

School of Media, Culture and Creative Arts

**Institutional Repositories in the Indonesian Higher Education
Sector: Current State and Future Prospect**

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**This thesis is presented for the Degree of
Doctor of Philosophy
of
Curtin University**

November 2018

Declaration

To the best of my knowledge and belief this thesis contains no material previously published by any other person except where due acknowledgment has been made.

This thesis contains no material which has been accepted for the award of any other degree or diploma in any university.



Toong Tjiek Liauw

6 March 2018

Abstract

This research investigates the state of deployment and development of institutional repositories in the Indonesian higher education sector. It also investigates their prospect for providing future support for the creation of an open access scholarly communication environment for Indonesia.

Recent decades have witnessed the rapid and massive transformation of scholarly publishing as a result of the near ubiquitous access to digital services to create, store, acquire, and transfer scholarly publishing. Central to these changes has been the development of the Open Access movement, to which institutional repositories have been a major contributor. The benefits that follow from the adoption of open access and institutional repositories have been welcomed by universities and research institutions in developed countries, but until recently they have been less easily and less widely implemented in developing countries.

This research focuses on one developing country, Indonesia, where a detailed survey of institutional repositories has not previously been undertaken. The study has adopted a mixed-methods research strategy. Individual methods employed were: 1) longitudinal content analysis study of institutional repositories' website implemented by Indonesian higher education institutions; 2) a survey of Indonesian academics; and 3) in-depth interviews with various institutional repository stakeholders from three Indonesian universities. Each method informs the implementation of subsequent methods, and results from later method(s) elaborate, enhance, or clarify results from earlier method(s). The sampling frame used for the content analysis phase were online directories: Webometric's Ranking Web of Repositories, Directory of Open Access Repositories (OpenDOAR), and Registry of Open Access Repositories (ROAR). The survey phase used an online survey platform (Qualtrics) for distribution to academics in higher education institutions that have been identified during the content analysis phase. Statistical Package for the Social Sciences (SPSS) software has been used to analyze the results from the survey. For the interview phase, three institutions were selected based on the number of survey responses obtained and by considering the need for representative sample determined by other factors: state institutions vs. private institutions, and Java based institutions vs. non-Java based institutions. Face-

to-face, in-depth, semi structured interviews were conducted with academics and university administrators (Vice Rector for Academic Affairs, Head of Office of Research and Development, Head of Library, and Repository Manager) from these institutions. The interview transcripts were coded and analyzed using Nvivo software.

The results of this research indicate that the initial drivers for the uptake of institutional repositories in the Indonesian higher education sector have been: 1) the need for corporate information management systems to manage students' theses and dissertations, that has expanded to include academic tenure processes; 2) institutional prestige in terms of university rankings (e.g., Webometrics' rankings); and 3) the need to build a corpus of scholarly works to combat plagiarism in the production of students' works. The research has also identified various local practices in the management and population (content recruitment) of the repositories, management and policy structure relating to repository operations, as well as underlying opinions, attitudes, and contributions of academics to their institution's repository. Furthermore, the research has identified issues relating to the open access policies and practices of repositories in the context of teaching and research in Indonesia's higher education sector.

Table of Contents

Declaration	i
Abstract	ii
Table of Contents	iv
List of Figures	ix
List of Tables	xi
Abbreviations	xiv
List of Publications	xv
Acknowledgements	xvi
Chapter 1. Introduction	1
1.1 Scholarly communication and the history of Open Access movement	1
1.2 Institutional repositories.....	4
1.3 Statement of the problem	5
1.4 Research question and objectives	6
1.5 Research design	7
1.6 Significance of research.....	7
1.7 Chapter outline.....	9
Chapter 2. Background.....	12
2.1 Brief overview of Indonesia.....	12
2.2 Indonesian higher education sector.....	13
2.3 Institutional repositories in the Indonesian context	21
2.4 Local practices and developments that relates to institutional repositories.....	23
Chapter 3. Literature Review	26
3.1 Scholarly communication and publishing.....	26
3.2 Open access: Challenges and opportunities	28
3.3 Open access in the context of developing countries	31
3.4 Overview of institutional repositories.....	32
3.5 Previous surveys and studies on institutional repositories.....	42
Chapter 4. Methods	50
4.1 Overview of methods.....	50
4.2 Mixed-methods research design	51
4.3 Triangulation.....	54
4.4 Overview of the design of this research.....	56
4.5 Content analysis as method.....	57
4.5.1 Sampling and coding.....	60

4.5.2	Survey as method	62
4.5.3	Survey and questionnaire	62
4.5.4	Sample and sampling	65
4.5.5	Statistics	66
4.6	Interview as method	71
4.6.1	Interview	71
4.6.2	Transcription	76
4.6.3	Interview analysis and coding	81
Chapter 5. Content analysis.....		89
5.1	Data collection 1 (2014-2015)	89
5.2	Results from data collection 1.....	99
5.3	Data collection 2 (2016-2017)	105
5.4	Results from data collection 2.....	109
Chapter 6. Online survey		120
6.1	Data collection	120
6.1.1	The Survey: Platform, pilot, and questions	120
6.1.2	Sampling	126
6.2	Results.....	129
6.2.1	Demographic makeup of survey participants.....	130
6.2.1.1	Gender	130
6.2.1.2	Age	131
6.2.1.3	English proficiency in reading.....	132
6.2.1.4	English proficiency in writing.....	133
6.2.1.5	Status of institution.....	134
6.2.1.6	Geographical location of institution	136
6.2.1.7	Length of work	136
6.2.1.8	Academic role.....	137
6.2.1.9	Academic status.....	138
6.2.1.10	Field of study	139
6.2.1.11	Language preference in reading scholarly works	141
6.2.1.12	Knowledge about institutional repositories (n=428).....	143
6.2.2	General opinions and attitudes toward institutional repositories	144
6.2.2.1	Interactions with institutional repositories (n=362)	144
6.2.2.2	Support for institutional repositories (n=362)	145
6.2.2.3	Influence of language of institutional repository content on usage (n=362)	146
6.2.2.4	Impacts of institutional repositories (n=319)	147
6.2.3	Reasons to contribute to institutional repositories	148

6.2.3.1	Specific reasons to contribute to institutional repositories (n=234)	148
6.2.3.2	TOP specific reasons to contribute to institutional repositories (n=234)	150
6.2.3.3	Type of works contributed to institutional repositories (n=234)	152
6.2.3.4	Factor Analysis and Reliability Analysis of the reasons to contribute to institutional repositories (n=234)	153
6.2.4	Reasons NOT to contribute to institutional repositories	162
6.2.4.1	Specific reasons NOT to contribute to institutional repositories (n=90)	162
6.2.4.2	TOP specific reasons NOT to contribute to institutional repositories (n=88)	164
6.2.4.3	Factor Analysis and Reliability Analysis of the reasons NOT to contribute to institutional repositories variable (n=90)	166
Chapter 7. In-depth interviews		173
7.1	Data collection	173
7.1.1	The planning stage	173
7.1.2	The interviews	177
7.1.3	Post interviews	178
7.1.4	Transcription	179
7.1.5	Participant checks	179
7.1.6	Translation	181
7.2	Results	182
7.2.1	The coding of the interview transcripts	182
7.2.2	Individual participant's reports	188
7.2.3	Questionnaire for repository managers	189
Chapter 8. Discussions		191
8.1	Content analysis (longitudinal) study	191
8.1.1	How the content analysis study answers the research objectives	197
8.1.2	Recommendations	200
8.1.2.1	Practical recommendations	201
8.1.2.2	Recommendations for further research	202
8.2	Online survey	202
8.2.1	How the survey answers the research objectives	218
8.2.2	Recommendations	220
8.2.2.1	Practical recommendations	220
8.2.2.2	Recommendations for further research	221
8.3	In-depth interviews	221

8.3.1	General opinions	222
8.3.2	Uptake drivers	224
8.3.2.1	Scholarly communication.....	225
8.3.2.2	Information management.....	227
8.3.3	Uptake barriers	231
8.3.4	Management issues	235
8.3.4.1	Jurisdictional issues and institutional policies.....	235
8.3.4.2	Advocacy.....	239
8.3.4.3	Use of information and management of information	241
8.3.5	Local practices	242
8.3.6	Publish vs. publicly accessible.....	245
8.3.7	Potential of institutional repositories and open access.....	247
8.3.8	How the interviews answers the research objectives	251
8.3.9	Recommendations	255
8.3.9.1	Practical recommendations.....	255
8.3.9.2	Recommendations for further research	257
Chapter 9.	Conclusions	258
9.1	How the study answers the research question.....	258
9.2	Reflections on the methods.....	260
9.3	Final reflections	262
9.4	General recommendation for further research	263
	References.....	264
<hr/>		
	APPENDICES	290
<hr/>		
Appendix A	Printed version of the online survey	291
Appendix B	Documents related to online survey	299
1.	Formal letter for soliciting participation	300
2.	Information sheet	302
Appendix C	Factor Analysis and Reliability Analysis for “Reasons to Contribute to IR” variables.....	304
1.	Tables and figure related to Factor Analysis for “Reasons to Contribute to IR” variables	305
2.	Tables related to Reliability Analysis for Factor 1 (Scholarly Communication)	312
3.	Tables related to Reliability Analysis for Factor 1 (Scholarly Communication) with the INCLUSION of another variable.....	314

4.	Tables related to Reliability Analysis for Factor 2 (Corporate Information Management)	316
5.	Tables related to Reliability Analysis for Factor 2 (Corporate Information Management) with the EXCLUSION of one variable.....	318
Appendix D Factor Analysis and Reliability Analysis for “Reasons NOT to Contribute to IR” variables.....		320
1.	Tables and figure related to Factor Analysis for “Reasons NOT to Contribute to IR” variables	321
2.	Tables related to Reliability Analysis for Factor 1 (External Aspects)	328
3.	Tables related to Reliability Analysis for Factor 1 (External Aspects) with the EXCLUSION of one variable.....	329
4.	Tables related to Reliability Analysis for Factor 2 (Administrative and Tool Aspects)	330
5.	Tables related to Reliability Analysis for Factor 2 (Administrative and Tool Aspects) with the EXCLUSION of one variable	331
6.	Tables related to Reliability Analysis for Factor 3 (Internal Aspects)	332
7.	Tables related to Reliability Analysis for Factor 3 (Administrative and Tool Aspects) with the INCLUSION of another variable	333
Appendix E Documents related to interview.....		334
1.	Formal letter for soliciting participation	335
2.	Information sheet	337
3.	Consent form.....	339
4.	In-depth interview protocol.....	340
5.	In-depth interview participants coding table.....	342
Appendix F List of questions for interviews		343
1.	List of questions for vice rector and head of office of research and development (ORD).....	344
2.	List of questions for head of library.....	346
3.	List of questions for institutional repository manager	348
4.	List of questions for academics (lecturers/researchers).....	350
Appendix G Questionnaire for institutional repository manager		352
Appendix H Documents related to Primary Research Group - List of questions and email correspondence for permission to use.....		362
Appendix I Guidelines for transcribing interviews		366
Appendix J NVivo codebook		368

List of Figures

Figure 5.1	Distribution of institutional repositories (in red) in Indonesia and the population of the region (in black or white)	99
Figure 5.2	Distribution of Indonesian higher education institutional repositories based on repository software (n=52 IRs)	100
Figure 5.3	Distribution of digital objects in Indonesian higher education institutional repositories based on repository software (n=547,452 digital objects).....	100
Figure 5.4	Snapshots of some aspects of Indonesian higher education institutional repositories.....	102
Figure 5.5	Distribution of the Types of Work found in Indonesian higher education institutional repositories (n=52)	103
Figure 5.6	Comparisons of some criteria (Distribution of IRs, University Status, IR Software, Availability of Links, Availability of Access Statistics, Author Naming Convention, Standardized Access Points, and Language of Access Points) between DC1 and DC2.....	113
Figure 5.7	Comparisons of some criteria (Types of Work, Public Full-text Availability, Openness, and List Used) between DC1 and DC2	114
Figure 6.1	The flow of the survey at Qualtrics online survey platform	122
Figure 6.2	Gender.....	131
Figure 6.3	Age (based on year or birth)	132
Figure 6.4	Age (based on year of birth) by gender	132
Figure 6.5	English proficiency in reading.....	133
Figure 6.6	English proficiency in writing	134
Figure 6.7	Status of institution	135
Figure 6.8	Status of institutional affiliation by gender.....	135
Figure 6.9	Geographical location of institution	136
Figure 6.10	Length of work.....	137
Figure 6.11	Academic role	138
Figure 6.12	Academic status	139
Figure 6.13	Field of study	140
Figure 6.14	Field of study by gender	141
Figure 6.15	Language preference in reading scholarly works	142
Figure 6.16	Language preference in reading scholarly works by gender	143
Figure 6.17	Knowledge about institutional repositories	144
Figure 6.18	Interactions with institutional repositories.....	145

Figure 6.19	Support for institutional repositories	146
Figure 6.20	Influence of language of institutional repository content in usage	147
Figure 6.21	Impacts of institutional repositories.....	148
Figure 6.22	Specific reasons to contribute (sorted in descending order based on the total value of responses from “Strongly Agree” and “Agree”)....	150
Figure 6.23	TOP specific reasons to contribute to institutional repositories (sorted in descending order)	152
Figure 6.24	Contributed works to institutional repositories (sorted in descending order).....	153
Figure 6.25	Specific reasons NOT to contribute (sorted in descending order based on the total value of “Strongly Agree” and “Agree”).....	164
Figure 6.26	TOP specific reasons NOT to contribute to institutional repositories (sorted in descending order).....	165
Figure 7.1	Mind map of codes including the number of sources and references referred to by each code.....	185
Figure 7.2	Hierarchy chart of codes based on the number of sources and references referred to by each code	186
Figure 7.3	Aggregated percentage coverage of topics by Academics (9 interviews)	187
Figure 7.4	Aggregated percentage coverage of topics by Administrators (12 interviews)	188
Figure 7.5	Percentage coverage of topics by DIKTI officials.....	188
Figure 7.6	A sample of individual participant’s percentage coverage of topics during the interview	189
Figure 8.1	Comparison of patterns of links to sources for TENURE (Uptake Drivers > Information Management > Personal) between PERSONAL (a) vs. INSTITUTIONAL (b) Impacts (General Opinions)	224
Figure 8.2	The institutional repository ecosystem triangle with three major stakeholders and other minor stakeholders.....	237

List of Tables

Table 3.1	Changes in self-archiving permissions of journals listed in SHERPA/RoMEO	30
Table 4.1	Individual methods used in the research and their respective contributions in fulfilling the research objectives.....	57
Table 4.2	Tool selection for Descriptive Statistics	68
Table 4.3	Statistical measures of association.....	69
Table 5.1	Indonesian higher education institutions with multiple repositories and reasons for the inclusion in or exclusion from the content analysis study.....	91
Table 5.2	Coding schedule containing variables for content analysis of Indonesian higher education institutional repositories	92
Table 5.3	Characteristics used to evaluate and categorize content in the content analysis of Indonesian higher education institutional repositories.....	96
Table 5.4	List of institutions with a repository, of which number of Digital Objects have more than 100 item counts difference between manual counting and data derived from OpenDOAR in Data Collection 1	101
Table 5.5	Indonesian higher education institutions with multiple repositories and reasons for the inclusion in or exclusion from the <i>longitudinal</i> content analysis study	106
Table 5.6	List of institutions with repository, of which number of Digital Objects have more than 100 item counts differences between manual counting and data derived from OpenDOAR in Data Collection 2.....	110
Table 5.7	Distribution of collections in Computer Science College's (STIKOM) and Sunan Ampel State Islamic University's (UINAMPEL-DL) institutional repositories.....	116
Table 6.1	Response options from Q25 and their origin.....	125
Table 6.2	Gender.....	131
Table 6.3	Age (based on year of birth)	131
Table 6.4	English proficiency in reading.....	133
Table 6.5	English proficiency in writing	134
Table 6.6	Status of institution	135
Table 6.7	Status of institutional affiliation by gender.....	135
Table 6.8	Geographical location of institution	136

Table 6.9	Length of work.....	137
Table 6.10	Academic role	138
Table 6.11	Academic status	139
Table 6.12	Field of study	140
Table 6.13	Field of study by gender	140
Table 6.14	Language preference in reading scholarly works	141
Table 6.15	Language Preference in Reading Scholarly Works by gender	142
Table 6.16	Knowledge about institutional repositories	144
Table 6.17	Interactions with institutional repositories.....	145
Table 6.18	Support for institutional repositories	146
Table 6.19	Influence of language of institutional repository content on usage ...	147
Table 6.20	Impacts of institutional repositories.....	147
Table 6.21	Specific reasons to contribute (sorted in descending order based on the total value of responses from “Strongly Agree” and “Agree”)....	149
Table 6.22	TOP specific reasons to contribute to institutional repositories (sorted in descending order)	151
Table 6.23	Contributed works to institutional repositories (sorted in descending order).....	153
Table 6.24	Common themes for components (factors) related to the reasons to contribute to institutional repositories identified by Factor Analysis	159
Table 6.25	Specific reasons NOT to contribute (sorted in descending order based on the total value of “Strongly Agree” and “Agree”).....	163
Table 6.26	TOP specific reasons NOT to contribute to institutional repositories (sorted in descending order).....	165
Table 6.27	Common themes for components (factors) related to the reasons NOT to contribute to institutional repositories identified by Factor Analysis	168
Table 6.28	Common themes for components (factors) related to the reasons NOT to contribute to institutional repositories based on Reliability Analysis	172
Table 7.1	Some characteristics of institutional repository in University A and University B.....	190
Table 8.1	Comparisons of population of people, and number of repositories and digital objects in various regions of Indonesia.....	191
Table 8.2	Cross-tabulation of “Preferred Language in READING Scholarly Works” and “Influence of Language of IR Content” variables	205
Table 8.3	Chi-square tests table for Cross-tabulation Table 8.2.....	205

Table 8.4	Cross-tabulation of “Interactions with OWN IR” and “Support of OWN IR” variables.....	206
Table 8.5	Chi-square tests table for Cross-tabulation Table 8.4.....	207
Table 8.6	Cross-tabulation of “Interactions with OWN IR” and “Interactions with OTHER IR” variables.....	207
Table 8.7	Chi-square tests table for Cross-tabulation Table 8.6.....	208
Table 8.8	Cross-tabulation of “Interactions with OWN IR” and “Interactions with OTHER IR” variables.....	208
Table 8.9	Chi-square tests table for Cross-tabulation Table 8.8.....	209
Table 8.10	Cross-tabulation of “Interactions with OWN IR” and “Contributed Contents to OWN IR” variables	209
Table 8.11	Chi-square tests table for Cross-tabulation Table 8.10.....	210
Table 8.12	Cross-tabulation of “Academic Status” and “Contributions to OWN IR” variables.....	214
Table 8.13	Chi-square tests table for Cross-tabulation Table 8.12.....	214
Table 8.14	Cross-tabulation of “Field of Study” and “Contributions to OWN IR” variables	215
Table 8.15	Chi-square tests table for Cross-tabulation Table 8.14.....	215

Abbreviations

BOAI	Budapest Open Access Initiative
BOAID	Budapest Open Access Initiative Declaration
DC1	First Phase of Data Collection for Content Analysis Study
DC2	Second Phase of Data Collection for Content Analysis Study
DIKTI	Directorate General of Higher Education (Direktorat Pendidikan Tinggi) – currently under KemenristekDikti
Garuda	Garba Rujukan Digital (Digital Reference Portal), a nation-wide aggregator of institutional repositories' metadata created and maintained by DIKTI (appears to be inactive since 2015)
GDL	Ganesha Digital Library
HE	Higher Education
IOS	Indonesian One Search, a nation-wide aggregator of institutional repositories and library catalogs' metadata created and maintained by the National Library of the Republic of Indonesia
IR / IRs	Institutional Repository / Institutional Repositories
Kemendikbud	Ministry of Education and Culture (Kementerian Pendidikan dan Kebudayaan) – defunct name
Kemendiknas	Ministry of National Education (Kementerian Pendidikan Nasional) – defunct name
KemenristekDIKTI	Ministry of Research, Technology, and Higher Education (Kementerian Riset, Teknologi, dan Pendidikan Tinggi)
LMS	Library Management System
OJS	Open Journal System
OPAC	Online Public Access Catalog
ORCID	Open Researcher and Contributor ID, a persistent digital identifier that distinguishes a researcher from every other researcher (https://orcid.org/)
PDF	Portable Document Format
URL	Uniform Resource Locator (web address)
WWW	World Wide Web

List of Publications

Journal articles

Liauw, T. T., & Genoni, P. (2017). A different shade of green: A survey of Indonesian higher education institutional repositories. *Journal of Librarianship and Scholarly Communication*, 4(0), eP2136. doi:10.7710/2162-3309.2136

Liauw, T. T., & Genoni, P. (n.d.). Content analysis and its application with dynamic online content: A case study of a survey of Indonesian higher education institutional repositories. *Qualitative and Quantitative Methods in Libraries Journal*. [under review]

Poster Presentation

Liauw, T. T., & Genoni, P. (2015). Diversity or perversity: An assessment of Indonesian higher education institutional repositories. Indianapolis, IN: The 10th International Conference on Open Repositories (June 8-11, 2015).

Datasets

Liauw, T. T. (2015). *Content analysis of Indonesian higher education institutional repositories (Nov 19, 2014 - Feb 01, 2015)*. [Dataset(s)] doi: 10.4225/06/565BACB4C3CBA

Liauw, T. T. (2017). *Longitudinal content analysis of Indonesian higher education institutional repositories*. [Dataset(s)] doi: 10.4225/06/594098a5b01f7

Liauw, T. T. (2018). *De-identified dataset for online survey on institutional repositories in Indonesian higher education sector (May 18-Aug 17, 2015)*. [Dataset(s)] doi: 10.4225/06/5a585f32884c1.

Liauw, T. T. (2018). *De-identified in-depth interview transcripts of academics and administrators in three Indonesian universities on their opinions and attitudes toward institutional repositories (Nov-Dec 2015)*. [Dataset(s)] doi: 10.4225/06/5a585ca2def47.

Acknowledgements

This Ph.D. study has been an amazing and enriching life journey. It has opened up new horizon in terms of the way I view and understand science, as well as the realization to the breadth of knowledge available out there. This experience has been a humbling one. Thus I would like this Acknowledgements section to be an ‘official’ record of not just the academic side of my Ph.D. journey, but also the social and ‘fun’ sides of it. My sincere appreciation is due to the many people and organizations that have played their roles along this amazing life journey.

First of all, I would like to give my highest appreciation to both my Supervisor (A/Prof. Paul Genoni) and my Co-Supervisor (Dr. Gaby Haddow). Both have provided invaluable guidance and feedback along my Ph.D. journey, and both have also been amazing colleagues. Paul – as the Main Supervisor – has especially been very helpful with providing guidance and feedback regarding my Thesis, as well as navigating the administrative aspects of Ph.D. enrolment at Curtin University.

Secondly, I would like to express my sincere gratitude to various people and campus units that have also played their role in this Ph.D. journey. The Faculty of Humanities, Curtin Library and the Learning Centre have been very instrumental in providing various Ph.D. workshops that have contributed significantly to various research skills that I have acquired along the way. I particularly want to mention Claire Hulcup from the Learning Centre, who has helped me overcome my fear of statistics; either through the workshop series on SPSS and Statistics, or the personal consultations that she has kindly provided. Her workshop on Introduction to NVivo was also very helpful in accelerating my learning curve for using the software for one of my Thesis chapters. Thanks also to other members of the Learning Center team at the time for the intensive academic writing workshop for international students: John Fielder, Michael Seats, and Grace Conti. I also find the workshops on EndNote provided by the Library have been very instrumental for my Thesis writing. My thanks to Marilyn Coen (Humanities Faculty Librarian), Janice Chan (eSpace), Matthias Lieffers, and John Brown (Research Data Management Team), who have provided kind support in dealing with copyright issues, as well as minting the DOIs for the datasets resulting from this research. I also appreciate the various Higher Degree by Research (HDR) workshops

organized by the Faculty of Humanities through its Research Culture Officer (Julie Lunn). Besides equipping HDR students with research skills, the workshops have also provided a forum for the Humanities students to meet and network with others, exchange ideas, and get to know one another; an important social support system for a Ph.D. journey, which many have characterized as a lonely journey. The Humanities Postgraduate Research Hub has also played a crucial role in providing a sense of community for its regular users. I have personally felt I belong to this Hub. HDR students at the Faculty of Humanities are blessed with the existence of this Hub, especially its Common Room (aka. kitchen), where many regular Hub users – whom I affectionately call the “Hubbies” – have lunched together and developed life-long friendships. Thanks again to Julie Lunn for maintaining the Hub so that – besides being the research hub – it has really functioned as the meeting hub for all the Hubbies.

Thirdly, I would also like to thank various other people and organizations whom I have met along this journey. I have enjoyed and learned so much from attending seminars, workshops, public lectures, and other events organized by Centre for Culture and Technology (CCAT); Curtin Hub for Immersive Visualisation and eResearch (HIVE); Curtin Institute for Computing (CIC); the Pawsey Supercomputing Centre (Pawsey); the John Curtin Institute for Public Policy (JCIPP); Curtin Career Centre; and Centre for Human Right Education. Meeting with various people from these organizations have really enriched my worldview. My sincere thanks to Lucy Montgomery (CCAT), Erik Champion, Andrew Wood, and Joshua Hollick (HIVE), Andrea Bedini and Rebecca Lange (CIC), and Luke Edwards (Pawsey). I also would like to personally thank Karen Visser from the Australian National Data Services (ANDS) for allowing me to ‘sneak in’ to the various ANDS’ workshops and webinars at Curtin University and around Perth.

Fourthly, various student-based entities have also enriched my Ph.D. life. I have felt privileged to be able to co-initiate the CURTIS (Curtin Information Studies Club) with Petra Dumbell and Aminath Riyaz, and being part of it throughout my Ph.D. journey. My involvement as General Councillor, and later as the Humanities Faculty Representative, in Curtin University Postgraduate Student Association (CUPSA) has also provided so many invaluable non-academic experiences. The position has enabled me to experience and learn how student organizations in Australia are run. The position has also enabled me to sit in various meetings of the Faculty of Humanities’ Research

and Graduate Studies Committee. I thank Tim Dolin as the Dean of Research and Graduate Studies at the time, for allowing me to be part of the Committee, representing the postgraduate students in the Faculty. Those opportunities have been an invaluable learning experience for me. The same is true of my experience being part of Association of Indonesian Postgraduate Students and Scholars in Australia at Curtin (Curtin AIPSSA). Thanks to Abid Halim and Gorga Parlaungan for the teamwork and experience. I have also felt privileged to have been part of the Curtin Volunteers' team. I recall the fond memories of learning about the management of FoodBank, and the hard works in sorting and packing food for the organization to be distributed to the people in need. Thanks to Samuel Rushton for being the team leader, who drove us around during the assignments. I also recall fondly the memories of being assigned to assist a school student at Clontarf Aboriginal College in learning to read through the Curtin Volunteer's Literacy Program. Thanks to Sarah Battaglia for your passionate leadership in this program.

Most importantly, I would like to acknowledge and thank the Australian Government – especially its Department of Education – for the Endeavour Postgraduate Scholarship that has made this incredible journey possible. Besides the opportunities to undertake Ph.D. research, this scholarship has also provided opportunities to network with other fellow Endeavour scholarship recipients; some of which I have come to know personally through the Curtin Endeavourians, the group that I initiated in 2014. Also to other fellow Endeavourians whom I have come to know through the various networking events: Kuenga Nidup, Dorji Rinchen, Dechen Choki, Endah Yanuarti, Mario Manopo, Kritu Panta, Ky Trung Le, Udsanee Pakdeetrakulwong, Leela Waheed, Mekhala Vithana, Saadia Shabnam, Imran Pasha, Ella Prihartini Syafputri, Lorna S. Almocera, Muhammad Kamran Khan, Sukham Munilkumar, and Anton Lucanus. A special mention goes to Frank Alexander Bender, who was in Perth as an Endeavour Research Fellow at the University of Western Australia in 2016. Our meeting was truly serendipitous and we have connected almost instantly. My sincere thanks also go to a number of the Scope Global case managers, who have provided kind assistance and support in navigating personal and academic life in Australia; from the beginning to the end of my Ph.D. journey. Thank you Vanessa Wright, Ammeline Balanag, Sarah Oldham, Rabia Khan, and Omesha Jayakody.

I also would like to give a special mention to Curtin (T. L. Robertson) Library for its Library Student Assistant (LSA) program, which allows students to work casually at the library assisting library users with all kinds of issues, as well as helping the library manage the collections. I have learned so much working as an LSA for two years. I gained insights on some of the inner workings of the library, including induction and training for new LSAs, work scheduling, timesheets, and various policies regarding collections and services. Besides acquiring new knowledge the job has also introduced me to the wonderful librarians, library technicians, and staff: Peter Green, Janice Chan, Drew Fordham, Isabella, Elizabeth Manassah, Shauna Mullally, Rayfel Murray, and James Robinson. Special mention goes to Cheryl Glasgow and Daniel Maloney for being such wonderful and caring supervisors for the LSAs. Through the job I have also come to know other wonderful LSAs: Adil Gran, Marko Petrovic, Aaron Sta Maria, Claire Homer, Kate Holmes, Rebecca Kerr, Peter Giles, Gajan Loganathan, Josh Soutar, Ba Loc Pham, and many more.

And last but definitely not the least, I would like to thank many Hubbies, especially my regular lunch buddies: Ryan Quinn, Julie Lunn, Yuanhang Liu, Satrya Wibawa, Sebastian Davies-Slate, and Shanshan Liu for the many interesting and ‘educational’ conversations that we had, the Ausie slangs, plus all the jokes and silliness. The same goes to other (current and former) Hubbies, whom I have come to know well enough: Sean Ryan, Laura Kittel, Lionel Kakai, Zafu Assefa Teferi, Hossein Mohammadi, Moiz Masood Syed, Aseel Ayash, Sumher Alezzawy, Asif Iqbal Siddiqui, Shahin Tolou, Pejman Sabet, Chen Guo (Ann), Roberto Minnuno, Lucas Marie, Daniel Juckes, Hersinta, Nurmala Elmin Simbolon, Indah Tri Purwanti, Annie Winnie Sudarsono, Achmad Room Fitrianto, He Zhang (Jan), Hersinta, Hong Van Vuthi, Omar Khater Alzahrani, Sunil Govinnage, Kashiraj Pandey, Khaeruddin Kiramang, Mariela Zingoni Debaro, Maureen Boyle, Nicholas Naggar, Nhu Nguyet Le (Lune), and Mehrzad Jahanbin. And these non-Hubbies: Donovan Mujah anak Bernard Lium, Keet Khoo Leung, Alexander (Sasha) and Lucy Prokhorov, Philips and Dorothy Lucks, Aldrick Arceo, Jincheng (Justin) Cen, Du Vinh Nham, Emy and Nino Lucero, Fenny and Jacub Hartono, Yossy Eko Hartono, Robert Smallwood and Katarina Smelikova.

Thank you all for making this Ph.D. journey such an amazing and transformative life journey. Thanks for all the fond memories that we have created together. God bless you all.

I am also dedicating this Thesis for my late father, whom had ‘forced’ me to learn English since my early childhood despite my ‘reluctance.’ Also to my late mother, whom did not give up on my tertiary education despite the difficult financial situation of the family at the time. Had it not for both of them, I would not have been where I am right now, enjoying the privilege of the highest level of formal education and traveling the world.

Chapter 1. Introduction

1.1 Scholarly communication and the history of Open Access movement

Scholarly or scientific journals have been the main channel of communication for scholarly communities since the 17th century (Kronick, 1976). In their early development these journals were largely established and managed as not-for-profit enterprises by various scholarly or professional societies and universities, securing their mission as the preferred choice of scholarly information dissemination for most disciplines. However in the final decades of the twentieth century the issues of rising costs associated with the production and distribution of these journals, coupled with the need to introduce new technologies, resulted in many of these societies and universities transferring ownership and control over numerous journals to the commercial scholarly journal publishers (Cope & Phillips, 2009; Horowitz, 1991). As commercial entities these publishers have understandably put more emphasis on profit-making than on purely disseminating scholarly information. The domination of commercial publishers in the scholarly journal publishing arena resulted in rapidly-rising prices of subscriptions to the point where they were becoming unaffordable for many libraries and therefore threatened to create significant barriers to the dissemination of scholarly information (Helfer, 2004). This profit-making priority can be observed from the publishers' policies and business models, such as the practice of 'bundling' subscriptions to electronic journals that – although presented as providing better value for money to subscribers – has largely removed from institutional subscribers control over titles entering their library's collection (McGuigan & Russell, 2008).

As a response to the commercial journal publishers' increasing domination of journal publishing, scholarly communities looked to the rapid development of digital technologies to provide a competitive solution. As a result they devised and supported the concept of 'open access,' and put considerable energy and resources into what has become known as the Open Access movement. The Open Access movement is

considered to have ‘officially’ started with the Budapest Open Access Initiative (BOAI) Declaration in 2002, which defined open access as the;

free availability [of peer-reviewed journal literature] on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited (Chan et al., 2002, para. 3).

BOAI also recommended self-archiving (Green open access or Green OA) and open-access journals (Gold open access or Gold OA) as the preferred strategies “to achieve open access to scholarly journal literature” (Chan et al., 2002, para. 5 & 6). According to Harnad et al. (2008) Gold OA is the choice for authors to “*publish* your article in an OA journal,” and Green OA means to “to *publish* your article in a non-OA journal but also *self-archive* it in an OA archive” (p. 36, emphases added). Crawford (2015) provides a commonly cited definition of Gold OA journals as “journals that make all peer-reviewed articles freely available for online reading as soon as they’re published, without requiring fees or registration to read those articles” (p. 2); thereby echoing the principles laid out in the BOAI Declaration.

The BOAI was followed by the Meeting on Open Access Publishing in 2003, which resulted in the Bethesda Statement on Open Access Publishing, further refining the definition of open access. Libraries were acknowledged in the Bethesda Statement as a critical stakeholder in open access publishing, and in the Open Access movement in general. This was also made apparent by the issuing of the Statement of the Libraries & Publishers Working Group, which listed proposed strategies for libraries to adopt in support of the Open Access movement (Suber, 2003).

Another significant milestone came with the 2003 conference convened by the Max-Planck Society in Berlin, which issued the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (Max-Planck Society, 2003). The Berlin Declaration is noteworthy in that it further broadened the scope of the Open Access movement to specifically include the field of Humanities. It also used the term “open

access contributions” instead of “open access publications,” thereby further broadening the scope of scholarly/scientific information resources within Open Access; moving from merely scholarly journal articles to numerous other types of information resources, including cultural heritage material (Liau, 2013). This broadening of scope increased the involvement of academic libraries as the managers of choice for most institutional repositories, since academic libraries commonly have the skills required to manage, the myriad of scholarly/scientific information resources. The 2003 Max-Planck Society conference was followed the annual Berlin Open Access Conference that has taken place internationally; and which at the Berlin 11 Open Access Conference in 2014 formulated a mission statement, which has initiated a goal “to ensure that 90% of the scholarly research literature is published with an OA model” (Max-Planck Society, 2013, p. 1). Since the inception of the Open Access movement Open Access mandates relating to Gold OA and Green OA have been the topic of many discussions (Carr et al., 2006; Gargouri et al., 2012; Stewart, 2013; Xia et al., 2012; Zhang, Boock, & Wirth, 2015).

In 2015 the Max-Planck Digital Library released its Open Access White Paper, which argues that “a large-scale transformation of the current subscription journals to an open access business model” can already be accomplished with the amount of “money spent annually in the subscription system” (Schimmer, Geschuhn, & Vogler, p. 2). The white paper has served as the basis for the formulation of the “Expression of Interest in the Large-scale Implementation of Open Access to Scholarly Journals” (Max-Planck Digital Library, 2016), which according to Food and Agriculture Organization/FAO Agricultural Information Management Specialists Team (2016) was formulated during the 12th Berlin Open Access Conference in 2015 (para.2) and “will act as the basis for gaining consensus for an internationally coordinated effort to shift libraries’ journal budgets away from subscriptions and towards an article-processing-costs model for OA journals” (para. 3), which is later known as OA2020. In an interview with Frank Sander (Head of Max-Planck Digital Library), Giersberg (2016) from Goethe-Institut reported that the OA2020;

aims to *transform* the scientific publications *market*. It is no longer just a case of *approving* of Open Access in *principle*, but more about *changing business models* drastically, so that the majority of all scientific publications are freely accessible right from the very first day they are published (para. 3, emphases added).

In the wake of OA2020 it is apparent that more worldwide developments in open access are to be expected in the near future.

1.2 Institutional repositories

Institutional repositories, as one of the principal forms of providing open access to scholarly literature, have in part been implemented by the scholarly community as a response to the increasing domination of commercial journal publishers that has threatened to stifle the dissemination of scientific information. The Open Access movement as a whole seeks to ‘liberate’ scientific information from the restriction of commercial interests, and institutional repositories are an important means of achieving this goal.

In the context of higher education institutions, one of the most frequently cited definitions of an institutional repository is provided by Lynch (2003);

a university-based institutional repository is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution (p. 328).

In terms of the content of institutional repositories, Lynch (2003) considers that:

a mature and fully realized institutional repository will contain the intellectual works of faculty and students – both research and teaching materials – and also documentation of the activities of the institution itself in the form of records of events and performance and of the ongoing intellectual life of the institution (p. 328).

As universities and other research institutions looked for ways to both support open access and enhance their institutional prestige it did not take long for institutional repositories to proliferate. With regard to open access strategies there have been other developments, such as open access publishing of journals and more recently monographs (Knowledge Unlatched, 2016). Some social networking sites for researchers have also proliferated, such as ResearchGate and Academia, as well as sites that try to bypass publishers’ paywalls, such as SciHub. These developments indicate that there has been a struggle for control involving academic authors, libraries

and the commercial publishing sector, with some ‘wins’ for each. Although the power of commercial publishers has been hard to shake, there are now open access alternatives to acquiring published scientific information, which might otherwise be locked behind paywalls. Among the publishers listed in SHERPA/RoMEO (2017), there are now (as of 28 December 2017) only 20% of publishers that do not allow the self-archiving of pre-prints and post-prints. In other words the majority of scholarly publishers are now supporting – in one form or another – the self-archiving practices. It needs to be acknowledged though that the term “self-archiving” can be misleading since it refers to self-deposit with no archival – in the true sense of the word – process involved. The terms “pre-prints” and “post-prints” can also be misleading. The National Information Standards Organization (NISO) has recommended the use of more specific terms that have more granularity and accuracy, such as author’s original, submitted manuscript under revision, accepted manuscript, proof, etc. (2008).

The rise of self-archiving has meant the worldwide growth of repositories, especially since 2006 (Bhardwaj, 2014, p. 188). Although developing countries have lagged behind in the adoption of institutional repositories (Bhardwaj, 2014, p. 198), they have now entered a phase of ‘catching up,’ as reflected from the research on repositories in the 2011-2015 period (Ammarukleart & Kim, 2017, p. 275).

1.3 Statement of the problem

Open access and institutional repositories present important opportunities for research productivity and research communication in developing countries. As a result of the international adoption of institutional repositories, developing countries have access to scholarship they would not otherwise be able to afford. Just as importantly, these repositories provide developing countries with the potential to make available the results of their research when they often find it difficult to use established English language journals that are the standard platform for the communication of peer-reviewed research.

Additionally, repositories might be instrumental in introducing an open access culture to developing countries, at least to their higher education sector. It is therefore important to understand the state of institutional repositories in developing countries. And despite the rising amount of research on repositories generated from developing

countries, to date there have been relatively few studies on institutional repositories and their potential to erode the ‘digital divide’ that is threatening to exacerbate the gulf between developed and developing countries with regard to the production and consumption of scholarly publishing.

These circumstances are particularly relevant to Indonesia, which has to date been the subject of negligible research regarding the state of institutional repository implementation, or the potential for repositories to benefit the country’s research and higher education sectors. This study will fill the gap in understanding institutional repositories in Indonesia, by investigating the current practice and future prospect for repositories, as a means of understanding the extent to which they can support the transformation of teaching, learning, and scholarship in the context of a rapidly developing higher education system.

1.4 Research question and objectives

This research project is driven by the need to answer the following question:

What is the current state and future prospect for institutional repositories in supporting open access for the benefit of Indonesian higher education teaching and research?

This research question will be answered by the use of methodologies that address the following objectives:

- Identify the rate of, and drivers for, the uptake of institutional repositories in Indonesian higher education institutions.
- Assess the management and policy structure supporting institutional repositories in Indonesian higher education institutions and their libraries.
- Identify the motivations, contributions, and attitudes of Indonesian academics towards current and future development of institutional repositories and open access.
- Identify local practices of Indonesian higher education institutions in populating and managing their institutional repositories.
- Assess the potential for institutional repositories and open access to support Indonesian higher education teaching and research.

1.5 Research design

The research has been conducted in a post-positivist paradigm and adopted mixed-methods as the research strategy, employing three different methods: longitudinal content analysis of institutional repository websites; an online survey of Indonesian academics; and in-depth semi-structured interviews conducted with institutional repository stakeholders. Sampling frame for the longitudinal content analysis studies has utilized online directories, namely Webometrics' Ranking Web of Repositories, Open Directory of Open Access Repositories (OpenDOAR), and ROAR (Registry of Open Access Repositories). Results from the content analysis stage, coupled with literature reviews of previous surveys, have informed the sampling, questions construction, and execution of the online survey. As a follow up to the survey, interviews have been conducted in three institutions; with the three selected institutions representing state and private institutions, as well as institutions based in Java and outside Java. A longitudinal content analysis has also been conducted two years after the first study to assess the development of repositories in the Indonesian higher education sector. A full discussion regarding the selected research methods will be provided in Chapter 4.

1.6 Significance of research

Despite the rising importance of institutional repositories in the Indonesian higher education sector, there has been virtually no in-depth study of their presence or role in supporting the nation's teaching and research. Although there have been some studies of institutional repositories in Asian countries (Ahmed, Alreyaee, & Rahman, 2014; Leng, Ali, & Hoo, 2016; Nazim & Mukherjee, 2011; Roy, Biswas, & Mukhopadhyay, 2016) and in ASEAN countries (Tan, Abrizah, & Noorhidawati, 2013) that have included Indonesia, they are quantitative studies that have relied heavily on data derived from the Registry of Open Access Repositories (ROAR, <http://roar.eprints.org>), Directory of Open Access Repositories (OpenDOAR, <http://www.opendoar.org>), OAIster (<http://www.oaister.org>), and/or Webometrics' Ranking Web of Repositories (<http://repositories.webometrics.info>). A doctoral thesis studied the readiness of Indonesian academic libraries in implementing open access repositories by conducting a survey and interviews with a number of academic

libraries' staff (Priyanto, 2015). The most recent study was by Rifai and Hasan (2016), which investigated the relationship between academics' expectations and their use of their institution's repository by using a questionnaire distributed to 50 academics in an Indonesian university. However this study's main objective was limited to testing the validity and reliability of the measuring instrument and has not provided useful information regarding the current state and content of Indonesian repositories.

Therefore this proposed survey on Indonesian institutional repositories will fill a gap and benefit many stakeholders in the Indonesian higher education sector in that it provides a snapshot of the current state and recent repository implementation in the country's higher education sector. The survey will also provide important information regarding the best-practices in developing institutional repositories and associated open access policies. The study will also hopefully provide some 'inspiration' for Indonesian academics and students in the field of library and information science to conduct further research regarding institutional repositories in Indonesia—a field that has been relatively 'neglected' so far, despite the increasing use of repositories among the country's higher education sector stakeholders.

The Indonesian Directorate General of Higher Education (DIKTI) will find value in this study, which increases understanding of various aspects relating to institutional repositories implementation and usage in Indonesia; and their role in, and impacts on, the Indonesian higher education sector, including the global visibility and impact of Indonesia's research output. The study will help DIKTI in formulating evidence-based policies, as well as creating relevant policies and supporting systems to enable repositories and open access to flourish.

Higher education institutions can benefit from this research by taking measures to address the issues identified; particularly as Indonesian institutional repositories tend to be viewed as technical infrastructure by many in the higher education sector. The recommendations provided as an outcome of this research will increase the practical utility of this study and potentially benefit university administrators and repository managers. In general, academic libraries will find valuable insights from this study in recognizing issues involved in the management and population of institutional repositories in the context of open access and the evolving scholarly communication landscape.

Finally, the study will also benefit the global scholarly community by filling the current gap in research studies, particularly in Indonesian institutional repositories and open access. The benefits of this research will also apply to other developing countries that are looking to encourage open access in support of national teaching and research priorities and enhance the accessibility of their research output to an international audience.

1.7 Chapter outline

This thesis consists of nine chapters and is composed in the following organization:

Chapter 1 is an introduction chapter that provides brief discussions into the problems that the study aims to address, the research question and objectives, and the research design, as well as introducing the relevant key concepts that will be used throughout the thesis. The chapter also provides the information on how the thesis is structured in terms of its chapter outline.

Chapter 2 provides additional background information to the study that describes the context of the research. It commences with a discussion of the Open Access movement and how the movement has led to the conceptualization of repositories in general. It then proceeds by providing an overview of the Indonesian higher education sector including how institutional repositories have been adopted and developed in that context.

Chapter 3 is dedicated to reviewing the available literature on the subject of institutional repositories. In addition to looking at the currently-available literature on the various aspects of institutional repositories adoption and developments, the literature review focuses on previous surveys of institutional repositories. The chapter also gives emphases to relevant scholarly works that focus on the Indonesian context.

Chapter 4 begins with short introduction to research methods in general and discussion on the dominant paradigms. The chapter then proceeds with more detailed discussions regarding the mixed-methods research, which includes its strengths and challenges; categories of mixed-methods research design; and different strategies involved. The chapter ends with a discussion that frames the application on the mixed-methods research design into the current study and how each individual method

(content analysis, survey, and interview) contributes to answering the research question and objectives. Additional discussion on each method is undertaken in the separate respective chapters that follow in the belief that this arrangement will provide better context and ease of understanding.

Chapter 5 is dedicated to the first method used in the mixed-methods research design, which is the content analysis. The chapter commences with the theoretical foundations of content analysis, as well as the subjects of sampling and coding. The chapter then describes how those theoretical foundations are being applied in the data collection phase of the content analysis study. The results of the data collection make up the last part of the chapter. Since the content analysis study involves multiple data collection phases (longitudinal study), each phase is represented by a data collection and results section.

Chapter 6 focuses on the second method used in this research: a survey. Adopting a similar structure to the previous chapter, this chapter starts with the theoretical foundations of surveys as a research method; the construction process of questionnaires; and the importance of sampling. The Chapter then discusses the execution of the survey itself, including the preparation phase that involves the selection of online survey platform (Qualtrics); the construction of survey questions; the pilot phase of the survey; and the sampling technique used in this study. The chapter concludes with the presentation of the survey results.

Chapter 7 is devoted to discussion relating to the third methods used: in-depth semi structured interviews. The chapter is structured similarly to the other two methods by starting with the theoretical foundations of interviewing as a research method, and different approaches to interviewing. Theoretical discussion in the chapter covers the issues relating to the transcription process, coding of the interview transcripts, and analysis of interviews. As with the previous two chapters, this chapter then proceeds with discussion relating to the stages of data collection: planning and execution of the interviews, transcribing interview recordings, participant checks for the interview transcripts, and a brief discussion on translation. The results of the interview are then described.

Chapter 8 consolidates the discussions based on the results of each individual research method, where each previous phase informing the later phases of the research. Discussions in the chapter is structured sequentially (content analysis, survey, and interviews) to reflect the sense of progression. Concluding each section, a brief additional discussion will connect the findings to the relevant research objectives in order to give readers a sense of seeing the ‘big picture’ with regard to how findings contribute to answering the research question. At the end of each section, whenever applicable, recommendation(s) provide practical outcomes from this research to different stakeholders in the Indonesian higher education sector.

Chapter 9 summarizes all the findings, structured around answering ~~each~~ of the research question, and presents the researcher’s final reflections.

Chapter 2. Background

This chapter describes the context for the research including background information on local conditions and practices that might be unique to Indonesia. This includes matters of governance and administration relating to the higher education sector that have influenced the adoption and implementation of institutional repositories by the nation's universities.

2.1 Brief overview of Indonesia

Indonesia is the largest country – geographically and population wise – in South-east Asia, with a population of 255 million in 2015 and projected to reach more than 271 million in 2020 (Statistics Indonesia, 2014) spread across its 16,056 islands (Badan Informasi Geospasial, 2017). The annual population growth of the country is 1.2% and life expectancy at birth is 69 years (UNESCO Institute for Statistics, 2018b). The country has 1,910,931 square km of surface area; a Gross Domestic Product (GDP) of USD 888.538 trillion, with 5% annual GDP growth rate in 2014. Government expenditure in education in Indonesia has reached 3.3% of its GDP, and there is an estimated 126.2 mobile-cellular subscriptions per 100 inhabitants, with 17.2% of the population (above the age of 5) using the Internet (United Nations Statistics Division, 2018).

UNESCO Institute for Statistics (2018a) gives a slightly lower figure for government expenditure on education in 2014 (3.28% of GDP), which represents 17.67% of total government expenditure, and 3.59% of GDP in 2015 (20.52% of total government expenditure). Indonesia has shown strong economic growth in recent decades and is predicted to become the world's fourth largest economy by 2050, with the growing middle class as a potential significant driver of growth (de Haan, 2017, p. 1). The World Bank Group surveys in 2012 and 2015 have identified education as the second most important priority in Indonesia's government, behind only public sector governance and reform (Public Opinion Research Group, 2015, p. 10).

2.2 Indonesian higher education sector

Indonesia currently has 122 state higher education institutions and 3,128 private institutions (Kementerian Riset, 2017b). The gross enrolment ratio for higher education in the country, according to the Ministry of Research, Technology, and Higher Education, was 33.5% in 2015 (Kementerian Riset, 2015, para. 1); exceeding the ministry's target of 26.86% for 2015 and even its 2019 target of 32.56% (Kementerian Riset, 2017a, p. 77). A 2015 joint publication by the Organization for Economic Cooperation and Development (OECD) and Asian Development Bank – citing 2014 data from the UNESCO Institute for Statistics – has put Indonesia's higher education enrolment rate at 31.5%; above a number of other ASEAN countries, but below Malaysia (36%) and Thailand (51.2%). The same report has also declared that “Indonesia's tertiary attainment rate among the adult population between the ages of 25 and 64 is also very low compared with Thailand, Singapore and South Korea,” and that in terms of tertiary education there is currently inequity between social groups and regions within the country (OECD/Asian Development Bank, 2015, p. 184). According to the Ministry of Education and Culture Republic of Indonesia (2013) the total number of students in Indonesian tertiary education institutions reached 4.2 million in 2008 and had increased to 5.9 million by 2012.

Indonesia's Higher Education Law 12/2012 has specifically mentioned in its preamble that higher education plays a crucial role in developing the nation's national competitiveness in a globalized world (Yudhoyono, 2012). The law also defined the nation's various forms of tertiary education institutions: university, institute, college, polytechnic, academy, and community academy (Yudhoyono, 2012, Chapter 59, Clause 1). The academic degree and credentialing system supported by the Indonesian higher education consists of:

bachelor's (S1), master's (S2) and doctoral (PhD, or S3) degrees (academic or applied) and professional degrees (e.g. medicine). The stipulated length of study for a bachelor's degree is four years, with a further two years for a master's degree and a further three years for a PhD on top of that. On the vocational side, there are programmes leading to diplomas after one to four years of study (D1-D4). In principle there are flexible pathways between the different types of higher education according to the so-called multi-entry, multi-exit system (OECD/Asian Development Bank, 2015, p. 187).

Indonesia's Higher Education Law 12/2012 also defines the duties and responsibilities of each of these tertiary education institutional-types in providing education, research and community service, which is commonly known as "tridharma" (OECD/Asian Development Bank, 2015, p. 187). In terms of funding, the House of Representatives of the Republic of Indonesia has mandated all branches of government, including state and local governments, to allocate at least 20% of their budget for education (Sekretariat Jenderal DPR RI, 2016, Chapter XIII, Clause 31.4).

There was previously only one ministry with responsibility for education at all levels in Indonesia – the Ministry of Education and Culture, which was later renamed as the Ministry of National Education; with the 'Culture' component merged into the Ministry of Tourism. Further changes have seen the ministry once again re-titled the Ministry of Education and Culture; with the 'Education' component still including all levels of education. The latest changes have resulted in two ministries that are involved directly in education. The Ministry of Education and Culture is currently responsible for early childhood education, primary and secondary education, as well as the non-formal education sectors, in addition to its other mandate in the cultural sector (Kementerian Pendidikan dan Kebudayaan, 2015, para. 1). The Ministry of Research, Technology, and Higher Education is responsible for the higher education sector, in addition to its responsibilities in the research sector, and the development and implementation of relevant technology (Kementerian Riset, 2016, para. 1). These latest changes have been accepted by many in Indonesia as an improved arrangement, as the higher education sector can now better align with, or situate itself within, the country's research sector. Despite the opportunities that this new arrangement has presented, there are also challenges to be reckoned with. A recent interview with the acting Director of LIPI (Lembaga Ilmu Pengetahuan Indonesia or Indonesian Institute of Sciences), the peak body for the country's research sector, has highlighted some of the challenges that might emerge in the process of aligning the country's higher education sector into its research sector. In the interview the Acting Director stated that lecturers in Indonesian higher education institutions are not researchers (Subiyanto, 2018). However this is not the case since the Indonesia's Higher Education Law 12/2012 specifically mentions the "tridharma," which is the duty of Indonesian higher education institutions in providing education, research and community service; and which by default all lecturers in Indonesian higher education institutions have the

same “tridharma” as their responsibility with research as one of the components. In this context the opinion from the Acting Director can be understood as either he has different understanding of research or his opinion is a hint of, presumably, sectoral ego that might present challenges to efforts in aligning the two sectors. Nevertheless, the above statement – coupled with the situation whereby the higher education sector has only recently been aligned with the country’s research sector – might provide some basis for the conclusion that *in the past* Indonesian higher education institutions have been intended to function primarily as teaching institutions.

There are other ministries that are indirectly involved in education by providing specific educational systems and institutions. These include the Ministry of Religious Affairs that, according to the DIKTI’s Higher Education Database (<https://forlap.ristekdikti.go.id/perguruan tinggi>, as of January 2018), coordinates 1,143 religious-based higher education institutions, only 18 of which are university-level institutions, while the rest are small or very small institutions. Other ministries, such as the Ministry of Finance, Ministry of Health, Ministry of Maritime Affairs and Fisheries Ministry of Home Affairs, also establish and manage – to some degree at least – their own specific-purpose higher education systems. However the Ministry of Education and Culture, and the Ministry of Research, Technology, and Higher Education are currently the two main bodies responsible for education. Both are notionally entitled to a total of 20% allocation of the national budget as noted earlier, although in practice their combined budget might not reach that level. The Ministry of Research, Technology, and Higher Education has claimed to manage a budget of 40.63 trillion Rupiah (approximately USD 3.25 billion) in 2016, of which 39.66 trillion (97.6%) has been allocated for the country’s higher education sector (Kementerian Riset, 2015, para. 4). Logli (2016) has observed that there has been recent expansion of community colleges and distance learning/education in the Indonesian higher education sector, where these community colleges have been supported by stronger/larger institutions (universities) in their formation phase (p. 564). The rise of distance education or e-learning in the higher education sector has also been identified as an important factor (Pradana & Amir, 2016, p. 11542). In the Indonesian context distance education, in all of its forms, plays a crucial role in increasing access to higher education for under-represented segments of its society (Jacob, Wang, Pelkowski,

Karsidi, & Priyanto, 2012, p. 228). Zuhairi, Wahyono, and Suratinah (2006) have noted that,

[d]istance education has benefited working adults, in-service teachers working in remote areas, minority groups such as women, as well as those people coming from the lower layers of society,” and that its benefits extend beyond higher education to the primary, secondary, and even the non-formal education sector (p. 96).

Distance education has also been considered as enhancing access opportunities for the very large number of high school graduates in Indonesia, who have been excluded from attending conventional universities due to socioeconomic or geographical constraints (Pannen, 2003; Pannen & Abubakar, 2005). Jacob et al. (2012) identified the following institutions as the country’s leading players in providing distance education: Indonesian Open University, Southeast Asian Ministers of Education Organization (SEAMEO), Indonesian Distance Learning Network (IDLN), and the Center for Communication and Information Technology for Education under the Ministry of Education and Culture (Pustekkom) (p. 229).

Despite the importance that the Indonesian government has placed on education – at least in terms of potential budget allocations – there are still many problems and challenges facing the Indonesian education sector, including higher education. It has been noted that despite recent improvements that, “[t]here are striking quality differences especially between the public and private institutions where, with a few exceptions, the private institutions are generally weaker in terms of size, staff qualifications, infrastructure, equipment and facilities” (OECD/Asian Development Bank, 2015, p. 185). The geographical nature of the country, with its many thousands of islands, presents a unique delivery challenge for higher education providers, as well as creating complex issues for policy makers (Jacob et al., 2012, p. 231). Low scientific and research outputs has also been a long-time problem plaguing Indonesian higher education sector. Since the period when it was under the auspices of the Ministry of Education and Culture, DIKTI has expressed its dismay at the low productivity in terms of peer-reviewed scientific publications being produced by the Indonesian higher education and research sector. Recent data (as of 2016) continues to demonstrate that the number of scientific publications from Indonesia indexed in Scopus remains below Malaysia, Singapore, and Thailand (Sadjuga, 2017, p. 39).

Although, as Mulyanto (2016) stated, “[t]he essence of a researcher in a public research organization is not necessarily to publish papers per se but to produce and communicate knowledge through different mechanisms” (p. 79), peer-review publication is nonetheless seen as the most important indicator of research productivity, and is widely used for assessments within the higher education sector. Mulyanto (2016) also observed that scientific publications in international journals generated from developing countries tend to be more focused on generalised commentary and less based on original research than those originating in more developed countries (p. 79). Many factors have contributed to the low number and quality of scientific publications from developing countries. These include limited availability of research resources and infrastructure; use of languages other than English which can prevent access to scholarly content and research reporting which are dominated by English; immature cultures of research and publishing; as well as tenure practices and other related policies (Gonzalez-Brambila & Veloso, 2007, p. 1036). In his earlier study, Mulyanto (2014) identified that the current Indonesian government’s budgeting mechanism does not provide strong motivation for public research institutions to build linkages with industry (p. 149). It is also important to note the observation with regard to higher education institutions in Indonesia that, “in the mission statements of these higher education institutions ... *research* is not necessarily part of their *core* function;” that the majority of them “do not have the financial and academic basis to conduct research,” and it therefore becomes “more important for them to concentrate their efforts on developing high-quality relevant *teaching*, with some of them being more vocationally oriented” (OECD/Asian Development Bank, 2015, p. 187, emphases added). Liauw (2009) has also observed a phenomenon where many Indonesian higher education institutions have provided limited access to their theses and dissertations due to ‘excessive’ fear of plagiarism and insecurity over the quality of the works produced (p. 20). This phenomenon has significantly decreased access to locally-produced scholarly works with more relevant topics and no language barriers since these resources are mostly written in Bahasa Indonesia rather than English.

Another problem facing Indonesian higher education is plagiarism. The Indonesian Ministry of National Education Regulation No. 17 / 2010 has defined plagiarism as;

any act, either intentional or unintentional in gaining or trying to gain credit or value over a scholarly work, by partially or wholly quoting a work and/or scholarly work by other party, which then claimed as one's scholarly work, without citing the source accurately and adequately (Nuh, 2010a, Chapter 1 Clause 1).

Carroll (2007) has provided a much shorter definition of plagiarism as “submitting someone else’s work as your own” (p. 13) where the word “submitting,” describes “an action without implying intent” and “acknowledges the distinction between private and public work – it is only plagiarism when you ‘go public’, i.e. when a student hands in work” (p. 14). A US-based study has found that more than 90% of students (high school and college) believed that cheating is wrong but 76% reported that they had “cheated in either high school or college or both” (Davis, Grover, Becker, & McGregor, 1992, p. 17). A similar study by Franklyn-Stokes and Newstead (1995) has found that more than 60% of undergraduate students in the UK admitted that they have copied one another’s work, plagiarized, and altered and invented research data (p. 159). A national survey conducted between 2016-2018, involving 15,047 students and 1,243 staff at eight Australian universities and four non-university higher education providers, has found that one in seven students has purchased, sold, or traded notes, and one in four has completed assignments for others (Contract Cheating and Assesment Design, 2018). A US-based company – turnitin – has recently launched its new product named Authorship Investigation, which provides “support for institutions in identifying potential contract cheating incidences” by using “a combination of machine learning algorithms and forensic linguistic best practices to detect major differences in students’ writing style between papers” (turnitin, 2018, para. 3). Regardless of the extent of the problem, plagiarism is “a problem worth tackling” since “[b]y its nature, plagiarism threatens the value and integrity of what is being taught. It threatens students’ engagement with learning and, unless addressed, could undermine the worth of the awards students earn and the reputation” of higher education institutions (Carroll, 2007, pp. 22-23).

Plagiarism has also presented itself as a significant problem in the Indonesian higher education sector. The most recent high profile case was the termination of the Jakarta State University’s Rector (Vice Chancellor/President) by DIKTI before he completed his term amidst serious allegations that involve plagiarism, nepotism, and abuse of

power (Gumilang, 2017). The plagiarism component of the case itself involves two inter-related issues. The first issue relates to the strong indications of rampant plagiarism found in a number of doctoral students' theses. These theses had been found to contain too many similarities with works by other people (Rustad, 2017a) and involve dubious practices in their production (Rustad, 2017b, para 16). The second issue relates to the Rector's suspiciously high number of doctoral graduates (612 doctoral graduations in eight years) under his supervision and his controversial presidential decree allowing a threshold of up to 50% of similarity for plagiarism checking (Rustad, 2018, para 7 & 15) after an audit by DIKTI, which has strongly indicated unethical conduct to circumvent any allegation of plagiarism (Rustad, 2017b, para 13-14). Both inter-related issues have culminated in the allegation of commercialization of the institution's doctoral degree (Mudhoffir, 2017; Wirawan, 2017). Plagiarism cases in Indonesia have not happened only in terms of theses production but also other types of works, including journal articles (Prita, 2010), books (Trim, 2017), and even newspaper opinion piece involving a public official (Keswara, 2014).

Among the challenges faced by the higher education sector in Indonesia as discussed above, affordable access to scientific information may be the biggest barrier. This is particularly true for small to medium-sized institutions, or institutions in less developed areas of the country. Even though some academic publishers and/or aggregators provide discounted pricing for developing countries including Indonesia, affordability remains a major obstacle to accessing scholarly content. Indonesian access to commercial scholarly databases is typically limited to a small number of larger, state-funded institutions. Even the comparatively better-funded private institutions can afford only a very limited number of hardcopy journals, and few can afford to subscribe to commercial online journal databases. On the other hand, accessibility and affordability of scientific information are crucial components to increasing the quality of higher education in Indonesia, especially with the rising role of distance education that can better serve the geographically challenging nature of the Indonesian archipelago. There has been efforts made by DIKTI to provide national access to a number of online journal databases on behalf of Indonesian higher education institutions. Individual academics from higher education institutions in Indonesia can request access through an online system provided by KemenristekDikti

at <http://simlitabmas.ristekdikti.go.id/ejournal/>. DIKTI has also made efforts to promote this service to all higher education institutions in Indonesia (Subekti, 2015). With a slightly different selection of subscription services, the National Library of Indonesia has also provided access to its individual members, whereby they can request password access the e-resources provided by the Library (<http://e-resources.perpusnas.go.id/>). At the inauguration of the new building of the National Library of Indonesia, the President of Indonesia stated that this duplication should be avoided by consolidating the national subscription to online journal databases, and mandated the National Library to be the country's access point (Perpustakaan Nasional Republik Indonesia, 2017, para. 9; Romadoni, 2017, para. 1). This statement has then been followed by the Minister of Research, Technology, and Higher Education signing a Memorandum of Understanding between the Ministry and the National Library (Kementerian Riset, 2017c). The Minister has also requested individual universities to cease their individual institutional e-journal subscriptions to online journal databases (Esy/JPPN, 2017). Implementation of this new 'policy,' however, has proven to be more complicated than anticipated, with the following potential problems:

- it is difficult to expect universities to cease their institutional subscriptions when the replacement is limited to individual (personal) access that requires individual academics to register online to the National Library's website;
- requiring the National Library's server to handle all online registrations from across Indonesia can potentially introduce unmanageable loads on the server;
- requiring all access to go through the National Library's proxy server can potentially introduce an access bottleneck (dependent upon the National Library's bandwidth) and reduce access speed considerably, which will in turn significantly reduce usage of the online resources;
- online journals databases and/or individual e-journal titles subscribed to by the National Library do not necessarily meet the needs of individual universities;
- it is unrealistic to expect commercial publishers and/or aggregators not to adjust their pricing and access policies for the current National Library's subscriptions with the loss of income from institutional subscriptions from individual universities (Surachman, 2017, para. 11).

It is therefore understandable that some in the higher education sector are pessimistic about the prospect of centralizing the subscriptions to online journal databases and/or

e-journals. The complexities as discussed above, however, have only reinforced the importance of providing affordable and accessible scientific information in the Indonesian higher education sector using forms of open access.

The discussion of Indonesian higher education thus far has indicated the government's belief that Indonesia is a potential beneficiary of open access as a form of free scholarly communication, with the prospect of compensating for the lack of access to research-based content that lies behind commercial paywalls. Alternative access, such as that offered by institutional repositories, has considerable potential to assist in alleviating the lack of access to scholarly information to support learning, teaching, and research needs of the Indonesian higher education institutions.

2.3 Institutional repositories in the Indonesian context

Although there is no specific year that can be identified as being associated with the emergence of institutional repositories in Indonesia, it is apparent that several academic libraries were instituting some form of digital library platform in 2004 or 2005 to manage their growing digital content. These initial platforms were primarily used to manage collections of students' theses and dissertations, as well as locally-produced works that were commonly referred to as "local content" by Indonesian librarians as part of their effort to enhance access to these resources (Liau, 2007). Alongside the growing interest in institutional repositories worldwide, as indicated by the accelerating growth in research in the subject starting after 2006 (Bhardwaj, 2014), the academic library community in Indonesia started aligning their digital platform with the repository model. They also commenced linking these repositories to efforts to address issues arising from debates regarding scholarly communication and open access (Liau, 2011, 2013). Signs of the alignment toward 'proper' institutional repositories was evidenced by the increasing adoption of open source repository software, such as EPrints and DSpace, by Indonesia's higher education institutions.

Recognition of the importance of institutional repositories in Indonesian higher education was emphasized by the creation in 2009 of Garuda (Garba Rujukan Digital or Digital Reference Portal, <http://garuda.dikti.go.id/>) by the Directorate General of Higher Education (DIKTI) (Farida, Tjakraatmadja, Firman, & Basuki, 2015). Garuda provides an online union catalog that consolidates metadata from various repositories,

and also provides server space and Internet bandwidth to institutions that cannot afford to establish and maintain their own repositories. The creation of Garuda was followed by the Ministry of National Education Regulation No. 17 / 2010, which mandates the use of Garuda or other forms of repository to “upload electronically all scholarly works by students/lecturers/researchers/staff of any higher education institution” (Nuh, 2010a, Chapter 7 Clause 2). In 2011 DIKTI operationalized this Regulation by issuing Circular 2050/E/T/2011, “Kebijakan Unggah Karya Ilmiah dan Jurnal” (“Policies on the Uploading of Scholarly Works and Journals”). The Circular re-emphasized the critical role that Garuda and institutional repositories play in the Indonesian higher education sector (Santoso, 2011).

The importance of institutional repositories in Indonesia has been further reinforced by the increased attention given since 2006 to the Ranking Web of Universities. The Webometrics used to rank international universities claim to provide “reliable, multidimensional, updated and useful information about the performance of universities from all over the world based on their web presence and impact” (Spanish National Research Council, n.d.). In addition to institutional websites, repositories also play an important role in determining a university’s ranking on the Ranking Web of Universities. Webometrics also provides Ranking Web of Repositories, a separate ranking that specifically targets repository websites (<http://repositories.webometrics.info/>). Despite the lack of description on the algorithm used by Webometrics in determining their rankings, both have often been used interchangeably and are highly regarded by Indonesian higher education institutions. The importance of these rankings in Indonesia was established when the Directorate General of Higher Education commenced using them as indicators to benchmark Indonesian higher education institutions, and was also made apparent by the publication of the rankings on the Directorate’s and universities’ official websites (Kopertis XII, 2013; Rumah Pena, 2012; Suara Merdeka, 2012). The Ranking Web of Repositories, however, has been discontinued since July 2017 with no future appointed date for resumption (<http://repositories.webometrics.info/en/node/29>), leaving only the Ranking Web of Universities as the Webometrics’ rankings.

2.4 Local practices and developments that relates to institutional repositories

Some particular local practices in Indonesian higher education institutions deserve mention in order to help provide the background and context for this study:

- the majority of journals published in Indonesia are published by higher education institutions, although there are also a number of journals published by (non-university) research institutions and professional associations;
- most Indonesian higher education institutions require a thesis for all levels of tertiary education, from bachelor to doctorate degree (some institutions even require it at the diploma/non-degree level);
- theses in repositories are usually stored in separate chapters to compensate for low Internet bandwidth; and
- a substantial number of articles available in Indonesian higher education institutional repositories are therefore undergraduate theses – and in much lower number, Masters theses – that have been converted into ‘journal-style’ articles to comply with DIKTI’s requirement that undergraduate students need to publish in scientific journal(s) as part of their degree.

The final point deserves some additional explanation. Firstly, in 2011 DIKTI issued an official letter on “Policies on the Uploading of Scholarly Works and Journal Articles” to all higher education institutions containing two main points: 1) any journal article published by academics and submitted to DIKTI for tenure must be available and verifiable online; and 2) all higher education institutions and journal administrators are required to upload students and academics’ scholarly works into Garuda, an institutional portal, a journal portal, or some other form of (online) portal (Santoso, 2011). These requirements have helped in populating institutional repositories. Secondly, in January 2012 DIKTI issued another official letter requiring all higher education graduates to produce scholarly work(s), which have to be published in international journal(s) for a doctorate level degree; DIKTI-accredited national journal(s) for masters degrees; and any journal(s) for an undergraduate degree (Santoso, 2012b). This requirement for undergraduate students to publish created considerable debate for several reasons: 1) the large number of undergraduate students; 2) the limited number of local and/or national journals that can accommodate them; 3) the enormous effort that would be required for the peer-review process; 4) many of

these undergraduate theses are merely final project or fieldwork reports; and 5) the unnecessary academic burden that the requirement would place on students.

Thirdly, in February 2012 DIKTI circulated the “Guidelines for the Management of Electronic Scientific Journals” (Santoso, 2012a). The letter accompanying the guidelines specifically indicated that it was intended to be read as a follow up to the first letter. However it is the case that this third letter has been understood differently by higher education administrators and interpreted as ‘permission’ from DIKTI for institutions to ‘publish’ students’ theses as journal-style articles into locally-managed online journals to fulfil the requirement for graduation; thereby practically linking this third letter to the second letter, instead of to the first letter as was intended. It can be speculated that the higher education community might have seen this third letter as a ‘way out’ or ‘compromise’ to the difficult situation created by the second letter in terms of the requirement for even undergraduate level students to ‘publish.’

Despite the developments described above and Garuda’s relative success in consolidating metadata from various higher education repositories, the portal has seemingly been abandoned by DIKTI when it was deactivated in 2015 (Fahmi, 2015). Although there has been no official statement made by DIKTI on this development, it can be speculated that the transfer of DIKTI from the Ministry of Education and Culture to the Ministry of Research, Technology, and Higher Education (KemenristekDikti) may have contributed to the decision to discontinue Garuda. KemenristekDikti’s website (<http://simlitabmas.ristekdikti.go.id/>) still lists Garuda as one of its assets but its URL (<http://garuda.ristekdikti.go.id/>) is inaccessible. KemenristekDikti has seemed to shift its priority to the creation of Sinta (Science and Technology Index) in 2016, which focuses on measuring “the performance of researchers, institutions, and journals in Indonesia” (Ministry of Research, 2017). Another interesting development is the creation of the Indonesian Publication Index (IPI) that aims to monitor and improve the standard of scholarly publishing in Indonesia. As of 21 February 2018 IPI claims to have indexed 4,189 journals and 447,817 articles published in Indonesia (Institute of Advanced Engineering and Science, 2015).

Alongside the shift in priority by DIKTI and the proliferation of journal-based online information system as described above, the implementation of institutional

repositories has continued to generate interest and discussion in Indonesia. Two national bodies in Indonesia have indicated their support for institutional repositories. Firstly, the National Library of Indonesia has commenced developing a national portal for institutional repositories (Indonesia One Search), which was launched in March 2016 (Perpustakaan Nasional Republik Indonesia, 2016). As of January 9, 2018 Indonesia One Search claims to have harvested 5,444,238 records from 4,200 repositories provided by 730 institutions across Indonesia (Perpustakaan Nasional Republik Indonesia, 2018a). Among these 730 institutions, 585 (80.1%) are universities (Perpustakaan Nasional Republik Indonesia, 2018b) and of these 4,200 repositories, 3,884 (92.5%) are from the higher education (university) sector (Perpustakaan Nasional Republik Indonesia, 2018c). However these numbers need to be read with some caution since many of the repositories in Indonesia One Search are online journals that are being managed using the Open Journal System (OJS). Secondly, the Center for Scientific Documentation and Information—under the auspices of the Indonesian Institute of Science—conducted a national workshop on “Data, Information, and Knowledge Management in Supporting the Development of Indonesian National Repository” in August 2016 (Lembaga Ilmu Pengetahuan Indonesia, 2016).

These recent developments indicate that institutional repositories have gained a place in the Indonesian higher education sector and therefore have the potential to increase international exposure to Indonesian research and publishing. This study aims to establish benchmark evidence regarding the current state of Indonesian institutional repositories and their implementation within Indonesian higher education and provide data that might also be reflective of practices in other developing countries as they look to take advantage of open access capability.

Chapter 3. Literature Review

3.1 Scholarly communication and publishing

Scholarly journals, as the primary means of scholarly communication, emerged in the second half of the seventeenth century (Kronick, 1976). In their formative years scholarly journals were largely published by scholarly societies, professional associations, or other not-for-profit entities in order to provide for the free flow and exchange of ideas within disciplines. The twentieth century, however, saw this model of not-for-profit publishing eroded as journal publishing increasingly required considerable resourcing and financial support, to the point where a number of established journals struggled for viability under the not-for-profit model. The issue of “survivability” – as discussed by Horowitz (1991, p. 222) – has always been the challenge for scholarly journal publishers; although it is understandable that not-for-profit publishers face greater challenges in this regard than publishers with a more commercial business model. In many cases, commercial journal publishers emerged to fill the gap as not-for-profit publishers and titles began to struggle, either by acquiring existing journals previously published by not-for-profit organizations, or by publishing their own competing journals.

This transition to a more commercial basis for scholarly publishing was entwined with, and abetted by, the difficult transition from traditional (print) to digital publishing with “significant cost involved for publishers in establishing platforms for online delivery” (Cope & Phillips, 2009, p. 1). This transitional period entailed start-up expenditure that provided an additional incentive for not-for-profit publishers to relinquish their publishing activities to commercial publishers. The broadly simultaneous shift from acquisitions models based on purchasing-of-print to those based on licensing-of-digital also gave additional power to commercial publishers as they acquired greater control over the access and use of digital content.

Publishers also took the opportunity to introduce new business models based on the practice of ‘aggregation,’ whereby large numbers of journals were bundled into packages for discounted subscription. While aggregation was initially promoted as a means of lowering the subscription price of individual journals, it eventually resulted

in a situation whereby the ever larger bundles of journals consumed an unsustainably large proportion of many libraries' acquisitions budgets, while at the same time "constraining the ability of libraries to choose which journals they wish to acquire" (McGuigan & Russell, 2008, para. 22).

As a result of these various developments, commercial publishers increasingly came to dominate scholarly publishing and assume considerable control over the global dissemination of scientific publications and knowledge. With the management of scholarly publishing increasingly under their control, commercial journal publishers also assumed greater control over pricing, and subscribers – who are mostly academic and/or research institutions and their libraries – found the cost of both individual subscriptions and aggregations rising sharply. Although publishers are undeniably an important part of the scholarly publishing process, Crawford (2011) concluded that;

[i]t is apparent that some major commercial publishers fully intend to charge what the market will bear. They have succeeded in acquiring most of the highest-profile journals, including many that were originally modestly priced society-published journals, and in raising prices so as to assure profit margins far in excess of those enjoyed by most book publishers and companies in other industries (p. 6).

These circumstances created dysfunctions that "have reduced dissemination of scholarship and crippled libraries" (Helfer, 2004, p. 31). Even the biggest acquirers of scholarly publishing such as Harvard University have complained that major global commercial journal publishers "have made the scholarly communication environment fiscally unsustainable and academically restrictive ... [and pricing structures] financially untenable" (The Faculty Advisory Council, 2012, para. 1 & 4). Nicholson (2015) summarized the widely held concern regarding the degree of control that publishers were increasingly exerting over scholarly content when he argued that;

[t]he whole balance of ownership and production has become skewed. Academic institutions pay researchers to write articles and books to make their research public. They also provide free editorial services in most cases for journals. The publishers then get authors to sign over all their copyright to them so that they can control the content as long as possible ... How ridiculous is it for authors, experts in their fields, to have to ask permission from publishers to use their own material to teach, share with colleagues, place on a personal or institutional repository, or allow translations or modifications of their works (para. 21 & 25).

3.2 Open access: Challenges and opportunities

Further to the discussion regarding open access in the Introduction, it is important to also discuss briefly what is meant by an ‘open access model’ or ‘open access journal’. As stated above, commercial journal publishers have used the emergence of digital publishing and distribution of scholarly journals to place those journals behind paywalls by means of subscription charges. The Open Access movement has attempted to remove these paywalls, by shifting the cost-bearing element of scholarly journals from the readers’ to the authors’ side of the publishing cycle. This has been described as an “author pays” model. However this term, according to Suber (2006), “is false for the majority of OA journals that charge no author-side fees, and false or misleading for most of the remaining OA journals whose fees are often waived or paid by sponsors on the author’s behalf” (para. 36). A number open access journal business models have been described, including several where authors do not incur any financial burden in publishing articles in open access titles (Chen, 2006). One particular business model – the hybrid journal – can be problematic with the (potential) occurrence of “double dipping,” whereby multiple use of public funding can occur in publishing research results: “first, for the production of the work by publicly paid scholars and scientists; second, for the journal subscription; and third, for the provision of OA to individual articles” (open-access.net, 2017, para. 13). Another problem arising from the open access journal business model, in particular for journals that involve Article Processing Charges (APCs), is the rise of predatory publishers or journals.

Predatory publishers or predatory journals, as described by Beall (2012a), are journals or their publishers that primarily exist in order to profit through the leveraging of an APC. They typically employ very rudimentary or no peer-review process or other forms of quality control in selecting and publishing articles. Beall (2012b) suggested that the “author fees” business model is the primary cause for the rise of predatory publishers. Beall has also provided a useful and influential – albeit controversial – lists of predatory journals and publishers as part of his Scholarly Open Access website, which has recently been deactivated. Based on their study, Xia et al. (2014) identified that young or inexperienced researchers, predominantly from developing countries, have been the foremost victims of predatory journals and publishers (p. 1406). There

have been various efforts to tackle the problem of predatory publishing, however detailed discussions on this subject are beyond the scope of this thesis.

Despite the real and potential problems arising from some of the open access journal business models, the Open Access movement has proliferated and developed many different useful manifestations including various tools, such as online directories of reliable quality open access resources. Among those on offer are

- Directory of Open Access Repositories (OpenDOAR – <http://www.opendoar.org/>);
- Registry of Open Access Repositories (ROAR – <http://roar.eprints.org/>);
- Directory of Open Access Journals (DOAJ – <http://www.doaj.org/>);
- Directory of Open Access Books (DOAB – <http://www.doabooks.org/>);
- Open Access Theses and Dissertations (OATD – <http://oatd.org/>);
- SHERPA/RoMEO (<http://www.sherpa.ac.uk/romeo/>) – journal publishers’ policies on self-archiving on the web and OA repositories;
- SHERPA/JULIET (<http://www.sherpa.ac.uk/juliet/>) – funders’ policies on self-archiving research publications and research data; and
- ROARMAP (<https://roarmap.eprints.org/>) – online registry of open access mandates and policies adopted by universities, research institutions, and research funders.

The open access community has also created and maintained the Open Access Directory (http://oad.simmons.edu/oadwiki/Main_Page), a compilation of open access-related resources.

The developments relating to open access have facilitated changes in the wider scholarly communication and publishing landscape. The foremost of these is the proliferation of open access articles and/or journals. In his detailed study of Gold OA journals listed in DOAJ, Crawford (2015) found that – as of June 8, 2015 – there had been 482,361 open access articles published in 9,512 open access journals (p. 4). Significant growth has also been achieved in the increasing number of journals – open access or non-open access – that have allowed the self-archiving of pre- or post-print versions of published articles. A study conducted by Laakso (2014) concluded that publishers are much more permissive in allowing authors to self-archive post-print manuscripts on personal websites or institutional repositories as compared to subject

repositories (p. 475). And although Laakso (2014) made no predictions on the future trend regarding journals' policies in permitting self-archiving, the data he captured from SHERPA/RoMEO provides a basis for comparison with the current circumstances, as can be seen in Table 3.1. The table illustrates the increasing number of journals that allow the self-archiving of pre-prints and/or post-prints, as well as the decreasing number of journals that do not allow self-archiving. Based on this data it appears that the trend over the recent four-to-five year period points strongly toward the wider recognition of self-archiving practices by increasing number of publishers. The trend is observable in the context of journals listed in SHERPA/RoMEO. This does not necessarily mean, however, that the same trend will be observable in a much broader context, especially in the context of more traditional journals and/or more commercial-leaning publishers.

Table 3.1 Changes in self-archiving permissions of journals listed in SHERPA/RoMEO

RoMEO colour	Archiving policy	(a) (May 2013)		(b) (Dec 28, 2017)	
		Publishers	%	Publishers	%
Green	Can archive pre-print and post-print	369	30	1,012	41
Blue	Can archive post-print (i.e. final draft post-refereeing)	397	32	796	33
Yellow	Can archive pre-print (i.e. pre-refereeing)	97	8	158	6
White	Archiving not formally supported	387	31	482	20

(a) Laakso (2014) ; (b) SHERPA/RoMEO (2017)

Along with the encouraging developments in open access described above, some commentary has also provided slightly different means of assessing open access-related issues. From the perspective of developing countries, Nwagwu (2016) has suggested that open access is technology-laden and from an economic perspective it has primarily benefited the developed world (p. 58), while the developing world still struggles with various disadvantages – mainly language, and research and publishing quality – that prevent countries from enjoying the full benefits of open access (p. 71).

3.3 Open access in the context of developing countries

The relevance and potential importance of open access to developing countries has long been recognized. In its open access principles, the International Federation of Library Associations and Institutions/IFLA Governing Board (2003) recognized that open access can help in overcoming “information inequality” by – among other initiatives – “ensuring effective and affordable access for the peoples of developing nations.” The Board also argued that open access “provides access to the world’s research output, free of financial and other restrictions [and] strengthens economies through developing a strong and independent national science base” (para. 6). Swan and Chan (2010) have claimed that open access “incorporates local research into an interoperable network of global knowledge [and] increases impact of local research, providing new contacts and research partnerships for authors” (para. 5). According to Swan and Chan (2010), in developing countries open access has been viewed as “an unprecedented opportunity to provide equality of access to essential research information and raising awareness of national research” (para. 1) since they face double the problems in terms of research information: 1) unaffordable journal subscription prices, and 2) “inability to integrate national research into the global knowledge pool” (para. 2). This unfortunate situation has caused much of the scientific information from developing countries to be ‘missing,’ when they should have been able to contribute to solving global health and environmental problems (Swan & Chan, 2010, para. 3). Chan, Kirsop, and Arunachalam (2005) have stated that developing countries’ research capacity “cannot be strengthened without access to the global library of research information;” and they have envisioned open access to be the solution to the problem (p. 1). Open access initiatives, according to Christian (2008), will also contribute to curbing the ‘brain drain’ syndrome suffered by developing countries, which is a phenomenon whereby numerous leading scientists have migrated to more developed countries in the pursuit of better research opportunities and funding (p. 10). In the context of “true global knowledge exchange,” Chan et al. (2005) have viewed “the establishment of interoperable open access archives,” or repositories, as part of the solution (p. 1).

That open access-related issues have gained an increasing importance in developing countries is indicated by the 1st Asian Conference on Open Access Scholarly

Publishing in 2014; convened by the Open Access Scholarly Publishers Association in Bangkok, Thailand. The Association explicitly stated that the decision to hold the conference in Thailand was made in order to represent “the growth of OA across this region in recent years” (Open Access Scholarly Publishers Association, 2014). Another indication is the emergence of Research4Life (2014), an organization with several initiatives supporting free or affordable access to academic and professionally peer-reviewed information in health, agriculture, environment, and development and innovation. The target of the initiatives are the world’s least developed countries as defined – among others – by the United Nations (2017). Eighteen of the Research4life participating publishers – representing 8,000 scientific, technical and medical journals – “have agreed to authorize their library customers to provide copies of articles, free of copyright fees, to Research4Life-registered institutions in the 48 Least Developed Countries” (danrebo, 2014). Another recent development in open access in the context of the developing world was the release of the Delhi Open Access Declaration, which has specifically linked the imperative to “share scientific research outputs and accelerate scientific research” to the efforts in tackling challenges in the South Asian region, such as “hunger, poverty and inequality” (Open Access India, 2018, para. 2).

3.4 Overview of institutional repositories

Repository implementation, in general, was one of the recommendations of the Budapest Open Access Initiative Declaration (BOAID). It was the Green OA strategy that initially adopted the term ‘archive,’ which evolved into the now widely used term ‘repository’ (Suber, 2016; see also Harnard et al., 2008). The idea of authors undertaking self-archiving had, however, been in existence before the BOAID. As Harnad (2001) noted when discussing self-archiving;

[u]nlike the authors of books and magazine articles, who write for royalty or fees, the authors of refereed journal articles write only for ‘research impact’. To be cited and built on in the research of others, their findings have to be accessible to their potential users. From the authors’ viewpoint, toll-gating access to their findings is as counterproductive as toll-gating access to commercial advertisements (p. 1024).

The BOAID effectively approved of self-archiving as the preferred Green OA strategy, which includes the use of subject repositories and/or institutional repositories. The most widely known subject repository is perhaps the arXiv, a subject-based repository

developed by Paul Ginsparg in 1991 and hosted at the Los Alamos National Laboratory with an initial focus on High Energy Physics. arXiv has subsequently been hosted by Cornell University Library (Cornell University Library, 2013, para. 3 & 4). In addition to being a subject repository, arXiv has also functioned as a publishing platform in physics and related fields. Subject repositories, such as ArXiv, according to Awre and Baldwin (2005);

have proved successful in enabling communication and fostering collaboration within the disciplines concerned. But they can be sporadic in their coverage and many disciplines have no such facility. Institutionally based repositories offer an opportunity for researchers to share their outputs with others in their subject and additionally offer a route for institutions to manage their research output effectively (p. 138).

Following the success of arXiv, “the potential of disciplinary repositories to disseminate scholarship immediately and openly began to be applied at the institutional level” (Callicot, Scherer, & Wesolek, 2016, p. xvi). Other developments have further accelerated the growth of repositories at the institutional level, resulting in the increasing use of institutional repositories as a component of the open access environment. The rise of institutional repositories has also been abetted by the acceptance of a hybrid future for scholarly journals, whereby ‘traditional’ journals acquired on a subscription basis would continue alongside open access journals, but a form of open access to individual articles would be provided when copies of articles (and other outputs) were deposited within repositories, irrespective of the type of journal in which they were initially published.

One of the most widely used definitions of an institutional repository (with particular reference to university repositories) was provided by Lynch (2003);

a university-based institutional repository is a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution (p. 328).

One of the ongoing issues in terms of institutional repositories has been the scope of the content that should be included in a repository – in particular whether they should only include outputs that have been through a formal peer-review process, or whether

they should include other forms of ‘grey literature’ produced in the process of conducting research, or even other university-generated content such as student papers and teaching materials. Crow (2002b) described a view that institutional repository content should be;

scholarly – the material is research- or teaching-oriented; produced, submitted, or sponsored by an institution’s faculty (and, optionally, students), or other authorized agents; non-ephemeral – the work must be in a complete form, ready for dissemination; and licensable in perpetuity – the author must be able and willing to grant the institution the right to preserve and distribute the work via the repository (p. 25).

McDowell (2007), on the other hand, stated that an institutional repository “is intended to collect, preserve, and provide access to, among other things, faculty scholarly output in multiple formats,” thereby suggesting some limitations that exclude categories of material such as student works, archival-only materials, format-specific materials such as “learning objects, electronic theses and/or dissertations (ETDs), or images” (para. 5).

Uncertainty and lack of consistency regarding the scope of institutional repository content has continued to be an issue for repository development and implementation. An expansion of the possible content of institutional repositories is asserted by Heery and Anderson (2005), who indicate that one of the key services of institutional repositories is as “corporate information management (records management and content management systems)” (p. 2). More recently, the Aligning Repository Networks Meeting in Rome noted with regard to institutional repository networks that “[n]etworks don’t share a common directive and have been deployed to support differing mandates and requirements” (Shearer, 2014, p. 5). The statement appears to acknowledge the different roles that repositories have had based on the needs of the deploying institutions, including the types or forms of content that a repository can include. Lynch’s definition – as well as Heery and Anderson’s assertion regarding institutional repositories – seem to more accurately describe the current practice in developing countries, including Indonesia. In such countries, there is evidence that higher education institutions are using repositories for storing the outputs of not only research faculties and individual researchers, but also students (research and/or non-research, and/or teaching materials) as well as records and archival-type materials relating to the institution (including communities affiliated to the institution, such as

alumni), and even information resources regarded as indigenous or local knowledge (Toong Tjiek, 2006).

Xia (2008) suggested that;

[i]n regard to the mechanism of content recruitment ... institutional repositories (IR) at their initial stage of development in the early 2000s followed what subject-based repositories (SR) had already practiced for many years ... although recent operations and content materials of IRs have been more diverse (p. 489).

This increased diversity of content means that in addition to published works, institutional repositories may include various other types of works, such as grey literature (unpublished works), corporate/institutional records, and special collections (Liauw, 2011, p. 166). The use of repositories to preserve corporate memory seems to be paramount for some organizations, whose corporate/institutional records are also considered to be grey literature (Onyanha, Al-Awah, & Cole, 2012, p. 172). The inclusion of content in institutional repositories in addition to formally published scholarly material suggests a departure from the initial intention of repositories as a Green OA response to the crisis in scholarly communication. However the inclusion of unpublished content does not mean that these repositories necessarily divert from, or reject, the more established function of providing an archive for published research and scholarship. McDowell's survey of United States' institutional repositories (2007) identified the breadth of materials collected therein:

ETDs [(Electronic Theses and Dissertations)]; e-prints (pre- or post- print articles); working papers and technical reports; conference proceedings and presentations; e-journals and e-books; learning objects; multimedia files (digital audio/video); datasets; pictures (images); digitized archival documents and university records (historical texts and primary sources); non-scholarly institutional publications; undergraduate student work; graduate student work (non-ETD); and course content (syllabi, assignments, lectures) (para. 22)

Taking a similarly broad view of institutional repositories, Lynch (2003) concluded that;

a mature and fully realized institutional repository will contain the intellectual works of faculty and students – both research and teaching materials – and also documentation of the activities of the institution itself in the form of records of events and performance and of the ongoing intellectual life of the institution. (p. 328)

Abby Smith, in her foreword for the MIRACLE Project report, has written that “[a] conspicuous fact about institutional repositories, confirmed by the MIRACLE Project findings, is that there is no consensus on what institutional repositories are for” (Markey, Rieh, St. Jean, Kim, & Yakel, 2007). Genoni (2004) has similarly argued that as institutional repositories are “designed to serve the needs and interests of the institutions that support them ... their content should be developed with local requirements foremost.” These local “needs and interests” may differ both between institutions, and between countries (p. 302).

The proliferation of open access mandates enacted by numerous scholarly institutions and governments has contributed to the international success and proliferation of institutional repositories. In the recent period of development of the Open Access movement, institutional repositories have surpassed subject repositories, at least in terms of their number. Many higher education and research institutions began to implement institutional repositories in the early 2000s and their rapid growth in numbers has continued. Academic libraries have played a critical role by becoming the major advocates for the establishment of repositories, and then in many cases taking on the task of implementing and maintaining a repository. With regard to the implementation and/or management of institutional repositories, it has been argued that the most successful examples have involved libraries/librarians. Salo (2008) notes that “most deposits [to institutional repositories] are third-party mediated, many by librarians, some by support staff or IT personnel” (p. 112). Pelizzari (2005) has even regarded academic libraries as the “standard bearer” in the adoption, implementation, and management of institutional repositories (p. 48). In doing so academic libraries have contributed significantly to the Open Access movement by providing one of the key means by which universities and other research institutions support open scholarship.

Wide support for the Open Access movement and open access mandates has – to some degree – been responsible for the prevailing ‘balance of power’ between scholarly communities and institutions, and commercial journal publishers (Bergman, 2006, pp. 125-126). More commercial journal publishers now allow authors to self-archive the pre-print and/or post-print version of their articles in an institutional repository or other online space as they have increasingly realized that this practice does not have

significant impact upon their revenue streams. As a result, the phenomenon of self-archiving in repositories has contributed to reducing the impact of the cost barrier erected by commercial publishers in terms of access to journal articles. Crow (2002b) expressed the view that “over the long term” institutional repositories would help in “advancing the positive transformation of scholarly communication” (p. 5), a situation that has to some extent been realised, even if the control of the large international publishing houses over key journals remains in place. As an alternative channel for scholarly communication, repositories now play an important role in bridging the digital divide in developing countries, where there is a long-established barrier in accessing scholarly information due to the high price of subscriptions to commercially sourced journals and aggregations. The result is that institutional repositories have the potential to erode the digital divide that would otherwise threaten to exacerbate long-established differences between developed and developing countries in terms of their access to scholarly content. For the purpose of this research, the digital divide is defined as “the differential access to computers, information, the internet, and telecommunications, globally, regionally, nationally, and locally” (Mayhew, 2009). It is noted that there are barriers other than affordability that impact on the development of institutional repositories in developing countries. These include the general state of technological infrastructure, cultural issues, and language barriers. Where relevant to the research question and objectives, these issues will also be investigated.

Implementing an institutional repository involves numerous issues such as the technical and managerial aspects; creating an agreed policy framework; budgeting; defining the scope of contents; software/platform selection; metadata standards; interoperability; content acquisition/recruitment; digital preservation; managing intellectual property rights; advocacy; marketing, and user training (Barton & Waters, 2004). These various management facets of institutional repositories, and their growing importance to open access and efficient scholarly communication, have resulted in a considerable literature over the last decade or more. Earlier important writing on institutional repositories identified a number of critical issues. Some milestones included:

- research by K. B. Oliver and Swain (2006) indicating that “from [the relationship of repository content to the research and development investments,] it may be possible to monitor the growth and distribution of innovation geographically around the world” (p. 4);
- a study that found a “100% deployment [of institutional repositories] in countries like Germany, Norway and the Netherlands, where it is clear that repositories have already achieved some status as common infrastructure across the relevant national higher education sector ...” (van Westrienen & Lynch, 2005, para. 11);
- the five common features (digital content, community-driven, institutional support, durability and permanence, and institutional repository is not a black archive) and six core functions (material submission, metadata application, access control, discovery support, distribution, and preservation) of institutional repositories described by Gibbons (2004);
- a recommendation by C. Jones (2007) that self-archiving undertaken by researchers should have “payoffs in other areas,” and that “the further the institutional repository is embedded in the business processes of the organisation, the more likely it is to succeed” (p. 54);
- an emphasis on the library’s role in advocating for institutional repositories by building relationships with various stakeholders on campus, discussed by Buehler (2013) in the context of institutional repositories as scholarly communication platforms;
- the utilization of the diffusion of innovation theory to “speed up the rate of adoption [of an innovation – in this case the institutional repositories –] by developing a targeted methodology,” which can help develop an understanding of “the particular characteristics of the social structure and the possible types of communication” (R. Jones, Andrew, & MacColl, 2006, pp. 112-113); and
- the importance of aligning institutional repositories with academics’ existing work practices to improve their acceptance of institutional repositories, which will in turn improve content recruitment (Foster & Gibbons, 2005).

A growing amount of published research has also contributed significantly to the collective understanding of institutional repositories and digital repositories in general. Bhardwaj (2014) conducted a bibliometric analysis study on research papers on the subject of institutional repositories before 2013; analyzing 436 articles published in

118 journals with authors from 68 countries. He found that the first paper was published in 2001 but growth was slow before accelerating after 2006, thereby positively correlating with the growth in institutional repositories worldwide (p. 188). Bhardwaj concluded that developing countries are not only lagging behind in the establishment of institutional repositories, but also in undertaking and publishing research on institutional repositories (p. 198). A study by Cho (2014) found a similar pattern, concluding that the “activation time” of research on institutional repositories was reached in 2005. Cho (2014) identified *The eScholarship Repository: A university of California response to the scholarly communication crisis* by Soehner (2002) as the first published research on institutional repositories in the field of library and information science (p. 389). She also found that the two most highly-correlated words to “institutional repositories” are “open access” and “scholarly communication” (p. 390). 2005 was also used as a starting point for another study analyzing trends in institutional repository research undertaken by Ammarukleart and Kim (2017). Amongst the features and trends in institutional repository research they identified were:

- published research on institutional repositories reached its peak in 2006 with 88 articles published (p. 268);
- cumulative number of published research outputs on institutional repositories to the end of 2015 was 603 (p. 268);
- of the 109 journals that have published the 603 articles, the top 15 journals have published approximately 50% (p. 268);
- in the 2005-2010 period, “research on IRs primarily focused on issues related to faculty scholarship” with terms such as “faculty contribution,” “faculty participation,” and “faculty scholarship” frequently used (p. 274);
- in the 2011-2015 period, research on institutional repositories has seemed to shift focus to “data curation and management,” with terms such as “data,” “research data,” “scientific data,” “data collection,” “data curation,” “data management,” and “research data management” more frequently found (p. 273); and

- in the 2011-2015 period, research on institutional repositories has started to become more international with the increased use of continent names in research papers, such as “Africa,” “Asia,” and “Latin America,” as well as country names such as “China,” “India,” “Japan,” “Indonesia,” “Malaysia,” “Nigeria,” and “Spain” (p. 275).

Simons and Richardson (2013) dedicated two chapters of their book *New Content in Digital Repositories* to discussing research data-related topics. The publication of this book has complemented a similar shifting focus to research data found in journal articles published between 2011–2015.

The numerous aspects of implementing repositories also indicate the range of the stakeholders involved – each with their own interests – that need to be considered in the planning and daily operation of repositories. The complex inter-relationships of stakeholders have affected the development of repositories and ensures they vary from institution to institution, and from country to country.

Many countries – mostly the more developed – have acknowledged the importance of the issues of open access and institutional repositories in the broader context of scholarly communication, and now integrate repositories as a regularized component of their higher education and research infrastructure. This normalization of repositories has also been evidenced by the formulation of national policies and other regulatory measures in supporting open access and the development of institutional repositories. As an example of measures taken by developed countries in supporting open access and institutional repositories, in 2012 Australia established the Australian Open Access Support Group (AOASG). This organization seeks to provide national advocacy, collaboration, awareness-raising, and leading and building capacity on open access issues. AOASG provides resources relating to open access in general, open access repositories, publishing, policies, and scholarly communication (Australian Open Access Support Group, 2012). Since 2015 AOASG has expanded to become Australasian Open Access Support Group by incorporating New Zealand (Australasian Open Access Support Group), and in 2016 it has changed the “Support” in its name into “Strategy” to “better reflect the group's activities and focus” (Australasian Open Access Strategy Group, para. 7). AOASG is an excellent example of the sort of national leadership that is required if open access and institutional repositories are to

be fully and successfully integrated into a country's higher education and research infrastructure (Kingsley, 2013).

Despite the widespread adoption of institutional repositories as a key component of the Open Access movement, there have been those who have sounded cautionary notes with regard to their potential uses. For example, based on the discussions on the four functions of scientific communication by Roosendaal and Geurts (1998), Cullen and Chawner (2009) cautioned that in the (traditional) scholarly communication cycle, institutional repositories relate only to awareness (“making the research available to others”) and archiving (“long-term preservation to make the results available to future researchers”), while the principles of registration (“identifying the ‘owner’ of the intellectual property”) and certification (“establishing the quality of the research”) have tended to be forgotten (p. 270). In other words they suggest that repositories cannot provide a genuine alternative to scholarly publishing. A similar view was expressed by Poynder (2006), who – based on Lynch’s definition of an institutional repository – tends to see “institutional repositories as a species of digital library than a publishing platform” (p. 11). In addition, Bullock (2016) has cautioned that “institution’s priorities and a desire to use the IR as a promotional tool might trump the broader interests of the academic world,” and that academics’ mobility might introduce complexities to the management of institutional repositories. King, Harley, Earl-Novell, Lawrence, and Perciali (2006) concluded that “approaches that try to ‘move’ faculty and deeply embedded value systems directly toward new forms of archival, ‘final’ publication are destined largely to fail in the short-term” (p. 2). This conclusion was reached with regard to scholarly communication in general, however their assertion on the embedded value systems and new forms of archival, or “final” publication, are relevant and worth consideration in relation to institutional repositories. Plutchak and Moore (2017) made several critical remarks on the use of institutional repositories as a mechanism to showcase institutions’ research output and their use as “an alternative, disaggregated model for scholarly publishing” (p. 28) – the two strategic issues for institutional repositories as envisioned by Crow (2002a). Instead, they have proposed that: 1) research information systems are a more appropriate ‘vehicle’ to showcase institutional research output with repositories as a component of that system, and 2) “a version of published research should only be added to an institutional repository when that is the *only* option of providing OA to the

content of that article.” They argue this will “*reduce* duplications of OA versions” and *avoid* “the potential downside of inadvertently directing people to versions of articles that have actually been corrected or retracted” (Plutchak & Moore, 2017, p. 31, emphases added).

3.5 Previous surveys and studies on institutional repositories

K. B. Oliver and Swain (2006) wrote that by assessing the relationship between institutional repository content and investment in research and development, “it may be possible to monitor the growth and distribution of innovation geographically around the world” (p. 4). Since that time researchers have produced numerous institutional repository-based studies, including surveys or census of the state of repositories in various parts of the world. The Coalition of Networked Information (CNI) undertook a census of institutional repositories by sending an email questionnaire to its member institutions in the United States and gathered responses from 97 “doctoral universities” and 35 “liberal arts institutions” (Lynch & Lippincott, 2005, para. 5). Some of the findings of the study were:

- 58% of the participants responding to the question on repository software (22 out of 38) indicated that they have used DSpace (para. 16);
- research libraries have assumed the leadership role in formulating policy for repositories, with almost 80% reporting that libraries have had the sole responsibility for operating the repositories (para. 17);
- due to slow content recruitments from faculties, some institutions have begun populating their repositories with other types of content, with students’ theses and dissertations being one of the options (para. 25);
- institutional repositories would have increasing roles in the area of research data management (para. 29); and
- institutional repositories have been deployed, at least in the US, as “general purpose infrastructure within the context of changing scholarly practice,” and not simply as a “response to concerns about the existing scholarly publishing system” (para 30).

In the same year CNI, in conjunction with the United Kingdom's Joint Information Systems Committee (JISC) and the SURF Foundation, conducted a census of institutional repositories by sending a questionnaire to institutions in Australia, Canada, the United States, and ten European countries (van Westrienen & Lynch, 2005). In the following year the MIRACLE Project conducted another census of institutional repositories via an online questionnaire targeting "academic library directors and senior library administrators" in the US, collecting responses from 446 institutions (Markey et al., 2007, p. 13). The study reported that despite being the majority in the US (56.6%), Master's and Baccalaureate institutions (based on the Carnegie Classification of Institutions of Higher Education) "are not where IR activity is happening," instead it was in research universities (p. 74). The study also reached a number of conclusions about the then current state of repositories and their management:

- in institutions that had implemented a repository, the library has been the dominant entity in handling the responsibility of any issues related to the repository (p. 23);
- "a typical approach to funding the IR is to absorb its cost in routine library operating costs" (p. 2);
- DSpace was the dominant repository software in use (p. 38);
- There was no correlation between the age and size of the institutional repositories surveyed (p. 43);
- "IRs in both the pilot-test and operational stages bear the traditional text-based document types that result from the research enterprise of faculty and students at postsecondary institutions, e.g., doctoral dissertations, master's theses, working papers, preprints, and journal articles" (p. 57);
- according to institutions with an operational repository: the top-ranked benefit of institutional repositories was for "capturing the intellectual capital of your institution" (p. 60), while the top-ranked inhibiting factor was the "absence of campus-wide mandates regarding mandatory contribution of certain material types, e.g., doctoral dissertations, master's theses, faculty preprints" (p. 62); and
- according to institutions with an operational *and* pilot/test repository: the top-ranked reason for contributing to the repository is "to expose the particular scholar's intellectual output to researchers around the world who would not have access to it through traditional channels" (p. 64).

Between November 2005 and March 2007 another census of United States' institutional repositories was conducted by analyzing relevant entries or records in several online platforms: DSpace Instances wiki; BePress Digital Commons repositories list; and the Registry of Open Access Repositories (McDowell, 2007, para. 7). Between June-October 2006 another census of institutional repositories was undertaken by means of a questionnaire distributed to various institutions in Europe, which gathered responses from 114 repositories in 17 countries (van Eijndhoven & van der Graaf, 2007, pp. 9-10). Kennan and Kingsley (2009) conducted the first survey of institutional repositories in Australia, collecting repository-related information from 38 (out of 39 invited) Australian universities. Their study provided a 2008 snapshot of Australian institutional repositories, with some of the findings as follows:

- 32 universities had operating repositories with 31 of them are openly accessible (para. 14);
- universities with funding for their repositories, either had absorbed it as institutional budget or as “ongoing recurrent” budget (para. 15);
- only five universities reported having open access as an institutional mandate for academics' peer-reviewed works, and 20 universities had mandated deposit of research students' theses (para. 17 & 19);
- in terms of content recruitment most universities relied on “individual approaches to researchers by repository staff and voluntary contributions to repositories,” with 18 universities indicating that they would link their repositories' content recruitment to the country's Higher Education Research Data Collection (HERDC) reporting (para. 19);
- in most universities, repositories were the responsibility of the library (para. 20); and
- the most common repository software was Fedora with Vital (para. 24), which most likely have been caused by the majority of the universities having membership of the Australian Research Repositories Online to the World (ARROW) consortium that has collaborated with VTLS (para. 35).

A US-based company providing commercial research services, conducted a series of surveys of international repository activity with a questionnaire to international higher education and research institutions (Primary Research Group, 2007, 2011, 2012, 2016); and finally yet another study reviewed the “worldwide growth of open access

repositories between 2005 and 2012, by using data from OpenDOAR (Pinfield et al., 2014).

The early surveys of open access repositories were therefore almost exclusively investigated developed countries relying on data gathered from either questionnaires or registries of repositories, such as OpenDOAR, ROAR, and the Webometrics' Ranking Web of World Repositories. This initial focus on developed countries is understandable since they were the early-adopters of repositories. More recently, however, similar surveys have started to emerge from developing countries. This is an encouraging development since, according to Swan and Chan (2010), institutional repositories are "highly appropriate for the support of research in developing countries." Swan and Chan also reported that institutional repositories can be used to showcase institutional strength, function as an institutional administrative tool, and increase impact and usage of institutional research, as well as highlighting the relatively low cost and quick set up time of repositories (para. 6).

The early studies relating to developing countries include the pan-Asian surveys conducted by Abrizah, Noorhidawati, and Kiran (2010); Nazim and Mukherjee (2011); and Tan et al. (2013), which variously used data from OpenDOAR, Webometrics, ROAR and OAIster. These studies provided helpful evidence regarding the emerging characteristics of institutional repositories in the Asian region. Among developing countries Nigeria has generated a number of published articles on the subject of higher education repositories (Anenene, Alegbeleye, & Oyewole, 2017; Ezema, 2011, 2013; Kari & Baro, 2016; Oye, Oyeniyi, & Mahan, 2017; Ukwoma & Okafor, 2017). Zhong and Jiang (2016) conducted a national survey of Chinese academic institutional repositories – focusing on mainland China – using data gathered from similar registries of repositories complemented by SouOA, a Chinese-based open access-related resource. They then conducted manual checking of each individual repository and supplemented the survey with two interviews. The manual checking of repository websites involved;

- checking the number of records they contained; the types of content they provide;
- the access mode they give (whether they are fully open or partially open); the metadata records they embed in the IR (whether they are OAI/PHM compatible);
- and the copyright policy they adopt (whether it is specified explicitly or implicitly on the web) ... their usability (whether they provide both simple and advanced

searches, whether they are easy to browse, and whether they have contact information on the web) and their platforms (whether they are using open source software, developing software themselves, or relying on third-party commercial software) (p. 741).

Some of the findings from their study were as follows:

Only 6 active IRs have records below 1000. IRs from the [China Academy of Science] rank the highest. There is a wide array of content types in those IRs, including journal articles, master's/doctoral dissertations, conference proceedings, book chapters, research reports, presentations, awards, patents, annual reports, multimedia materials, class notes, and library training materials ... The most popular content type are journal articles. One thing to note though, those articles are mostly post scripts, which means they are the published version, not the pre-script ... Among 26 IRs in CAS, only 7 provide full open access ... There are also IRs that choose to selectively open some full-text to the public ... A close look at this restricted access mode reveals that the restrictive full-text access is highly associated with certain content types. Dissertations, published books, book chapters, presentations, visual materials, class notes, and working papers have only metadata in the IRs instead of full-text. The most likely open content type is usually published journal articles. Surprisingly enough, patents in the CAS IRs are also open to the public. In the subject areas, our findings correspond to what other researchers have found, science disciplines are more open access friendly than humanities. Full texts availability in science and technology surpasses those of the social sciences and humanities ... Even though 90% of IRs we have investigated adopt the OAI/PHM standards, which enable the search engine to crawl the data and make them available on the search engine's platform, the fact that most of them only allow conditional access greatly limit their usability and potential contribution to the world-wide research fields (Zhong & Jiang, 2016, p. 742).

A number of surveys investigating academics or authors' attitudes towards, and use of, institutional repositories have also been conducted (Creaser et al., 2010; Hahn & Wyatt, 2014; Hall, 2014; Kyriaki-Manessi, Koulouris, Giannakopoulos, & Zervos, 2013; Lercher, 2008; Primary Research Group, 2009; Ukwoma & Dike, 2017). The Primary Research Group (2009) conducted a survey with 547 participants, consisting of academics from various higher education institutions in the US and Canada. The survey found that in terms of awareness of repositories, full professors were less aware

than others (associate, assistant, and lecturers); and that untenured faculty had greater awareness than their tenured colleagues (p. 17). Some of the more detailed findings were as follows:

- only 9.7% of participants had contributed their publications, with private college participants contributing more (14.74%) than their public college counterparts (6.8%) (p. 26);
- 58.89% of participants “recognize or understand the meaning of the term institutional digital repository.” Faculty in private colleges had a higher rate of recognition (63.64%) than those in public colleges (56.11%) (p. 40), and full professors had the highest degree of recognition (62.43%) followed closely by assistant professors (62.30%) (p. 41). Tenured faculty had the highest percentage (63.71%), followed by faculty who are *not* on a tenure track (59.18%), and faculty who are on a tenure track (48%) (p. 42, emphases added);
- 74.62% of participants “recognize or understand the meaning of the term open access,” with faculty in public colleges having a slightly higher rate of understanding (75.39%), than those in private colleges (73.6%) (p. 45); and assistant professors had the highest understanding (78.15%) followed closely by full professors (77.20%) (p. 46). Tenured faculty had the highest understanding (78.49%), followed by faculty who are *not* on a tenure track (75.51%), and faculty who are on a tenure track (65.85%) (p. 47, emphases added);
- in terms of “attitude towards the open access / digital repository movement,” 27.98% responded with “I sympathize and try to help out by providing open access to my research as much as I possibly can;” 30.56% responded with, “I have some sympathy with it but really need to make cooperating with the needs of commercial and society journal publishers my priority;” 3.57% responded with “I don’t really sympathize with it or its goals;” and 37.90% responded with “Not really sure what it is or what it stands for” (p. 49). Faculty in private colleges tended to demonstrate a more positive attitude (p. 50) in responding to the question “Have you ever used a college’s institutional digital repository in any of your scholarly research?,” but only 13% responded positively, and 87% responded negatively. Public college participants had slightly higher percentage in terms of a positive response (13.77%) than those from private colleges (12.11%) (p. 56); and assistant professors had the highest percentage of positive responses (14.78%) followed closely by full

professors (13.66%) (p. 57). Faculty who are *not* on a tenure track had the highest percentage of positive response (17.93%), followed by tenured faculty (11.57%), and faculty who are on a tenure track (9.82%) (p. 58, emphases added).

Studies of institutional repositories that focus on Indonesia are very limited. Toong Tjiek (2006) and Tjiek (2007) discussed the development of Desa Informasi (Information Village), the institutional repository of Petra Christian University, as a case study. Farida et al. (2015) produced a study of institutional repositories in Indonesia as part of a broader examination of knowledge management practices in Indonesian higher education institutions. In their study the authors conducted a survey in 2014, deriving data from Webometrics and OpenDOAR, which identified 42 Indonesian repositories from various sectors such as higher education, research institutions, and hospitals. The survey provided a preliminary account of the status of institutional repositories in Indonesia. The topic of institutional repositories in Indonesia has also been discussed by Liauw (2013) in his account of Green OA solutions in the context of scholarly communications in the Indonesian higher education sector. A survey of Indonesian academic libraries' readiness for the implementation of open access repositories has been the subject of a doctoral thesis (Priyanto, 2015), which found that:

- institutional prestige in terms of university rankings, especially in Webometrics' rankings, has been one of the main reasons for the implementation of open access repositories (pp. 128-129);
- the decision to establish repositories has involved primarily the university administrators and library directors, without involving other stakeholders such as academics and students (p. 130);
- the dominant content in repositories has been (Masters) students' theses and term-papers (p. 130);
- a mandate for faculty's scholarly published works has not been considered as an urgent matter (p. 130); and
- academic librarians have reported plagiarism to be an issue related to repositories, while academics have reported that open access repositories would make it easier to plagiarize scholarly works (p. 139).

A quantitative study by Rifai and Hasan (2016) explored the correlation between the expectations of academics and their use of their institution's repository. The study distributed a questionnaire to 50 academics at Syarif Hidayatullah Islamic University using a purposive sampling method. In addition to collecting demographic information, the questionnaire consisted of close-ended questions relating to repository users' expectations with Likert-scale response options. However, since this pilot study's main objective was to test the reliability and validity of the measuring instrument, it only reported the results in terms of reliability and validity measures, and did not report on the results in terms of the repository users' 'quantified' opinions as collected by the questionnaire.

No extensive survey of Indonesian institutional repositories has been reported. This study therefore aims to fill the gap by providing the first detailed study of institutional repositories in the Indonesian higher education sector.

Chapter 4. Methods

4.1 Overview of methods

Methods and techniques to researchers, according to McKemish and Gilliland (2013), are the tools to conduct the research, to conduct observation, and to model the phenomenon being investigated (p. 103). While epistemology, according to Trochim and Donnelly (2008), “involves the *philosophy* of how you come to know the world,” method or methodology “involves the *practice*” of learning about the world, with both being “intimately related” to the other (p. 18, original emphases). McKemish and Gilliland (2013) also state that, the dominant research paradigm in the social sciences are positivism and interpretivism; and that there is an association between particular research methodologies, methods, and techniques related with each paradigm. They gave the examples of quantitative and experiment-based research associated with positivism, and qualitative methods that are associated with interpretivism (p. 90). Trochim and Donnelly (2008) have attempted to define positivism as the belief that the purpose of knowledge is to describe phenomena, while the purpose of science is simply to stick to the things that can be observed and measured (p. 18). The latter was the dominant paradigm until mid-20th century, since when there has been a shift toward what is referred to as “post-positivism” (p. 19). Wesley (2009) states that “[a]ccording to the tenets of post-positivism, social scientists need not – indeed cannot – establish their conclusions with absolute certainty. Rather, their aim is to approximate “truth,” limiting the scope of their findings based on certain disciplinary standards” (p. 7).

According to Trochim and Donnelly (2008), critical-realism is one of the most common forms of post-positivism, of which adherent believe that all observation is prone to error and all theory can be revised (p. 19). They also believe that,

[b]ecause all measurement is fallible, the post-positivist emphasizes the importance of multiple measures and observations, each of which may possess different types of error, and the need to use triangulation across these multiple error sources to try to get a better bead on what's happening in reality. The post-positivist also believes that all observations are theory-laden and that scientists (and everyone else, for that matter) are inherently biased by their cultural experiences, worldviews, and so on (p. 19).

Also considering the benefit of multiple observations, Sieber (1982) is of the opinion that;

[t]he integration of research techniques within a single project opens up enormous opportunities for mutual advantages in each of three major phases - design, data collection and analysis. These mutual benefits are not merely quantitative (although obviously more information can be gathered by a combination of techniques), but qualitative as well – one could almost say that a new style of research is born of the marriage of survey and fieldwork methodologies (p. 177).

Sieber (1982) continued to argue that each respective technique should be modified for their specific roles in a set of inter-related methods, and it is the combination of adjustments in each method that can result in a distinctly new style of investigation (p. 177).

There are different terms used to describe a multiple observations research strategy in a post-positivist paradigm. Tashakkori and Teddlie (2003), and others, have used the term “mixed-methods” to describe a research strategy that involves a combination of methods in the data collection and analysis phases.

4.2 Mixed-methods research design

Mixed-methods research, according to Halcomb and Davidson (2006) – citing previous works by Halcomb and Andrew (2005), and Tashakkori and Teddlie (2003) – “frequently uses qualitative data in conjunction with quantitative data to provide a sense of ‘confirmation’ of the data through the enhancement of validity and confidence in the findings and a ‘completeness’ of the understanding of the concept(s) under investigation” (p. 40). Along similar lines, when considering a blend of survey (quantitative) and field research (qualitative) approaches, Sieber (1982) states that “each possesses special qualities that render these methods non-interchangeable; nevertheless, each methods can be greatly strengthened by appealing to the unique qualities of the other method” (pp. 178-9).

Mixed-methods research strategies, however, also pose challenges for researchers. Creswell (2009) notes the extensive data collection; time-intensive data analysis; and the need for the researcher to be familiar with both quantitative and qualitative methods, as some of the challenges (p. 205). Brannen (1992) has reported two

additional challenges that are frequently encountered when researchers combine approaches and methods, which are the question of the relative emphasis given to each method within the overall project, and the composition of skills in a research team (pp. 23-24). Among these various characteristics of a mixed-methods strategy, Sieber (1982) has given particular attention to the time-ordering of individual research techniques (p. 179), what Creswell (2009) describes as the “timing of the qualitative and quantitative data collection, whether it will be in phases (sequentially) or gathered at the same time (concurrently)” (p. 206). Creswell (2009) also described other decision points associated with a mixed-methods strategy: 1) weighting: the “weight or priority given to quantitative or qualitative” components of the mixed-methods (p. 206); and 2) mixing: whether the “qualitative and quantitative data” will be “merged on one end of the continuum, kept separate on the other end of the continuum, or combined in some way between these two extremes” (pp. 207–8). Creswell (2009) described three different types of the mixing of quantitative and qualitative data: 1) connected, which means that there is a connection between “a data analysis of the first phase of research and the data collection of the second phase of research;” 2) integrating, where the data collection for both methods takes place concurrently and researchers then “integrate or merge the two databases by transforming the qualitative themes into counts and comparing these counts with descriptive quantitative data;” and 3) embedding, where “the researcher might have a primary aim to collect one form of data (say quantitative) and have the other form of data (say qualitative) provide supportive information” (p. 208).

Despite the complexities of a mixed-methods strategy, as described above, if implemented soundly it should be able to provide “confirmation and/or completeness of the phenomenon under investigation” through “triangulation” (Halcomb & Andrew, 2005, p. 74). However, brief discussion is needed to clarify the meaning of “triangulation” and its role in mixed-methods research. The term “triangulation” has so often been used to a point where it gives the perception that it represents the sole purpose of adopting a mixed-methods strategy. Greene, Caracelli, and Graham (1989) acknowledge this when writing that “in current practice, quite different mixed-method designs are advocated and used in varied evaluation contexts for the common proclaimed purpose of triangulation” (p. 255), and that “authors stated triangulation as the purpose for the mixed-method design when it was not” (p. 262). As part of their

conceptual framework for mixed-methods evaluation designs, Greene et al. (1989) provided a useful guide that discusses the justifications for the use of mixed-methods into five categories, each with their respective rationale:

TRIANGULATION seeks convergence, corroboration, correspondence of results from the different methods ...

COMPLEMENTARITY seeks elaboration, enhancement, illustration, clarification of the results from one method with the results from the other method ...

DEVELOPMENT seeks to use the results from one method to help develop or inform the other method, where development is broadly construed to include sampling and implementation, as well as measurement decisions ...

INITIATION seeks the discovery of paradox and contradiction, new perspectives of frameworks, the recasting of questions or results from one method with questions or results from the other method ...

EXPANSION seeks to extend the breadth and range of inquiry by using different methods for different inquiry components ...

In the context of this research there are several research objectives, which justify a series of sequential and inter-related studies to be conducted that cover different facets of institutional repositories in the Indonesian higher education sector. These ‘facets’ include the uptake rate and drivers of repository adoption; their management and policy structure; academics’ attitudes and motivations for contributing content to repositories; variations in local practices in the population and management of repositories; and the potential of repositories to contribute to open access. Using the typology devised by Greene et al. (1989), these facets call for the combination of “development” as the *primary* purpose, with “complementarity” as the *secondary* purpose. With regard to the “development” design, according to Greene et al. (1989), “[t]he salient feature ... is the sequential timing of the implementation of the different methods. One method is implemented first, and the results are used to help select the sample, develop the instrument, or inform the analysis for the other method” (p. 267). While on the “complementarity” design, they state that the dominant feature is the “use [of] the results from one method to elaborate, enhance, or illustrate the results from

the other,” and that “the quantitative and qualitative methods should be used to examine overlapping phenomena or different facets of a single phenomenon” (p. 266).

As can be seen from the categories described by Greene et al. (1989), triangulation is only *one of* the justifications for using mixed-methods strategy. The perception that triangulation is *the* purpose for the use of mixed-methods strategy might be the result of two factors. Firstly, portions of the design characteristics relating to complementarity, development, initiation, and expansion overlap with triangulation (see Figure 2 in Greene et al., 1989, p 267). Secondly, triangulation as a research technique has been widely discussed in the discourses on research methodology. Detailed discussion on these two factors are beyond the scope of this research, but there is benefit in briefly considering some aspects of triangulation that are applicable to this research.

4.3 Triangulation

According to Denzin (1989), there are four basic types of triangulation, as follows:

- (1) *Data triangulation* has three subtypes: (a) time, (b) space, and (c) person. Person analysis, in turn, has three levels: (a) aggregate, (b) interactive, and (c) collectivity.
- (2) *Investigator triangulation* consists of using multiple rather than single observers of the same object.
- (3) *Theory triangulation* consists of using multiple rather than single perspectives in relation to the same set of objects.
- (4) *Methodological triangulation* can entail within-method triangulations and between-method triangulations (p. 237, original emphases).

In the context of this research only the *methodological triangulation*, which consists of two sub-types, is relevant. In *within-method* triangulation, a researcher relies upon one particular method (either quantitative or qualitative) and “employs multiple strategies within that method to examine data” (p. 243). In *between-method* (or cross-method) triangulation, researchers use a “combination of two or more different research strategies in the study of the same empirical units” to “illuminate the same class of phenomenon” (p. 245). In the mixed-methods strategy used in this research, the *between-method* triangulation will be used, combining quantitative and qualitative approaches.

Brannen (1992) described three categories of triangulation based on the relative emphasis of each method in the overall research project (p. 23), as follows: 1)

“qualitative methods play a subsidiary role” (QUAL < QUAN) (p. 24); 2) “quantitative methods are subservient or subsidiary to qualitative ones” (QUAL > QUAN) (p. 27); and 3) “[c]ombined methods [that] may result in two separate but linked studies which are distinct from one another at all stages of the research process (QUAL = QUAN) (p. 28). Based on the considerations that this research has adopted the mixed-methods strategy in the development and complementarity designs, the QUAL = QUAN approach has been selected as the most suitable approach. Characteristics of the QUAL = QUAN approach, according to Brannen (1992) are, among others:

- “[e]ach study may have a life of its own from the design stage onwards,” or “[a]lternatively, the methods are integrated in the one study, with the linkage occurring in the fieldwork phase or in the analysis or writing up stage” (pp. 28-29);
- “[t]he methods may be conducted simultaneously or consecutively” (p. 29);
- the investigation “may be conducted by multi-talented researchers or by separate teams of specialist researchers” (p. 29);
- “both types of data figure roughly equally in terms of resources allocated to them and both play an equal part in the analysis and writing up” (p. 29); and
- each of the qualitative and quantitative components, “addressed different but associated questions so that the two types of data complemented one another” (p. 31).

Sieber (1982) has also contributed to the discussion with his comparisons on survey (quantitative) and fieldwork (qualitative) methods, which he has contrasted using scenarios based on the time-ordering of individual research techniques (pp. 180-85). Creswell (2009) has used different terminology to describe similar time-ordering concepts with his “sequential exploratory strategy” and “sequential explanatory strategy” (p. 211). Adding to the theoretical discussions on mixed-methods, it is worth noting Bryman’s (1992) assertion that,

“[m]uch of what has been said up to now could be interpreted as implying that studies that combine quantitative and qualitative research are inherently superior to those based on a single method. This is not the case. The view taken here is that the research problem should guide the decision about whether to employ quantitative or qualitative research (and indeed which specific method of data collection should be used). Equally, this means that a research strategy that combines the two approaches is not necessarily superior in all circumstances. The researcher has to judge whether any important aspects of the research problem

would be ignored if there was an exclusive reliance on one research approach”
(p. 69)

4.4 Overview of the design of this research

Designing research, according to McKemish and Gilliland (2013), consists of identifying the research problem, determining and combining appropriate research methods, picking the most effective way to collect and analyze the data, and iteratively implementing, evaluating, and adapting the research design as the research progresses (p. 103). And in that context, this Chapter will be concluded by providing a summary of particular methods used in this research. This research has adopted a *mixed-methods* strategy (*development* and *complementarity* designs) employing three different methods: *content analysis* (longitudinal) of institutional repository websites; an (online) *survey* of academics; and in-depth *interviews* of repository stakeholders. The results of each stage will inform the subsequent stage.

Content analysis of repository websites is selected as the first method since it would provide an overview of current uptake of repositories, and practices in the management and population of repositories in the Indonesian higher education sector. Survey is selected as the second method to investigate the general opinion and attitude of the main stakeholder of repositories, which is the academics in the Indonesian higher education institutions. In-depth interview is selected as the third method as a follow up of the survey to provide validation for the survey results. The in-depth interviews would also enable the researcher to capture more nuanced responses from the interview participants as well as potentially discovering new issues that are not covered in the survey. A survey on repository managers was actually needed as well. However had this second survey been conducted there would have been two separate surveys; one for academics and one for repository managers. This would have raised concern in the feasibility of this research project. Firstly, the two surveys would have required considerably much more efforts and time to complete. Secondly, the survey for the repository managers might have some difficulties in gathering adequate number of participant for it to be a meaningful survey; considering that there would have been only one participant from each institution. Thus, it was decided that repository managers can be included in the in-depth interview phase. Other important stakeholders of repositories can also be included in the in-depth interview to provide

a more holistic view of the repository landscape in the Indonesian higher education sector. Each of these three individual methods will contribute to answering the research objectives of this research project. Table 4.1 summarizes the contributions of each method in fulfilling the research objectives, which in turn address the research question. Detailed discussion on each method used in this research will be presented in separate chapters to provide context and ease of reading. Each individual chapter that covers a specific method will include discussions on theoretical issues regarding the method, as well as the implementation of the respective method in data collection, and the results obtained from the data collection phase.

Table 4.1 Individual methods used in the research and their respective contributions in fulfilling the research objectives

Research Objectives	Content Analysis	Online Survey	In-depth Interviews
1. Identify the rate of, and drivers for, the uptake of institutional repositories in Indonesian higher education institutions.	√	√	√
2. Assess the management and policy structure supporting institutional repositories in Indonesian higher education institutions and their libraries.			√
3. Identify the motivations, contributions, and attitudes of Indonesian academics towards current and future development of institutional repositories and open access.		√	√
4. Identify local practices of Indonesian higher education institutions in populating and managing their institutional repositories.	√		√
5. Assess the potential for institutional repositories and open access to support Indonesian higher education teaching and research.	√	√	√

4.5 Content analysis as method

The first method to be used in this research was content analysis, used to analyze institutional repository websites of Indonesian higher education institutions. As a “systematic analysis of text,” content analysis has a long history dating to the 17th century with church-related studies (theology), which evolved into quantitative analysis of newspapers in the mass communication era in the beginning of the 20th

century (Krippendorff, 2013, pp. 10-13). Content analysis has more recently been applied to 'new media,' such as the Internet. Neuendorf (2002) considered the use of content analysis as a means of analyzing Internet websites and cited several instances of the emergence of this method of research (pp. 8, 23 & 106).

As a research method content analysis has been defined as a "technique for the objective, systematic, and quantitative description of the manifest content of communication" (Berelson, 1952, p. 18). Holsti (1969) stated that although there have been multiple definitions of content analysis, they have usually agreed on the requirements of *objectivity*, *system*, and *generality* (p. 3). He also described 'objectivity' as "rules and procedures" on which the research must be performed; 'system' or systematic as referring to the impartiality of the research process based on the formulated rules; and 'generality' as indicating the theoretical relevance of the findings (pp. 3-5). According to Silverman (2006);

[c]ontent analysis is an accepted method of textual investigation, particularly in the field of mass communications. In content analysis, researchers establish a set of categories and then count the number of instances that fall into each category. The crucial requirement is that the categories are sufficiently precise to enable different coders to arrive at the same results when the same body of material (e.g. newspaper headlines) is examined ... In this way, content analysis pays particular attention to the **reliability** of its measures - ensuring that different researchers use them in the same way - and to the **validity** of its findings - through precise counts of word use ... (p. 159, original emphases).

Two main aspects of content analysis have been widely debated. Firstly, the relative merit of the method when used for quantitative and qualitative measurements (Krippendorff, 2013, p. 88). Lasswell, Lerner, and Pool (1952) stated that "[t]here is clearly no reason for content analysis unless the question one wants answered is quantitative" (p. 45). However Holsti (1969), by referring to earlier work by Lazarfeld and Barton (1951), suggested that the method can also have qualitative applications, as "measurement theorists are generally in agreement that qualitative and quantitative are not dichotomous attributes, but fall along a continuum" (p. 11). George (2009) has contributed to the discussions by introducing the "non-frequency" content indicators, which he defined as "the mere presence or absence of a given content characteristic or a content syndrome within a designated body of communication," and which he

regarded as “the non-quantitative or non-statistical variant of content analysis” (p. 145). This research has adopted an understanding that content analysis can be utilized to gather qualitative as well as quantitative assessments, and for the purpose of this study a qualitative content analysis has been applied to repository web sites. Most of the qualitative assessments would be indicated by the presence or absence of certain characteristics. However some qualitative assessments would also be made as general observations and not part of the coding schedule. These later qualitative assessments were only intended to be additional observations to inform the study regarding the local practices of Indonesian higher education institutions in populating and managing their institutional repositories.

Secondly, is the issue of manifest versus latent content. This distinction has been raised by previous researchers when they have noted that the use of content analysis is not limited to manifest content (Mayring, 2000, p. 2), and that in addition to the primary content (subject matter) of a work, there is also the latent content (contextual information) provided by the metadata (Becker & Lißmann, 1973). Berelson (1952) has argued that there is no guarantee that different readers will comprehend the same manifest content, and that “[t]o some degree the argument goes, every reader takes his own peculiar meanings away from the common content” (p. 19). Neuendorf (2002) suggested that a latent construct can be measured by using one or more manifest variables, and provided an example by citing a previous work on the study of Internet websites by Ghose and Dou (1998), where “the latent variable, ‘interactivity’ ... was represented by 23 manifest variables that are easily measurable, such as presence or absence of a key word search, electronic couponing, online contests, and downloading of software” (p. 23). Schneider and Foot (2004) have referred to the “structural and feature elements of websites, hypertexts, and the links between them” as elements that potentiate and mediate “the relations between producers and users of web materials” (p. 118). Building on Schneider and Foot’s (2004) work, Herring (2013) stated that in addition to referring to the thematic meanings that can be found in text or images in web pages, content analysis can also refer to the structures or features of the websites themselves (p. 245).

Besides the ‘classical’ debates mentioned above, the emergence of the Internet and World Wide Web (WWW) has also introduced new challenges – albeit also new

opportunities – for content analysis. Newhagen and Rafaeli (1996) described the five defining characteristics of communication on the Internet that are different from traditional mass media: multimedia, hypertextuality, packet switching, synchronicity, and interactivity (para. 3). Three of these qualities have had significant impact on how content analysis can be applied to web-based media: the use of “mix multiple media including text, audio, graphics, animation, video, and even tactile and olfactory messages;” hypermedia links of the WWW “has broken the shackles of linearity” and “overthrown the tyranny of author over reader.” As a result, this new media has provided “the reader/user choice over the sequence and context in which material is consumed”, and a degree of interactivity that “empowers users to become dynamically involved with the media. They thereby gain control over the program through which they are navigating, and consequently, the Internet moves from an author-centered to a user-centered, or decentered, structure of information exchange” (Weare & Lin, 2000, pp. 274-275).

Those challenges have ramifications in how content analysis is being implemented as a research method.

4.5.1 Sampling and coding

As with research in any field, it is virtually impossible when using content analysis to examine the whole universe (population) of any research object (Krippendorff, 2013, p. 112). This raises the issue of sampling, which has two functions. Firstly, sampling is essential in reducing the data that needs to be collected. In the context of content analysis the first step is “to list all members of the class of documents about which generalizations are to be made” (Holsti, 1969, p. 128). Tools such as lists, indices, directories, etc. can be utilized to define the sample. Secondly, Holsti (1969) also stated that sampling helps researchers to define the limit to which they can make generalizations based on the data gathered; although an “adequate sampling design is a necessary but not a sufficient condition for validity” (p. 128).

Krippendorff (2013) defined three kinds of units in ‘traditional’ content analysis, namely: sampling units, recording/coding units, and context units, which he then described as follows:

- “Sampling units are *units that are distinguished for selective inclusion in an analysis;*”
- “Recording/coding units are *units that are distinguished for separate description, transcription, recording, or coding;*” and
- “Context units are *units of textual matter that set limits on the information to be considered in the description of recording units*” (pp. 99-104, original emphases).

In terms of sampling in the web-based media, Weare and Lin (2000) have cautioned that although the Internet has made data gathering much easier, its sheer size and ever-changing nature has introduced challenges for researchers in developing scientifically random samples (p. 276). Due to the mutability aspect of the Internet, some researchers even argue that it is almost impossible to select a true random sample (Bates & Lu, 1997, p. 332). Weare and Lin (2000) have recommended a number of frequently-used methods in developing a sampling frame, which are to use search engines, lists from collector websites, and most popular websites on the subject(s) being investigated. Each of these methods has its own advantages and disadvantages (pp. 278-279). At the same time they have also stressed that, “news in an electronic, digital environment can be customized, or personalized, in a way not possible in other media. Organizations and individuals are usurping the editorial function by aggregating articles and other information on a common topic for specialized groups;” a phenomenon that might challenge the validity of the research at hand (p. 283). In addition they have stated that most studies have defined their sampling unit as a single web site (p. 281).

Relating to recording/coding units, Neuendorf (2002) has argued that, “[a]lthough the content analyst should consult both scholarly literature and commercial research and use theory as a guide whenever possible, he or she is, in fact, the boss, the final authority on what content needs to be examined and what variables ought to be taped,” and that “variables to be included in a content analysis must reside in the message rather than the source or receiver” (p. 95). These coding units are the ones that will be used for comparisons, analyses, summaries and the basis for inference-making (Krippendorff, 2013, p. 101).

Based on her analysis of nineteen studies applying content analysis techniques to the WWW, McMillan (2000) concluded that there are three types of coding units: “content categories” (the most common); “structural features of the Web site (e.g., links,

animation, video, sound, etc.),” and “[the] ‘demographic’ characteristics of sites such as country of origin and type of institution that created the site ... [or] the nature and/or purpose of the sponsoring organization in more detail” (p. 88). The studies that she analyzed, however, did not produce any standard list of content categories, and she concluded that content categories should be specifically tied to the goals of the research (McMillan, 2000, pp. 87-88). Weare and Lin (2000) have advocated for “forsak[ing] exclusive reliance on the categorization of manifest message attributes” and instead “employing judgmental scales of Web site content” to enable a researcher to “measure holistic reactions of the audience that may be impossible to reduce to number of manifest attributes,” although they also conceded that “[t]here are concerns about the reliability of judgmental measures” (p. 286).

Context units on the other hand “are not counted, need not be independent of each other, can overlap, and may be consulted in the description of several recording units,” which “generally surround the recording units they help to identify ... or be located elsewhere, such as in footnotes, indices, glossaries, headlines, or introductions” (Krippendorff, 2013, p. 102). Ha and James (1998) recommended the use of the home page of websites as a context unit, arguing that it functions as the first landing page to the entire web site; it is where the web visitors make their decision on whether to continue browsing, as well as being a means to “provide consistency across the sample, since all units were a single page” (p. 467). This assertion was reinforced by McMillan (2000), who concluded that web sites are the most common context unit used for content analysis studies (pp. 85 & 87). However McMillan (2000) also noted that in many studies the ‘web site’ was not clearly defined, which has resulted in various interpretations, such as, the home page, some pages, or all pages of the website (p. 87).

4.5.2 Survey as method

The second method to be used in this research was survey; used to gather responses from lecturers/researchers in Indonesian higher education institutions.

4.5.3 Survey and questionnaire

According to Alreck and Settle (1995) one of the three basic reasons for conducting a survey is “to understand or predict human behavior or conditions;” while the other two

are “to influence or persuade some audience” and “to create or modify a product or service they provide for a particular public” (p. 3). There are eight basic topic categories of information that can be captured using surveys: attitudes, images, decisions, needs, behavior, lifestyle, affiliations, and demographics (p.11). Writing more specifically with regard to measuring attitude, Alreck and Settle (1995) stated that all three attitude components should be included in the survey questions: knowledge, feelings, and action (p. 11).

Frazer and Lawley (2000) have defined survey as the overall research design that includes sampling, analysis and reporting, with questionnaire – containing a set of questions designed to obtain information from participants – as an integral part of the method (p. 4). They have also described four different types of communication or administration methods for a questionnaire: mail questionnaire, personally administered questionnaire, telephone questionnaire, and Internet questionnaire, which among these types “Internet or online questionnaire has certain advantages” in terms of cost, speed of data collection, reach to geographically dispersed segments, accommodation of lengthy [and complex] questionnaire, respondent anonymity, avoidance of interviewer bias, and no need for interviewer supervision” (p. 3). Lumsden (2007) – by referring to previous works by Bandilla, Bosnjak, and Altdorfer (2003); Dillman (2000); and Kwak and Radler (2002) – has made a similar assertion by stating that “[o]nline (Web-based) questionnaires provide several advantages over traditional survey methods in terms of cost, speed, appearance, flexibility, functionality, and usability” (p. 44). A study by Kaplowitz, Hadlock, and Levine (2004) found that “a Web survey application achieved a comparable response rate to a mail hard copy questionnaire when both were preceded by an advance mail notification” (p. 100). They also found that “[t]he cost advantage of a mail notification/Web questionnaire delivery combination suggests that this approach may be beneficial for studying populations with full access to the Internet” (Kaplowitz et al., 2004, p. 100).

Despite their advantages, Lumsden (2007) indicated that online questionnaires still have a weakness to the four standard survey error types: coverage, nonresponse, sampling, and measurement errors (p. 45). She further elaborated each error type (by relying on Dillman’s (2000) definitions), as follows: (1) coverage error as “the result

of not allowing all members of the survey population to have an equal or nonzero chance of being sampled for participation in a survey,” which has been “exacerbated in online questionnaires as a result of the digital divide;” (2) sampling error as “the result of attempting to survey only some, and not all, of the units in the survey population,” which “can arise when all but a small portion of the anticipated respondent set is alienated (and so fails to respond)” due to technical ‘barriers’ in accessing the online questionnaire; (3) measurement error as “the result of poor question wording or questions being presented in such a way that inaccurate or uninterpretable answers are obtained” and (4) nonresponse error as instances “when individuals fail to respond to the invitation to participate in a survey or abandon a questionnaire before completing it” (Lumsden, 2007, p. 45).

Regarding the questions used in the questionnaire, Frazer and Lawley (2000) have defined the main categories of response format: open-ended (unstructured), close-ended (structured), and scale-response (p. 26), and that the order of questions should be logical and progress from general to more specific (p. 32). They have also stated that placing demographic questions in the beginning also improves the completion rate (p. 32). Alreck and Settle (1995) have described the three important attributes of survey questions as: “focus, brevity, and simplicity,” where “[t]he questions should focus directly on the issue or topic specified in the statement of information needs ... be as short as possible while still conveying the meaning [and] ... be expressed as simply and clearly as they can be” (p. 88).

However following those criteria is still not enough. Researchers should be constantly aware of the potential for bias and error created by: unstated criteria, inapplicable questions, example containment, over-demanding recall, over-generalization, over-specificity, over-emphasis, ambiguity of wording, double-barrelled questions, leading questions, and loaded questions (Alreck & Settle, 1995, pp. 93-99). Frazer and Lawley (2000) have added “order bias” to the list, a bias that is evident when the order of response categories influences respondents’ answers and/or affect their motivation in completing the questionnaire. They therefore recommended the use of “a screening question” that should appear first to verify the eligibility of participants to complete the questionnaire (p. 29). Pilot surveys are commonly used as a way of helping researchers to identify these potential problems before the survey is launched. Frazer

and Lawley (2000) have recommended the following groups to be used to pre-test the questionnaire: colleagues/fellow researchers, potential users of the data, and a sample of the potential respondents. Pilot surveys will also be useful in estimating the needed time to complete the questionnaire, give researchers the opportunity conduct the data analysis techniques, and check the properties of the data being gathered (p. 33).

4.5.4 Sample and sampling

Frazer and Lawley (2000) have asserted that addressing the issue of sampling during the design stage is critical as it can have significant influence on subsequent decisions (p. 9). There are two topics relating to sampling in a survey: the *size* of the sample (*number* of respondents or participants) and the sampling *technique* used to gather them (the sample).

Krejcie and Morgan (1970) provided a formula for determining sample size. Instead of a formula, Alreck and Settle (1995) provided some useful general guidelines for estimating the sample size needed for any survey:

1. “Ordinarily, a sample of less than about 30 respondents will provide too little certainty to be practical;”
2. “Usually experienced researchers regard a sample of about 100 respondents as the minimum sample size for large population, though there are exceptions;”
3. “The maximum practical size for sample is about 1,000 respondents, under ordinary conditions;” and
4. “It’s seldom necessary to sample more than 10 percent of the population to obtain adequate confidence, providing the resulting sample is less than about 1,000 and larger than the minimums noted earlier” (p. 62).

With regard to sampling techniques there are several different methods available. Maisel and Persell (1996) have described seven approaches to sampling: census, pseudo-census, self-selected sample, convenience or haphazard sample, typical case, quota sample, and probability sample; with three factors to consider in selecting the appropriate technique for a particular survey: “purpose of the study,” “potential for error in the way we are selecting the sample,” and “cost in time, money, and effort” (pp. 4-5). Alreck and Settle (1995), on the other hand, defined five sample selection methods: random sampling, stratified sampling, cluster sampling, quota sampling, and

special design sampling (pp. 70-77). They have also indicated that random sampling is the “best because it’s most representative of the entire population,” “least likely to result in bias,” and it “has statistical properties that allow the researcher to make *inferences* about the population, based on the results obtained from the sample” (p. 70, original emphasis).

4.5.5 Statistics

Statistics is the essential tool to help researchers analyze and interpret survey data. The word “statistics,” which was – according to Weinstein (2010) – derived from “status” or “state” refers to “the science that informs us about the status of situation, phenomena, or events of interest” (p. 16). According to Alreck and Settle (1995) “[t]he statistics used to analyze survey data fall into two broad categories: those that describe individual variables and distributions and those that measure the relationships between variables” (p. 305). The former category is called *descriptive* statistics and the latter *inferential* (or *inductive*) statistics.

The following discussion will provide the essential information relating to the descriptive statistics and inferential statistics that have been employed to analyze the survey. Some additional statistical discussions or explanations will be provided in Chapter 6.3 – accompanying the relevant survey data – to provide a better understanding of the statistical analyses and interpretations of the survey data.

Individual variables, themselves, can be separated into different categories. This categorization of variables is what Weinstein (2010) has called “levels of measurement because (1) each type of attribute can be measured with different scale and (2) there is a hierarchy among these types, with some considered to be at higher levels than others” (p. 31). Alreck and Settle (1995) have described four different types of variables, as follows:

1. Nominal: variables that “don’t stand for any quantity” and “only identify categories ... [or] attach verbal ‘labels’ to each code to make the categories more easily identifiable on the reports;”

2. Ordinal: variables that “show the *sequence* or *order* in which things occur within the range of the scale ... [but] do *not* have equal intervals between the integers ... [of which] values do show relationship in terms of *sequence* or *order*, so the numbers have more meaning than nominal values;”
3. Interval: variables with “numeric values equidistant from one another ... [but which] need not include the value of zero. If they do, ... the zero value doesn't really indicate the complete absence of whatever is measured;” and
4. Ratio: variables that are similar to Interval variables with only one difference, the “zero is absolute on the ratio scale” (pp. 256-257, original emphases).

Field (2009) has added the fifth category called the “binary variable,” which – along with the first two listed above – he has described as categorical variables, and the last two in the list above as continuous variables (pp. 8-10). Weinstein (2010) further explained that “some statistical procedures and techniques apply to one or two levels but not to the others” and that “[t]his is true of both descriptive and inductive applications” (p. 31).

The first statistical procedure and technique is descriptive statistics. According to Alreck and Settle (1995);

[t]here are three different characteristics of the distribution that researchers ordinarily measure and describe: (1) *average* – the most typical value; (2) *spread* – the amount of deviation from the average; and (3) *shape* – the form of the distribution. The technical term for a coefficient that indicates the most typical value is a “measure of central tendency.” Measures of central tendency will be referred to here simply as “averages.” The technical name for the amount of deviation from the average is *dispersion* or *variance*. The term *spread* will be used here to indicate the amount of deviation from the central point or average. The form of the distribution will be called its *shape* ... (pp. 271-272, original emphases).

Depending on the type of variable used, there are different ways to describe average, spread, and shape. These different ways are laid out in Table 4.2.

Table 4.2 Tool selection for Descriptive Statistics

The table is unable to be reproduced here due to copyright restrictions. The content can instead be accessed on page 273 of Alreck, P. L., & Settle, R. B. (1995). *The survey research handbook: Guidelines and strategies for conducting a survey* (2nd Edition ed.). New York, N.Y.: McGraw-Hill.

While average is commonly described as mean, it (mean) cannot be used in the case of categorical variables. Elaborating on this issue, Field (2009) explained that;

[i]f we want to look at the relationship between two categorical variables then we can't use the mean or any similar statistic because we don't have any variables that have been measured continuously. Trying to calculate the mean of a categorical variables is completely meaningless because the numeric values you attach to different categories are *arbitrary*, and the mean of those numeric values will depend on how many members each category has. Therefore, when we've measured only *categorical* variables, we analyse *frequencies* (p. 687, emphases added).

While still acknowledging the value of describing individual survey variables, Alreck and Settle (1995) have emphasized that “the principal value of the information doesn't lie in knowing about individual variables, but in knowing about their *relationship* to one another” (p. 283, original emphasis). This is where inferential or inductive statistics play a central role.

As in descriptive statistics discussed above, a similar situation applies to the second type of statistical procedure and technique, inferential statistics, where there are different statistical measures of association (or correlation, or relationship) depending on the type of variables used. However in this case the researcher would also determine which variable will be assumed as ‘dependent’ and which as ‘independent’ whenever causality is implied (Alreck & Settle, 1995, p. 283). Table 4.3 presents the different statistical measures of association for each type of variable.

Table 4.3 Statistical measures of association

The table is unable to be reproduced here due to copyright restrictions. The content can instead be accessed on page 284 of Alreck, P. L., & Settle, R. B. (1995). *The survey research handbook: Guidelines and strategies for conducting a survey* (2nd Edition ed.). New York, N.Y.: McGraw-Hill.

* Either variable may be regarded as the dependent or independent variable.

** The *independent* variable defines the pairs. Both are *continuous, dependent*.

In regards to statistical measures of association, Alreck and Settle (1995) have explained that;

[w]hen two variables are associated with one another, they may have one of two types of relationships: one can be regarded as partially *causing* or determining the value of the other, or they may be viewed simply as varying or changing together, *without* any causal implications. It's important to note that the statistics used to measure associations don't indicate whether or not one is causing another. That must be determined by the researcher, based on knowledge about the meaning of the items or variables, themselves. The statistics only measure the presence and degree of relationship between items. The existence and direction of causality must be inferred by the researcher, in advance, because the choice of appropriate statistical tool often depends on whether or not a *causal* relationship is implied (p. 283, original emphases).

With regard to *cross-tabulation* as a statistical measure of *association* for *nominal* or *ordinal* variables (see Table 4.3), Alreck and Settle (1995) state that it is effective, easy-to-understand and easy-to-interpret, as well as easily done using spreadsheet

software. Thus, cross-tabulation is the most frequently used technique in statistics (pp. 285-286). While *cross-tabulation* will help researchers in identifying *relationship* (or correlation) between variables, the *chi-square statistic* will indicate the *significance* of the relationship (p. 285).

Other commonly used statistical tests are Factor Analysis and Reliability Analysis. Field (2009) has defined Factor Analysis as a statistical tool “to measure things that cannot directly be measured (so-called **latent variables**)” (p. 628, original emphasis). In explaining the concept of latent variables, Norušis (2008) has given the example of asking, “[w]hat are creativity, love, and altruism? Unlike variables such as weight, blood pressure, and temperature, you can't measure them on a scale ... Instead, you infer their existence from observed patterns of behavior.” She also explains that “[b]y identifying such underlying constructs or factors,” which are not “single measurable” entities but “derived from measurement of other, directly observable variables,” researchers will be able to “greatly simplify the description and understanding of complex phenomena, such as social interaction” (p. 389). The number of factors to be extracted is the most important decision in factor analysis, according to Field (2009, p. 661). In this area Factor Analysis should only be used as an exploratory tool; to guide researchers in making various decisions, instead of letting the tool (factor analysis itself) make the decisions (p. 661).

As for reliability, DeVellis (2012) has defined it as “a fundamental issue in psychological measurement ... [where] a reliable instrument [or scale] is one that performs in consistent, predictable ways” (p. 31). According to Norušis (2008), “a scale is composed of many items that are supposed to be tapping into an underlying dimension” (p. 428). Or in DeVellis’ (2012) words, a scale is developed to “measure phenomena that we believe to exist because of our theoretical understanding of the world but that we cannot assess directly” (p. 11). Thus “[t]he purpose of a scale is to quantify some underlying dimension” (p. 427) and “[f]or a scale to be reliable, the scores it yields must represent some true state of the variable being assessed” (p. 31).

As for Field (2009), “[r]eliability means that a measure (or in this case questionnaire) should consistently reflect the construct that it is measuring,” and that “[o]ne way to think of this is that, other things being equal, a person should get the same score on a

questionnaire if they complete it at two different points in time” (p. 673). DeVellis (2012) has also mentioned that;

[i]nternal consistency reliability, as the name implies, is concerned with the homogeneity of the items within a scale ... If the items of a scale have a strong relationship to their latent variable, they will have a strong relationship to one another. Although we cannot directly observe the linkage between items and the latent variable, we can certainly determine whether the items are correlated to one another (p. 34).

To which he has added that;

[a] scale is *internally consistent* to the extent that its items are highly intercorrelated. What can account for correlations among items? There are two possibilities: Either items causally affect each other (e.g., Item A causes Item B), or the items share a common cause. Under most conditions, the former explanation is unlikely, leaving the latter as the more obvious choice. Thus, high inter-item correlations suggest that the items are all measuring (i.e., are manifestations of) the same thing (p. 34, original emphasis).

DeVellis (2012) also notes that internal consistency “is typically equated with Cronbach’s (1951) coefficient alpha (α)” (p. 34). “Cronbach’s alpha tells you how much correlation you expect between the present scale and all other possible [x]-item scales measuring the same thing” (Norušis, 2008, p. 433).

More discussions on Factor Analysis and Reliability Analysis – including Cronbach’s Alpha – will be provided alongside the implementation of both statistical tests in Chapter 6.3. More discussions on cross-tabulation and Chi-square statistics will be provided in Chapter 8.

4.6 Interview as method

4.6.1 Interview

An interview, according to Kvale (1996), “is a conversation that has a structure and a purpose. It goes beyond the spontaneous exchange of views as in everyday conversation, and becomes a careful questioning and listening approach with the purpose of obtaining thoroughly tested knowledge” (p. 6). In their discussions on in-depth interviewing, Minichiello, Aroni, Timewell, and Alexander (1995) used similar

terms such as “conversation,” “specific purpose,” and the focus “on the informant's perception of self, life and experience, and expressed in his or her own words” (p. 61). By adding “qualitative” as a qualifier, Byrne (2012) is of the opinion that interviewing is especially useful for accessing participants’ attitudes, values, and suppressed views; as well as giving some kind of empowerment to participants through the use of their own words in describing them (pp. 209–211). This understanding corresponds with Kvale and Brinkmann’s (2009) view that a “qualitative research interview attempts to understand the world from the subject’s points of view, to unfold the meaning of their experiences, to uncover their lived world prior to scientific explanations” (p. 1).

Mason (2002), who has equated qualitative interviewing to “in-depth, semi-structured or loosely structured forms of interviewing,” provided the following basic features for qualitative interviewing: “interactional exchange of dialogue,” “relatively informal style,” “thematic, topic-centred, biographical or narrative approach,” and having the perspective that “knowledge is situated and contextual, and therefore the job of the interview is to ensure that the relevant contexts are brought into focus so that situated knowledge can be produced” (p. 62). One of the reasons for using qualitative interviewing, still according to Mason (2002), is to use it as “*one of several methods* to explore your research questions. Qualitative interviews may add an additional dimension, or may help you to approach your questions from a different angle, or in greater depth” (p. 66, original emphasis).

Minichiello et al. (1995), from a slightly different perspective, are of the opinion that “[t]he terms *structured*, *semi-structured* and *unstructured* refer to the process of the interview,” where in-depth interviewing is part of the arsenal of semi-structured and unstructured interviews (p. 62, original emphases). Focusing on semi-structured interviewing, they then describe the process as;

entail[ing] researchers using the broad topic in which they are interested to guide the interview. An interview guide or schedule is developed around a list of topics *without* fixed wording or fixed ordering of questions. The content of the interview is focused on the issues that are central to the research question, but the type of questioning and discussion allow for greater flexibility than does the survey-style interview (p. 65, original emphasis).

Williamson (2013) has added the possibilities to follow up leads and direct quotations from participants as other advantages of semi-structured interviews (p. 361). Mason

(2002) has seemed to concur, stating that a “qualitative interviewer has to be ready to make on-the-spot decisions about the content and sequence of the interview as it progresses, and to keep everything running smoothly” (p. 67). Flick (1998) also spoke of various “ad-hoc” decisions that interviewers have to make (p. 94).

In-depth interviews, based on Taylor and Bogdan’s (1984) definition, are “repeated face-to-face encounters between the researcher and informants directed toward understanding informants’ perspectives on their lives, experiences or situations as expressed in their own words” (p. 77). Further elaborating on this definition, Minichiello et al. (1995) describe four characteristics of in-depth interviews: 1) “a greater length of time is spent with the informant;” 2) the “egalitarian concept of roles within the interview” between the interviewer and the interviewee; 3) it is “the informant’s account which is being sought and is highly valued;” and 4) the researcher’s role is “to retrieve the informant’s world by understanding their perspective in language that is natural to them” (p. 68). In-depth interviews are appropriate, “when the type of research depends on understanding a broad range of people or settings in a short time” (p. 74), while “[u]nstructured and semi-structured (or focused interviewing) are two ways of doing in-depth interviewing” (p. 68).

“An interview investigation,” according to Kvale (1996), can be divided into seven stages: “(1) thematizing, with a conceptualization of the research topic and formulation of the research questions; through (2) designing the study so it addresses the research questions, treating both knowledge construction and moral implications; to (3) the interviewing itself; (4) transcribing; (5) analyzing; (6) verification; and (7) reporting” (p. 14). Before commencing the interview researchers need to prepare the protocol, which Rosenthal and Rosnow (2008) described as “[t]he overall plan, specific design, and structure of an interview” and interview schedule, which they described as “the set of questions and instructions;” and which usually involve the following steps: “(a) deciding on the objective, (b) outlining a plan or a design for acquiring the data, (c) structuring the interview schedule, and (d) testing and revising the specific questions” (p. 167). In terms of developing an interview schedule, or interview guide as Luo and Wildemuth (2009) called it, the process usually involves outlining the relevant major topics along with the questions for each, and the ordering of topics and questions to be addressed during the interview (p. 234).

Two ethical concerns dominate any interview research: informed consent and confidentiality. Kvale (1996) has offered a useful definition on informed consent, which;

entails informing the research subjects about the overall purpose of the investigation and the main features of the design, as well as of any possible risks and benefits from participation in the research project. Informed consent further involves obtaining the voluntary participation of the subject, with his or her right to withdraw from the study at any time, thus counteracting potential undue influence and coercion ... (p. 112).

On the subject of confidentiality, Kvale (1996) has opined that it;

implies that private data identifying the subjects will not be reported. If a study involves publishing information potentially recognizable to others, the subjects need to agree to the release of identifiable information. In such cases this should be stated explicitly in a written agreement. The protection of subjects' privacy by changing their names and identifying features is an important issue in the reporting of interviews (p. 114).

Mero-Jaffe (2011) suggests that the issues of informed consent and confidentiality extend beyond the interview situation, such as the "transference of the [interview] transcripts to the interviewees" (p. 241). Researchers are advised to accommodate these issues of consent and confidentiality into their research data management (Kennan, 2013, p. 472).

Logistically, conducting interview research involves considerable preparation. This includes, "selecting an appropriate location, setting up the interview time, confirming arrangements, rescheduling in case of any emergent absence, sending out a reminder to the subject of the scheduled interview a couple of days in advance, and so on" (Luo & Wildemuth, 2009, p. 236). In projects that require the researcher to travel to other cities, additional logistical preparations include travel arrangements, accommodation bookings, and researching the localities and/or local transportation options to get to the interview venues. With projects that involve overseas travel the researcher will need to allocate more time for preparing these logistical aspects.

In addition to the logistical and ethical issues discussed above, there are further aspects of interview research that need to be carefully considered. Mason (2002) has stated that, "knowledge is at the very least reconstructed, rather than facts simply being

reported, in interview settings,” and as a consequence “meanings and understandings are created in an interaction, which is effectively a co-production, involving researchers and interviewees” (pp. 62-63). Morton-Williams (1993) has alerted researchers to be mindful of ethnic and cultural aspects, as well as social class, age, religious and regional groups, and the length of the interview (pp. 11–13). Since an interview is a face-to-face communication, Luo and Wildemuth (2009) have reminded researchers to be mindful of their tone of voice and that “the way he or she asks questions or reacts to the subject’s response can affect the subject’s responses and introduce bias in the data collected” (p. 236). Whyte (1980) has cautioned researchers about conflicting sentiments in interview situations (p. 117). He has also listed three factors that might influence a participant in an interview setting: “(1) *Ulterior motives* [especially when the interview will have some kind of effect on the interviewee’s job or life] ... (2) ... *desire to please* the interviewer, so that his opinions will be well received ... [and,] (3) *Idiosyncratic factors* may cause the informant to express only one facet of his reactions to a subject ...” (Whyte, 1980, p. 115, original emphases).

Finally, before conducting the interviews it might be worth heeding Minichiello et al.’s (1995) advice regarding the use of in-depth interviews, that;

[i]t is significant that all forms of in-depth interviewing are not predominantly used as *hypothesis*-testing modes of research but as theory-building ones. It is more usual to see this method being employed as part of an exploratory study where the researcher is attempting to gain understanding of the field of study, and to develop theories rather than test them (p. 75, original emphasis).

And the understanding that;

[t]he interviewee's statements are not collected – they are *co-authored by the interviewer*. The inter-view is an inter-subjective enterprise of two persons talking about common themes of interest. The interviewer does not merely *collect* statements like gathering small stones on a beach. His or her questions *lead up* to what aspects of a topic the subject will address, and the interviewer’s active listening and following up on the answers *co-determines* the course of the conversation (Kvale, 1996, p. 183, emphases added).

After the interviews are completed, the researcher will have some form of documentation, the most common of which will be audio recordings. These recordings of the “spoken words” from the participants would then need to be reproduced as

“written text” through the process called transcription (Halcomb & Davidson, 2006, p. 38) so that they can be efficiently analyzed.

4.6.2 Transcription

Lapadat and Lindsay (1999) explain that in the full tape-transcribe-code-interpret (TTCI) process, transcription has the role of “preserving data for analysis in a more permanent, retrievable, examinable, and flexible manner” (p. 77). Lapadat (2000) also states that “the usual first step in making spoken language manageable is to transcribe it as written text,” and that “speech that is written down is captured and made static or final. A written text can be operated on analytically. It can be quoted, sorted, copied, and inspected” (p. 204). It has also been advised that, “[t]ranscribing enables researchers to revisit the conversation, use multiple analytic angles to discover different aspects of meaning, and share parts of the conversation with larger audiences” (Skukauskaite, 2014, p. 4).

Kvale (1996), however, has warned researchers that “once the interview transcriptions are made, they tend to be regarded as *the* solid empirical data in the interview project,” while transcripts are actually “not the rock-bottom data of interview research, they are artificial constructions from an oral to a written mode of communication” (p. 163, original emphasis). Kvale (1996) further explains that this artificial construction “involves translating from an oral language, with its own set of rules, to written language with another set of rules,” and as a result of which transcripts are no longer the “copies or representations of some original reality, they are interpretive constructions that are useful tools for given purposes” (p. 165).

Transcribing interview recordings, according to Skukauskaite (2014), enables in-depth examination of meanings construction and self-representation of the participants (p. 4). As written language, transcripts are lacking in intonation, changes in voice patterns, body language, etc. that can enhance understanding of meanings (Mero-Jaffe, 2011, p. 232). According to Kvale (1996) “interview[s are] ... evolving conversation[s] between two people,” while “transcriptions are frozen in time and abstracted from their base in a social interaction. The lived face-to-face conversation becomes fixated into transcripts” (p. 166). Kvale (1996) then adds that;

[t]he problem with interview transcripts are due less to the technicalities of transcriptions than to the inherent differences between an oral and a written mode of discourse. Transcripts are decontextualized conversations. If one accepts as a main premise of interpretation that meaning depend on context, then transcripts in isolation make an impoverished basis for interpretation. An interview takes place in a context, of which the spatial, temporal, and social dimensions are immediately given to the participants in the face-to-face conversation, but not to the out-of-context reader of the transcripts ... The transcriptions are detemporalized; a living, ongoing conversation is frozen into a written text ... The words of the transcripts take on a solidity that was not intended in the immediate conversational context. The flow of conversation, with its open horizon of directions and meanings to be followed up, is replaced by the fixated, stable written text (p. 167).

Kvale (1996) has also 'warned' that researchers should;

not conceive of the interviews as transcripts: The interviews are living conversations – beware of transcripts. The transcripts should not be the subject matter of an interview study ... but rather the means, tools, for the interpretation of what was said during the interviews. Although produced as an oral discourse, the interview appears in the form of a written text. The transcript is a bastard, it is a hybrid between an oral discourse unfolding over time, face to face, in a lived situation – where what is said is addressed to a specific listener present – and a written text created for a general, distant, public (p. 182).

Despite certain limitations in addressing the problematic nature of interview transcription, researchers have devised a number of transcription methods or styles. Two of the widely used styles are naturalized transcription and denaturalized transcription (Davidson, 2009). Mero-Jaffe (2011) describes the features of each:

Naturalized transcription is a detailed and less filtered transcription. It is as detailed as possible and focuses on the details of the discourse, such as breaks in speech, laughter, mumbling, involuntary sounds, gestures, body language, etc. as well as content ... Denaturalized transcription is flowing, presenting 'laundered' data which removes the slightest socio-cultural characteristics of the data or even information that could shed light on the results of the study. It accurately describes the discourse, but limits dealing with the description of accent or involuntary sounds. The accuracy relates to the essence of the interview, the meaning and the perceptions that were created and its part in the discourse (p. 232).

Regarding the use of the term naturalized and denaturalized, Skukauskaite (2014) cautions that the terms can be used to refer to polar opposites in term of styles of transcription (p. 8). The oppositional nature of naturalized and denaturalized transcription is apparent when we compare the descriptions above with the one given by Bucholtz (2000):

[a] naturalized transcription is one in which the process of transcription is made less visible through literacization, the privileging of written over oral discourse features. Such transcripts run the risk of failing to call enough attention to linguistic form and its transformation from speech to writing. However, denaturalized transcription, in its faithfulness to oral language, may make speech itself seem alien. This is the paradox of using written texts to represent spoken language. In most written discourse, speech is represented via conventions of naturalization (as in fictional dialogue, newspaper quotations, and so on) (p. 1461).

In order to avoid confusion over terminology, the following discussions will use the descriptions given by Mero-Jaffe (2011).

Each transcription style has its own merit. Kvale (1996) explains that;

verbatim descriptions [or naturalized transcriptions] are necessary for linguistic analyses; the inclusion of pauses, repetitions, and tone of voice are relevant for psychological interpretations of, for example, level of anxiety or the meaning of denials. Transforming the conversation into a literary style [or denaturalized transcription] facilitates communication of the meaning of the subject's stories to readers (p. 166).

For Bucholtz (2000) "it seems clear that there can be no privileged, objective position from which to transcribe speech ... Transcription is inevitably a *creative, authorial* act that has political effects, and many of these effects cannot be anticipated" (p. 1461, emphases added). Kvale (1996) concurs by saying that in the transformation from oral to written mode there is no such thing as true and objective transformation (p. 166). What is most important, according to Lapadat (2000), "is not any particular step in the process, but rather the researcher's *mindfulness* about the problematic aspects of transcription" (p. 217, emphasis added).

Despite these various issues relating to transcription, researchers are usually in agreement in saying that the choice of transcription style should be based on the research purpose or need (Lapadat, 2000, pp. 205-206; D. G. Oliver, Serovich, &

Mason, 2005, p. 5; Skukauskaite, 2014, p. 8) or the audience for the transcripts (Kvale, 1996, p. 170). D. G. Oliver et al. (2005) note that the majority of researchers have used both styles or their permutations, and that the important thing is the researcher's decision-making process (p. 2). Regardless of which transcription style a researcher uses, as a "basic rule in transcription" he or she should "state explicitly in the report how the transcriptions were made" (Kvale, 1996, p. 165).

In addition to concerns regarding transcription styles, researchers should also give consideration to the ethics of transcription. The basic consideration is that participants should neither be harmed nor exploited (Mero-Jaffe, 2011, p. 241). On this issue, Kvale (1996) states that;

interviews may treat sensitive topics in which it is important to protect the *confidentiality* of the subject and of persons and institutions mentioned in the interview ... In sensitive cases, it may be advantageous as early as the transcription stage to mask the identities of the interviewed subjects, as well as events and persons in the interviews that might easily be recognized. This is particularly important if a larger research group is involved and several persons will therefore have access to the transcripts (p. 172, original emphasis).

McLellan, MacQueen, and Neidig (2003) state that the decision to omit sensitive information should be made prior to the transcription stage itself (p. 71). It is also considered to be ethically sound to provide the transcript of the interview to the participant. Mero-Jaffe (2011), by citing the work of Page, Samson, and Crockett (1998), mentions three motives for the sharing of interview transcripts with participants: "politeness or compensation to people who donated their time to the research, validation of the data or findings, and supplying of information and recommendations that could improve conditions by empowering [participants]" (p. 235).

Some caution, however, needs to be taken by researchers in providing the interview transcripts to participants. "Spoken language is constructed and uses terminology which is different from written language; however, when speech is represented as written text, readers evaluate it according to the conventions of written text" (Mero-Jaffe, 2011, p. 240). This situation can have unintended consequences, particularly when the researcher has decided to use a naturalized transcription style. "Some subjects may experience a shock as a *consequence* of reading their own interviews.

The verbatim transcribed oral language may appear as incoherent and confused speech, even as indicating a lower level of intellectual functioning” (Kvale, 1996, p. 172, original emphasis). Mero-Jaffe (2011) gives a similar assertion that;

[w]hile some of the feelings of embarrassment and confusion felt by the interviewees when confronted with the transcript can be attributed to a **fear of damaging their image**, others can be attributed to their **difficulty in coming to terms with the transcript** which, as a written text, has a set of accepted norms different to those of spoken language. These interviewees not only expressed anxiety or embarrassment, but often changed spoken language to written discourse or at least to a more refined discourse by recommending the deletion of sentences and paragraphs that appeared unnecessary (p. 240, original emphases).

Two approaches have been recommended to alleviate this problem. One is by adopting the denaturalized style, or by adding some explanations to the transcripts about the differences between spoken and written language (Kvale, 1996, p. 172).

Other more ‘technical’ aspects of transcription also need to be considered by researchers. There are some cost implications of transcribing interviews (Halcomb & Davidson, 2006, p. 40; Kvale, 1996, p. 169). Cost issues aside, Halcomb and Davidson (2006) have suggested that there are certain advantages for researchers to transcribe their interview recordings, especially in interviews where they have personally been involved; they would have intimate knowledge of the verbal as well as the non-verbal exchanges with the participants during the interviews that would enhance the quality of the transcripts (p. 40). Lapadat (2000) seems to support the suggestion for researchers to do the transcription themselves by stating that “[i]t is advantageous for the researcher to be close to the data” (p. 215) and that “[t]he process of doing transcription also promotes intense *familiarity* with the data, which leads to the methodological and theoretical thinking essential to *interpretation*” (p. 204, emphases added).

After discussing various aspects of transcription, Kvale (1996) concludes that the process, “is a transgression, a transformation of one narrative mode – oral discourse – into another narrative mode – written discourse. To *transcribe* means to *transform*, to change from one form to another” (p. 166, original emphases). Putting transcription in this particular context, Bucholtz (2000) suggests that;

[i]t is, moreover, undesirable to purge all traces of the transcriber from the transcript. We are not machines, but interpreters of texts and our transcripts must necessarily select out the details most important for our analysis. Our goal should not be neutrality but *responsibility*. Ultimately, what is needed is a reflexive discourse analysis in which the researcher strives not for an unattainable self-effacement but for vigilant *self-awareness* (p. 1461, emphases added).

Complementing this suggestion, Bucholtz (2000) explains that:

[a] reflexive transcription practice, then, is one in which the researcher is conscious of her or his *effect* on the unfolding transcript, and the effect of the transcript on the *representation* of speakers whose discourse is transcribed. This self-awareness, at both the interpretive and representational levels, however, is not enough. Discourse analysts must also make these choices *visible* in our research *reports*, not once but repeatedly ... We must be as accountable for the research process as for the research product (p. 1462, emphases added).

Based on the discussions on transcription thus far, it can then be concluded that transcription is an interpretative, rather than simply a clerical task (Kvale, 1996, p. 160). Interpretations will be the main features of the interview analysis stage, which almost always involves some level of coding.

4.6.3 Interview analysis and coding

Analysis of interviews, according to Kvale (1996), “is not an isolated stage, but permeates an entire interview inquiry,” from the interview design, the conduct of the interviews, the transcription stage, and up to the “verification and reporting of the interviews” (p. 205). Besides this pervasiveness of interpretations, as Kvale (1996) named it, there are two other issues affecting the interview analysis of which researchers should always be aware:

- the ‘tension’ between quantitative and qualitative analysis; and
- the theoretical presuppositions, which serve as the basis for the investigation and “provides the context for making decisions about how interviews will be analyzed” (p. 206).

Kvale (1996) also provided an important caveat with regard to methods used in interview analysis, where he stated that;

[t]here are no standard methods of text analysis that correspond to the multitude of techniques available for statistical analysis. This may be due in part to the

relative novelty and the small extent of cross-disciplinary communication about qualitative analysis in the social sciences. The lack of standard techniques of qualitative analysis may, however, also be due to the richness and the complexity of the subject matter. Some general approaches to the analysis of qualitative material – involving different technical procedures – do exist (p. 181).

Gibson and Brown (2009) reached a similar conclusion when discussing the thematic analysis of interviews, that;

no text could ever provide a good definition of why or how such themes should be created in the first place ... This is because the thematic organization of data is not simply a technical matter, but a theoretical and conceptual issue that cannot be codified or abstracted into concrete rules of practice (p. 138).

In addition Kvale (1996) has provided some guidance on the ‘proper’ use of methods in interview analysis, suggesting that;

[*m*]ethod may also be used in the sense of obtaining intersubjectively reliable results. The question then concerns how different readers can arrive at the same meanings when analyzing an interview. This may reflect the common concern that qualitative research leads to as many interpretations as there are researchers (p. 181).

Kvale (1996) has also addressed the issue of intersubjectivity when he considered the control of analysis, as will be briefly discussed later in this section.

Gibson and Brown (2009) offered a useful insight by likening the analysis of interviews to a form of storytelling, where “themes are a useful device for narrative construction” (p. 139). Weaving in van Manen’s (1998) analogy of themes as “knots in the webs of our experiences, around which certain lived experiences are spun” (p. 90), Gibson and Brown (2009) continue by noting that “a theme provides a way of linking diverse experiences or ideas together, and of juxtaposing and interrelating different examples and features of data” (p. 139). Gibson and Brown (2009) also conclude that, “thematic work, in some form or other, is a very common aspect of qualitative enquiry” (p. 138), which led them to the discussion of thematic analysis as referring to;

the process of analyzing data according to commonalities, relationships and differences across a data set. The word ‘thematic’ relates to the aim of searching for aggregated themes within data ... analysis is very varied and might not include this type of thematic work, but there is no doubt that many approaches to analysis do involve some interest in themes (p. 137).

A theme, according to Gibson and Brown (2009) is “a generalized and decontextualized category of contextually specific aspects of social life that become treated as ‘of a generalized type’ in order to compare them with other instances of data that are labelled in the same way” (p. 139). They then continue by describing three aims in thematic analysis, which are:

1. “Examining commonality ... This typically involves finding ways to pool together all the examples from across a data set that can be categorized as ‘an example of x’. These commonalities are then subjected to further analysis and subdivision” (p. 138);
2. “Examining differences ... The aim here is to find and analyze the peculiarities and contrasts within a given data set, and to examine their potential relevance for the specific issue being explored” (p. 138); and
3. “Examining relationships ... This may mean looking at the ways in which different code categories relate to each other, or how particular individual characteristics or differences relate to general themes” (p. 139).

In explaining the same concept by using the word “pattern,” instead of “theme,” Bernard (2006) described analysis as, “the search for patterns in data and for ideas that help explain why those patterns are there in the first place” (p. 452).

Contemporary researchers are assisted by various computer software in conducting analysis of interviews. These CAQDAS (Computer Assisted Qualitative Data Analysis) software can help researchers to focus on interpreting the interview data, rather than the technicalities of coding (Kvale, 1996, p. 174). According to Kvale (1996) these software function as;

textbase managers, storing the often extensive interview transcripts, and allow for a multitude of analytic operations ... [and other features such as] writing memos, writing reflections in the interviews for later analyses, coding, searching for key words, doing word counts, and making graphic displays. Some of the programs allow for on-screen coding and note taking while reading the transcripts. The most common form of computer analysis today is coding, or categorization, of the interview statements (p. 173).

While Gibson and Brown (2009) have stated that;

[t]he value of software for thematic work comes from the simple fact that in these types of analysis, researchers often handle large amounts of data and generate quite complex analytic frameworks that are much easier to work through and

explore using computers. The basic procedures of such analysis, however, are not contingent on computers (p. 138).

Describing the use of software for the analysis of interviews, Kvale (1996) has raised a caveat that;

[t]he use of computers in qualitative analysis could, however, reinforce existing trends toward reifying the transcripts and disregarding their basis in a lived social situation. The current emphasis on coding may lead to analyses of isolated variables abstracted from their context in live interpersonal interactions. With the technical ease of coding and of analyzing isolated variables, computer software could further a neglect of the contextual base of interview statements in the narratives of lived conversations (p. 174).

Researchers should be continuously aware of this issue while they are analyzing interviews with the aid of CAQDAS.

A related issue regarding the analysis of interviews is coding, which according to Saldaña (2013) is a way to organize similar interview data into categories (p. 9), which basically is the act of attaching labels to segments of transcripts (Mitchell, 2014, p. 5). Saldaña (2013) described a code as “a researcher-generated construct that symbolizes and thus attributes interpreted meaning to each individual datum for later purposes of pattern detection, categorization, theory building, and other analytic processes” (p. 4) and that it comes frequently in the form of “a word or short phrase that symbolically assigns a summative, salient, essence-capturing, and/or evocative attribute for a portion of language-based or visual data” (p. 3). Gibson and Brown (2009) have emphasized that a code is essentially a conceptual device to describe the commonalities found in the data; and that in the process of coding, labels can be attached to any forms of data, including interviews, observations, visual and textual data (p. 141). Saldaña (2013) also gave additional examples of data to which labels can be attached, such as interview transcripts, field notes, journals, documents, drawings, artifacts, photographs, video, Internet sites, and e-mail correspondence (p. 3). According to Richards (2015), “the act of coding has gathered the material that brought the idea and put a pointer to it, so the researcher can return there to think some more” (p. 113). To avoid any confusion, it is worth noting that the following discussion of the analysis of interviews will adopt the convention made by Saldaña (2013), whereby “[a] theme is an *outcome* of coding, categorization, or analytic reflection, not something that is, in itself, coded” (p. 14, original emphasis).

Saldaña (2013) has also cautioned researchers that “[c]oding is not a precise science; it is primarily an interpretative act ... [and] that a code can sometimes *summarize, distill, or condense* data, not simply *reduce* them” (p. 4, original emphases). The researcher has some level of influence in the coding process. As Sipe and Ghiso (2004) stated, coding always involves judgment calls and is influenced by the researcher’s subjectivities, personalities, predisposition, quirks (pp. 482-483). Gibson and Brown (2009) support this assertion arguing that coding involves ‘following hunches’ (p. 143). As for Henn, Weinstein, and Foard (2006), “coding is a process for which there are no rules, merely guidelines. Every category we develop, and every segment of the data we choose to code within a category, will be a subjective choice” (p. 202).

Returning to the more technical aspect of coding, some consideration is needed regarding what to code and/or how to code. Saldaña (2013) mentions that things are grouped together “not just because they are exactly alike or very much alike, but because they might also have something in common – even if, paradoxically, that commonality consists of differences” (p. 6). Gibson and Brown (2009) suggest the following “common reasons for creating codes” in the coding process: “[s]omething occurs more than once,” “[s]omething is said with intensity or strong emphasis,” “[p]arties in a conversation very readily agree on something or something goes uncommented or unnoticed,” “[p]eople disagree,” and “[m]istakes occur;” which they add that “*their relevance will be dictated by the research questions being asked and by the contexts of data being dealt with*” (p. 144, original emphases). Hatch (2002) has offered some characterizations of patterns in interview data based on similarity, difference, frequency, sequence, correspondence, and causation.

Furthermore there are two types of code according to Gibson and Brown (2009): “[a] priori codes are defined prior to the examination of data, while empirical codes are generated through the examination of the data itself” (p. 140). A priori codes, “are created to categorize aspects of a more general prespecified interest ... [and] directed towards exploring a particular issue, often ... formulated in the form of a research question” (p. 142), while empirical codes;

emerge through the exploration of data. They may be a derivative of an a priori category or something entirely new that was not foreseen in the original research formulation ... Empirical codes may also emerge as distinct interests that were unforeseen in the original formulation of interests (p. 143).

Harding (2015) has supported the view that both types of codes;

are not entirely separate: even when using empirical codes, it is likely that the researcher's prior knowledge of the subject will influence decision making to some extent. Similarly, when using apriori codes, it is almost certain that some issues and themes will emerge that were not anticipated from the researcher's prior reading in the subject area (p. 2).

These empirical codes that “emerge from data throughout the process of analysis,” and which naturally cause “the coding framework [to be] continually shaped by emerging information,” is one of the features that differentiate thematic analysis from content analysis, where a “set of codes to capture those characteristics is developed and finalized before analysis begins” (Spurgin & Wildemuth, 2009, p. 298).

The coding process itself, said Saldaña (2013) “is a cyclical act ... [with subsequent cycle] further manages, filters, highlights, and focuses the salient features of the qualitative data record for generating categories, themes, and concepts, grasping meaning, and/or building theory” (p. 8). Due to this iterative nature of coding, when a code evolves during the process it might be necessary to revisit the previously-coded data to see if they are affected by the new definition (Gibson & Brown, 2009, p. 146). Harding (2015), also taking account of the iterative nature of coding, offers the following steps for using *empirical codes*:

1. “Identifying initial categories based on reading the transcripts.”
2. “Writing codes alongside the transcripts.”
3. “Reviewing the list of codes, revising the list of categories and deciding which codes should appear in which category.”
4. “Looking for themes and findings in each category” (p. 3).

Codes or categories that are produced in the coding process are mostly “fuzzy categories,” which Tesch (1990) describes as having “fuzzy boundaries” as a result of which “[a]ny given object or concept can be a member of a category to a certain degree” and as a consequence “categories might overlap” (p. 136). During the coding process, Saldaña (2013) reports that the codes can also;

become more refined and, depending on [the researcher's] methodological approach, more conceptual and abstract. Some of ... [the original] codes may be later subsumed by other codes, relabeled, or dropped altogether. As [the coding]

progress ... there may be some rearrangement and reclassification of coded data into different and even new categories (p. 11).

As for “[t]he final number of [codes] ... should be held to a minimum to keep the analysis coherent, but there is no standardized or magic number to achieve” (p. 24).

A “useful tip when developing codes is to make codes as elemental as possible, which is to say, to err on the side of being more basic” (Mitchell, 2014, p. 6). Abbott (2004) has used the analogy of “decorating a room” to describe the coding process, where “you try it, step back, move a few things, step back again, try a serious reorganization, and so on” (p. 15). Due to the complicated nature of coding, Gibson and Brown (2009) recommend to keep a log of the addition, elimination, merging, and evolution of codes (p. 147).

As a rule of thumb, MacQueen, McLellan, and Milstein (2009) have suggested 30–40 as the maximum number of codes that can be handled by any coder at one time (p. 218). Gibson and Brown (2009) provide a useful tip by stating that;

[t]he iterative nature of coding means that it is an extremely time-consuming and messy process ... One of the tricks to efficient and effective analysis is to be able to keep one’s eye on the bigger picture of the research, and remember that the details of coding are only relevant and useful as far as they help the researcher to deal with their research issues (p. 146).

Focusing on the bigger picture (research question or objectives) will also help researchers in identifying the most relevant codes or categories. “And when the major categories are compared with each other and consolidated in various ways, you begin to transcend the ‘reality’ of your data and progress toward the thematic, conceptual, and theoretical” (Saldaña, 2013, p. 12). As means of controlling the analysis, Kvale (1996) recommends couple of approaches;

1. “*Multiple Interpreters* ... When different meanings are found by different analysts, they may be worked together into a dialogue leading to an intersubjectivity agreement. Or the different meanings found can be reported side by side, accompanied by the reasons for the divergent interpretations” (p. 208, original emphasis); or
2. “*Explication of Procedures* ... [where] the researcher present examples of the material used for the interpretations and explicitly outline the different steps of the analysis process” (p. 209, original emphasis).

In concluding the discussions on interview analysis and coding, it is worth noting Saldaña's (2013) view, that "[c]oding is only the initial step toward an even more rigorous and evocative analysis and interpretation for a report" (p. 8); and the conclusion by Gibson and Brown (2009) that coding is "only one part of the process of thematically analyzing data. A significant part of the aims of thematized analysis involve working out the relationships between code categories, and the significance of such relationships for the development of theoretical conceptions and statements" (p. 148). Nevertheless "[t]he development of an original theory is not always a necessary outcome for qualitative inquiry" (Saldaña, 2013, p. 13).

Chapter 5. Content analysis

5.1 Data collection 1 (2014-2015)

Several limitations in this study need to be mentioned regarding the efficacy of content analysis when applied to institutional repository websites. Firstly, the content analysis was applied to the *metadata* and *documents* contained in the repositories to gather information relevant to the characteristics and structure of the repositories. The content analysis was *not* applied to the individual *works* to gather information pertaining to the *topic* or *subject* of each work. As an example, when analyzing a repository no attempt was made to gather information on the subject areas covered by the works contained therein. Instead information was gathered on the various types of work represented (e.g. published, theses/dissertations, teaching materials, etc.).

Secondly, a repository's 'contents' reside behind a database, which means that they are not always available in the form of static web pages that can be analyzed as a *whole* representation of the website. They need to be retrieved using the interface that enables users to explore the 'contents' of the repository, either through the use of keywords/key-phrases in the search function or by browsing the hierarchical structure of the repository's content. It is also the nature of repositories to contain digital objects numbering from hundreds to hundreds of thousands, and these numbers can change (increasing or decreasing) as they are being investigated. In this circumstance it is not possible to analyze the *whole* 'contents' of a repository. A content analysis can only be completed by taking *samples* of the 'contents' (records), which can then be used to formulate *indicative* conclusion(s).

A further potential limitation is that data collection was undertaken by a sole coder, whereas Neuendorf (2002) has recommended the use of "at least two coders, to establish intercoder reliability" (p. 51). Thus the study does not fully satisfy Neuendorf's recommendation in this regard.

The *sampling frame* used in this study was several online resources (directories and/or lists) relating to institutional repositories: Webometrics' Ranking Web of Repositories (<http://repositories.webometrics.info/en/Asia/Indonesia>, July 2014 edition); Open

Directory of Open Access Repositories (OpenDOAR, <http://opendoar.org>); and Registry of Open Access Repositories (ROAR, <http://roar.eprints.org>). These online resources were used to compile a list of Indonesian higher education institutional repositories. Some other online resources were also identified, such as: Repositories 66 (<http://maps.repository66.org>) and OAIster (<http://www.oclc.org/oaister.en.html>). However investigation has revealed that their use did not provide any additional information to the ones that were already identified using Webometrics, OpenDOAR, and ROAR. Another tool was also explored, namely the Pangkalan Data Pendidikan Tinggi (Higher Education Database, <https://forlap.ristekdikti.go.id/perguruan tinggi>), an online database relating to higher education institutions maintained by the Directorate General of Higher Education under the Indonesian Ministry of Research, Technology, and Higher Education. No additional relevant information was found in this online database. The researcher has decided to conduct the survey on all the repositories listed on Webometrics, OpenDOAR, and ROAR since the total number is not large.

The *sampling unit* used in this content analysis is the individual and respective website of the repositories. The consolidated list has produced 58 Internet addresses (URLs) of Indonesian higher education institutional repositories. This number was obtained by applying filter for country = “Indonesia” on all three online lists mentioned above. The list obtained was then further refined by removing a number of repositories for various reasons, such as:

- the repository was undergoing a trial phase;
- being a subsidiary repository that is far less comprehensive than the primary one, as applies to some institutions that have more than one repository; or
- having a main or subsidiary repository that was integrated into the library OPAC, which makes it extremely difficult to conduct an assessment of the repository alone.

Table 5.1 provides detailed information on institutions with multiple repositories, along with the reasons for the inclusion or exclusion of each repository in or from the study.

Table 5.1 Indonesian higher education institutions with multiple repositories and reasons for the inclusion in or exclusion from the content analysis study

Institution Name	Internet Address of IR	Listed in / Software	Notes for Inclusion/ Exclusion
Politeknik Elektronika Negeri Surabaya (PENS)	repo.eepis-its.edu	OpenDOAR / Eprints	Included
	ies.eepis-its.edu/prosiding	OpenDOAR / Eprints?	Excluded. Trial phase ¹ (not official?)
Universitas Islam Negeri (UIN) Sunan Ampel	eprints.uinsby.ac.id	Webometrics / Eprints	Included
	digilib.uinsby.ac.id	Webometrics, OpenDOAR / Eprints	Excluded. Much less comprehensive.
	eprints.sunan-ampel.ac.id	OpenDOAR / Eprints	Excluded. Inaccessible. ²
Petra Christian University	repository.petra.ac.id	Webometrics, OpenDOAR / Eprints	Included
	dewey.petra.ac.id/catalog/ft.php	OpenDOAR / In-house	Excluded. Integrated into the library's OPAC. ³
Telkom University ⁴	repository.tcis.telkomuniversity.ac.id	Webometrics / Eprints	Included
	repository.tass.telkomuniversity.ac.id	Webometrics / DSpace	Included
	batik.tebs.telkomuniversity.ac.id	Webometrics / unknown	Excluded. Inaccessible.
University of Indonesia	repository.ui.ac.id	Webometrics / In-house	Included
	eprints.lib.ui.ac.id	OpenDOAR / Eprints	Excluded. Not an IR. ⁵

¹ This repository seems to be dedicated to storing seminar papers of the annual Industrial Electronics Seminar (IES).

² Revisited on Jul 11, 2015, the URL has been forwarded to the institution's website (<http://www.uinsby.ac.id>).

³ The IR is integrated into the library's OPAC, which makes it difficult to assess its content for analysis.

⁴ Each Faculty/School in the institution seems to be developing its own IR independently of one another.

⁵ The EPrints seems to be used for collaboration platform, instead of an IR.

Out of the initial 58, six were found to be inaccessible after three attempts to access them on different dates during the period of the content analysis (November 19th, 2014 to February 1st, 2015), leaving only 52 in the study. Considering that this number of repositories was a manageable size, it was decided that instead of taking samples from this 'population,' all 52 remaining repositories would be included in the content analysis.

The content analysis was undertaken by visiting each repository website and gathering mainly qualitative (non-frequency) data. A *coding schedule* in a form of a table (using spreadsheet application) was prepared to capture the *coding units*. Table 5.2 presents

the coding units/variables. In addition qualitative observations were also undertaken – separate from the coding schedule – to assess local practices of Indonesian higher education institutions in populating and managing their repositories.

Table 5.2 Coding schedule containing variables for content analysis of Indonesian higher education institutional repositories

Variables	Options	Type
Demographics		
Acronym	N/A	Text
Institution or IR Name	N/A	Text
Year (of establishment)	N/A	Numeric
Status	State	Numeric (1 or empty)
	Private	Numeric (1 or empty)
Region	Java	Numeric (1 or empty)
	Bali-Nusa Tenggara	Numeric (1 or empty)
	Sumatra	Numeric (1 or empty)
	Kalimantan	Numeric (1 or empty)
	Sulawesi	Numeric (1 or empty)
	Maluku	Numeric (1 or empty)
	Papua	Numeric (1 or empty)
# Digital Objects	Manual	Numeric
	OpenDOAR	Numeric
	ROAR	Numeric
IR Software	DSpace	Numeric (1 or empty)
	Eprints	Numeric (1 or empty)
	GDL (Ganesha Digital Library)	Numeric (1 or empty)
	Other/In-house	Numeric (1 or empty)
Source/List Used	WEBO (Webometrics)	Numeric (1 or empty)
	OpenDOAR	Numeric (1 or empty)
	ROAR	Numeric (1 or empty)
Date of Inspection	N/A	Date
Structural Features		
Exploration Tools	B (Browse)	Numeric (1 or empty)
	S (Search)	Numeric (1 or empty)
Links	LI (Link to Institutional Website)	Numeric (1 or empty)
	LL (Link to Library Website)	Numeric (1 or empty)
	NL (No Link to Either)	Numeric (1 or empty)
Access Statistics	Y (Yes)	Numeric (1 or empty)
	N (No)	Numeric (1 or empty)
Collection Naming Practices	Good	Numeric (1 or empty)
	Fair	Numeric (1 or empty)
	Poor	Numeric (1 or empty)
Content Categories		
Types of Works	PUB (Published)	Numeric (1 or empty)
	UNPUB (Unpublished)	Numeric (1 or empty)
	THESES (Theses/Dissertations)	Numeric (1 or empty)

Variables	Options	Type
	TEACH (Teaching Materials)	Numeric (1 or empty)
	STDW (Student Works)	Numeric (1 or empty)
	UREC (University Records)	Numeric (1 or empty)
	SPEC (Special Collections)	Numeric (1 or empty)
	OTHER	Numeric (1 or empty)
Author Naming Convention	Y (Yes)	Numeric (1 or empty)
	N (No)	Numeric (1 or empty)
Standardized Access Points	Standardized Subject Headings	Numeric (1 or empty)
	Free-text Keywords	Numeric (1 or empty)
	Mix	Numeric (1 or empty)
	Not Available	Numeric (1 or empty)
Language of Access Points	English	Numeric (1 or empty)
	Indonesian	Numeric (1 or empty)
	Mix	Numeric (1 or empty)
Public Availability of Full-Text	All/Most (n > 90%)	Numeric (1 or empty)
	Some (25% ≤ n ≤ 90%)	Numeric (1 or empty)
	Minimal (0% < n < 25%)	Numeric (1 or empty)
	No Full-Text (0%)	Numeric (1 or empty)
Openness	OA (Open Access) - Public Availability of Full Text > 90%	Numeric (1 or empty)
	NOA (Not Open Access) - Public Availability of Full Text ≤ 90%	Numeric (1 or empty)

The *context unit* of this content analysis was the individual records (metadata) in the repository website. The individual records (metadata) might be sufficient as a ‘deciding’ factor but they might not be sufficient as a ‘consistency’ factor, as asserted by Ha and James (1998, p. 467), since different repositories would have a different number of (metadata) records.

Specific characteristics of each repository were collected from the repository websites through direct inspection. These included the following:

- the name of the repository software in use, with the intention to see which software is/are most commonly used;
- the presence of search and/or browse functionalities. Repositories with only search or browse functionality might suggest lack of development;
- the provision of link(s) from the repository website to the library and/or the main institutional website. The absence of such links may imply an ‘isolation’ of the repository; and

- the provision of access statistics, indicating some level of service for the content contributors, who would be able to see the level of usage of their contributed works.

The year of establishment was included as additional information that might be useful in assessing whether older repositories were also the more ‘mature’ ones. This information was obtained in most cases from OpenDOAR and/or ROAR. Status of the institutions (state or private) and their locations in different regions in Indonesia were also assessed in order to recognize that there have been significantly different stages of development in each region, which might have some influence on the maturity of repositories. These data were gathered from Pangkalan Data Pendidikan Tinggi.

The number of digital objects indicated the size of the repository and was manually acquired by either browsing the index for “Year” of publication then summing the number of digital objects from each individual year (EPrints), or browsing the collections available and then adding up the number of digital objects from individual collections (DSpace and others). Similar information was also gathered from OpenDOAR and ROAR – where available – as a form of comparison. The size of the repository could also be used as one of the indicators for the maturity of the repository.

Author naming conventions were also assessed, since one important aspect of an institutional repository is the author’s formal affiliation with the relevant institution. It is in the best interests of institutions (and authors) to ensure that there is no ambiguity concerning the identity of authors represented in a repository. In the course of this survey the practice with regard to the naming of authors was assessed using several criteria. Naming practices were solely assessed according to how consistently institutions implemented rules or policies regarding names of author in the repository metadata. In repositories using EPrints, this could easily be assessed by browsing the contents based on ‘Author,’ which is one of the default options provided by the software. Criteria used to assess the implementation of author naming conventions were consistency with regard to:

- the formatting of names: for example, placement of first and last names, and/or the use of space and other punctuation marks;
- the use of upper and lower case;

- the use of academic and other titles in names, and the way they are used or written; and
- the use of student or staff identification numbers in names, and the way they are used or written.

Consistent implementation of naming conventions will help in avoiding variations of the name used to indicate a single person/author.

In order to facilitate discoverability of their contents, repositories need to provide adequate access points to their records. Access points are typically incorporated into the metadata of the works collected in the repositories. Therefore assessments on these access points provide useful information on how ‘discoverable’ individual works might be within the repository. Firstly, the availability of subject heading(s) and/or keyword(s) was assessed, along with the use of standardized entries for subject headings. Similar to the case for author naming conventions, assessment of subject heading(s) was made solely on the basis on how consistently institutions implemented rules in their entries for subject headings. This could be determined by taking some samples of record. Secondly, the language used in the access points was also assessed. The premise was that the presence of English as subject heading(s) or keyword(s), used to describe content that was mostly in Indonesian, would suggest that the repository has intended its content to be accessed or utilized by a broader (international) audience.

Collection naming practices, to a certain extent, could influence discoverability of contents by enhancing or inhibiting navigability for users. Repositories that used *single criterion* to categorize contents *at a certain level of collection hierarchy* would enable users to easily navigate that repository. The criterion could be based on Type of Work (published journal articles, teaching materials, university records, etc.); Type of Media (book, booklet, flyer, poster, etc.); Type of Content (text, image, video, etc.); or other aspects. Repositories that used *multiple criteria* to categorize contents *at a certain level of collection hierarchy*, on the other hand, tend to confuse users. In this study the categories for collection naming practices are as follows:

- Good: collection naming used a single criterion at a certain level of collection hierarchy;

- Fair: collection naming used more than one criterion at a certain level of collection hierarchy. The practice might cause some guesswork when navigating the collections, but in general the practice did not confuse users; and
- Poor: collection naming uses multiple criteria at a certain level of collection hierarchy. The practice definitely causes confusion for users in navigating the collections.

The characteristics used to evaluate and categorize content (types of work) in this study require further explanation. Content in repositories can be broadly categorized into published and unpublished works (grey literature). However in order to better understand how higher education institutions in Indonesia develop and utilize their repositories, it is necessary to describe the unpublished works using narrower categories, as shown in Table 5.3. In this study the category for published works includes conference articles/papers or proceedings, including proceedings that were published by an author’s own institution. Although conference proceedings may not, by some measures, be considered to be ‘proper’ publications, for the purpose of this study they are considered to have been through a standardized process of selection and editing, including in some cases, peer-review. In this study theses and dissertations – which are commonly categorized as unpublished works – are put into a separate category (THESES), and the ‘journal-style’ articles resulting from students’ theses are categorized as Theses and Dissertations since there is no peer-review involved in the editorial or production process.

Table 5.3 Characteristics used to evaluate and categorize content in the content analysis of Indonesian higher education institutional repositories

Type	Criteria
PUB Published Works	<ol style="list-style-type: none"> 1. Peer-reviewed journal articles (including articles published by the author’s institution) 2. Articles in conference proceedings (including papers published by the author’s institution) 3. Books or book sections (including books or sections published by the author’s institution)
UNPUB Unpublished Works	<ol style="list-style-type: none"> 1. Unpublished/internal research reports (submitted internally for reports or for tenure requirements) 2. Unpublished institutional research reports 3. Audio/video recordings or text of professoriate inaugural speeches/orations

Type	Criteria
THESES Theses and Dissertations	<ol style="list-style-type: none"> 1. Non-degree (diploma) theses 2. Undergraduate theses 3. Master theses 4. Ph.D. theses (Dissertations) 5. Technical/Working Papers 6. Includes also journal-style articles derived from students theses and/or presentation slides of the thesis defense (if available)
TEACH Teaching Materials	<ol style="list-style-type: none"> 1. Classroom presentation slides 2. Course/class-related (includes laboratory-based) materials
STDW Student Works	<ol style="list-style-type: none"> 1. Works by students outside the scope covered by THESES and UREC 2. Course/class-based works/assignments 3. Includes visual resources (photographs, drawings, computer renderings, animations, etc.) produced by students as part of assignments 4. Works produced by students as part of their participation in non-course-based activities such as competitions, internship and/or volunteer work, etc.
UREC University Records	<p>The emphasis of this category is on the evidential value of the documents, instead of the informational value (topic/subject) of the works.</p> <ol style="list-style-type: none"> 1. Internal campus newspapers, magazines, bulletins, or newsletters, including student-published journals or media 2. Promotional materials (flyers/posters/brochures) of campus notifications, events, facilities, services, programs/activities, or issue-based campaign 3. Photography/audio/video recordings of campus notifications, events, facilities, services, programs/activities, or issue-based campaigns 4. Newspaper clippings (includes screen captures in JPG/PDF of online news) 5. Audio/video/text of general speeches (except professoriate inaugural speeches/orations, which are categorized as UNPUB) 6. Institutional or departmental constitutions, by-laws, reports, guidelines, presentation slides, and other formal documents 7. Documents (presentations, handouts, flyers, etc.) used in campus events/activities.
SPEC Special Collections	<ol style="list-style-type: none"> 1. Digitized or born-digital resources related to special/rare collections and/or local collections
OTHER Other/Misc.	<ol style="list-style-type: none"> 1. Documents that are not related to the institution or its intellectual output or its unique collections (SPEC) but might be used or stored for reference purposes. Example: government documents, ministerial decrees, scanned books or eBooks; of which authors are not from the institution, etc. 2. Documents that are not the main works but supplemental to the main works and cannot be categorized as UREC since the emphasis is on the informational value instead of evidential value. Example: conference presentations (of a research/paper/article). The presentation slides can be stored in the same record as the main works (articles) in the repositories.

Information on the types of work was gathered by taking at least three sample records from each smallest unit of collection in the repository, and inspecting the metadata and the full-text documents (digital objects). It was only necessary to detect the *existence* of the different types of work in the repository, and no attempt was made to calculate *item* (digital objects) *counts* for each type of work.

Finally, the availability of full-text versions of works in a repository was assessed based on the criteria laid out in the coding variables table. The “Openness” variable was added for the sole purpose of making it easier for the researcher to count repositories with (presumed) open access policies in place (full-text found in >90% of the sampled records) and repositories without open access policies (full-text found in <=90% of the sampled records).

This content analysis study was mostly conducted by gathering non-frequency (qualitative) data and some qualitative observations on how the repositories are populated and managed. The study has also included the “Public Availability of Full-Text” variable. While gathering the data for this variable, assessments on local practices in the management and population of the repository was also conducted. In some cases the researcher has identified ‘perceived anomaly,’ unusual practices in managing or populating the repository. In these cases, to investigate further the nature of the ‘perceived anomaly’ additional sample records were examined other than the standard of three sample records taken as mentioned above. These *additional* sample records had been taken into account in the calculation of the percentage of full-text documents in the respective repository. Thus the *total number of records sampled* in one repository might or might not be identical to other repositories. Strictly speaking this was not an ideal situation since it might have introduced a bias; or at least the public availability of full-text content is not— strictly speaking — comparable between the repositories surveyed. This condition had been identified as an additional limitation to the one mentioned earlier in the section regarding context units.

Additional qualitative assessments of each repository – outside of the coding schedule – was undertaken and recorded in order to provide additional general assessments about the characteristics of individual repositories, and therefore the state of Indonesian higher education institutional repositories in general. Each repository was scrutinized in order to note any local practices in the management and population of

that repository. As much as possible, general descriptions were made of each cluster of content (collection) in the repository along with examples to provide evidence. The outcomes of this part of the survey are only provided as a summary in the results section below and incorporated into the Chapter 8 (Discussions), without reference to particular institutions.

5.2 Results from data collection 1

The full list of the 52 repositories surveyed in this study can be found as an external dataset in Microsoft Excel format (Liauw, 2015). Subset or summary tables and graphics will be used in this section for the discussions to highlight aspects of the repositories surveyed.

The 52 repositories contained 547,451 records and were located in all regions of Indonesia except for Maluku (Mollucans) and Papua, regions in which there were no repositories registered in Webometrics, OpenDOAR, or ROAR. Most repositories (76.9%) were found in Java, where 56.82% of the nation's population live (Statistics Indonesia, 2014). The prevalent language of works in the repositories is Bahasa Indonesia with a number of works also in English. Figure 5.1 illustrates the distribution of higher education repositories in Indonesia and the population of each region.

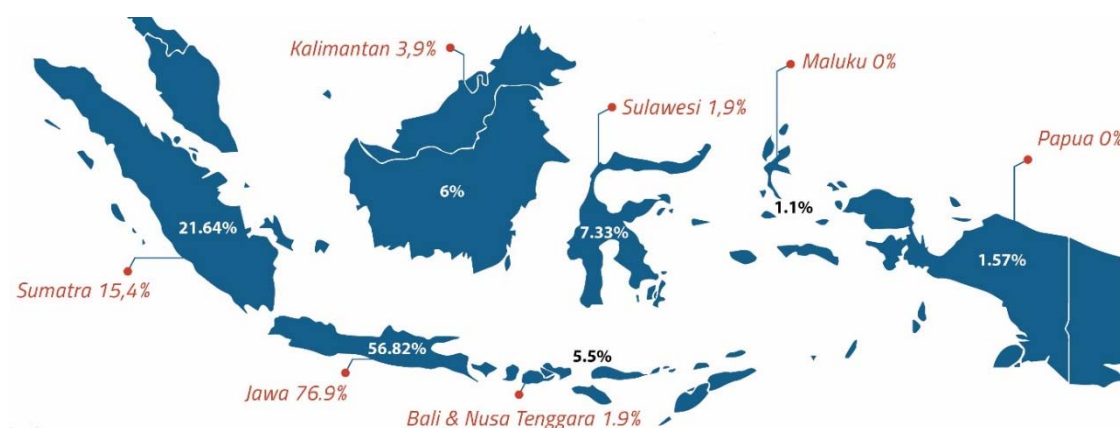
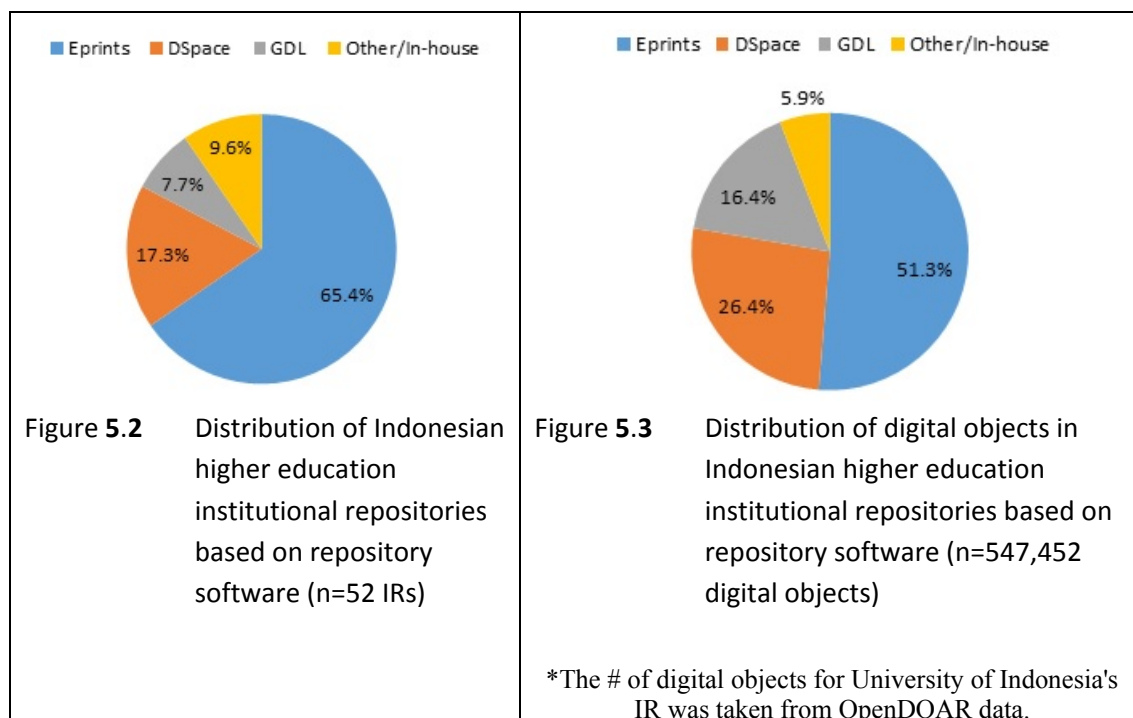


Figure 5.1 Distribution of institutional repositories (in red) in Indonesia and the population of the region (in black or white)

Among the 52 repositories surveyed, 30 (57.7%) were associated with state universities, and 22 (42.3%) with private higher education institutions. The majority of the repositories were using EPrints (n=34, 65.3%); followed by DSpace (n=9, 17.3%); Ganesha Digital Library/GDL (n=4, 7.8%), and other or in-house-developed

software (n=5, 9.6%). Figure 5.2 indicates the distribution of the number of repositories based on repository software, while Figure 5.3 indicates the distribution of digital objects (records) based on the repository software.



In terms of number of digital objects, the numbers gathered through manual counting generally support the data provided by OpenDOAR. Of the 52 repositories, OpenDOAR provided a number of digital objects for 32. Out of these 32 repositories, only 12 were found to have a relatively substantial difference (more than 100 items) in terms of the number of digital objects (see Table 5.4). Ten repositories have less than 100 items difference between the manual counting and OpenDOAR data, and ten repositories have an exact match. Data accessed from ROAR during this study appeared to be out of date and was not useful for comparisons.

Table 5.4 List of institutions with a repository, of which number of Digital Objects have more than 100 item counts difference between manual counting and data derived from OpenDOAR in Data Collection 1

Institution	Region	Status	# Digital Objects			
			Open DOAR	Manual	Difference	% Diff.
Bogor Agricultural University (IPB)	Java	State	61,979	58,323	-3,656	-5.90
Sepuluh Nopember Institute of Technology (ITS)	Java	State	34,751	33,033	-1,718	-4.94
University of Surabaya (UBAYA)	Java	Private	19,211	18,807	-404	-2.10
Diponegoro University (UNDIP)	Java	State	39,582	38,687	-895	-2.26
Sunan Kalijaga Islamic State University (UINSUKA)	Java	State	14,579	14,383	-196	-1.34
Hasanuddin University (UNHAS)	Sulawesi	State	12,111	11,640	-471	-3.89
Sriwijaya University (UNSRI)	Sumatra	State	3,373	3,227	-146	-4.33
North Sumatera University (USU)	Sumatera	State	40,287	40,026	-261	-0.65
Malang Muhammadiyah University (UMM)	Java	Private	14,790	14,289	-501	-3.39
Walisongo State Islamic University (UWS)	Java	State	3,215	2,956	-259	-8.06
Gunadarma University (GNDRM)	Java	Private	9,016	1,408	-7,608	-84.38
Syarif Hidayatullah State Islamic University (UIN-SYARIF)	Java	State	21,974	23,533	1,559	+7.09

In terms of public availability of the full-text documents, based on the sample records retrieved during this study, 14 repositories (26.9%) provide all or most documents in full-text; 16 (30.7%) provide some or a representative number; 17 (32.7%) provide a small number only, and five (9.6%) do not provide any full-text documents (metadata only). The majority of repositories (n=39; 75%) has not implemented any author naming conventions, and only 13 repositories (25%) have done so.

Most repositories (n=47, 90.3%) provide access points in the form of either standardized subject heading entries; free-text keywords (n=16, 30.7%), or both (n=15, 28.9%). Realizing that most (if not all) repositories will find it difficult to link their repository software to another database containing standardized subject headings, this study only assessed whether the subject heading entries used in a repository adheres

to certain ‘rules’ or guidelines, or simply allowed free-text keywords to be entered without reference to any guidelines. Some repositories might have separate field/metadata for subject headings and keywords, while some might place them both in the same field/metadata. Interestingly, there are five repositories (9.6%) that provide neither subject headings nor keywords; or at least do not make them accessible to users through the repository’s user interface. In terms of the language used for these access points, the majority (43 repositories, 82.6%) use English subject headings and/or keywords. Of these 43, 19 (36.5%) use English only, while 24 (46.1%) use English and Bahasa Indonesia subject headings and/or keywords. Figure 5.4 indicates some characteristics of the repositories discussed above.

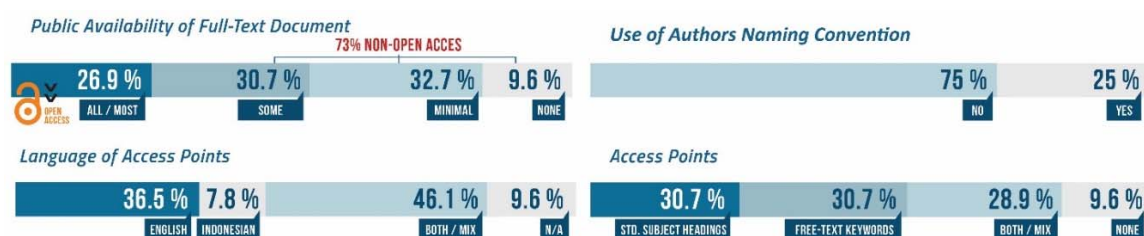


Figure 5.4 Snapshots of some aspects of Indonesian higher education institutional repositories

In terms of exploration tools, almost all repositories (one exception only) have search and browse functionalities. One has a search function only. 28 repositories (53.84%) provide a link to neither the institutional nor the library website; eight (15.38%) provide a link to the institutional website only; four (7.7%) provide a link to the library website only; and twelve (23.08%) provide links to both. Most repositories (45, 86.54%) do not provide access or usage statistics, with only seven repositories (13.46%) doing so. Some repositories might have software limitation issues in terms of the provision of usage statistics.

The most widely included type of work are Theses and Dissertations (n=44, 84.6%), followed by Published Works (n=42, 80.8%). These are followed in turn by Unpublished Works (n=27, 51.9%) and University Records (n=26, 50%). Teaching Materials are only included in 20 (30.8%), and Student Works in eight (15.4%). Special Collections comprise the least commonly encountered type of work of those specified, being found in one repository only (1.9%). ‘Other’ types of work (those not fitting into the specified categories) were found in ten (19.2%) of the repositories.

Figure 5.5 reports the distribution of the types of work in Indonesian higher education institutional repositories.

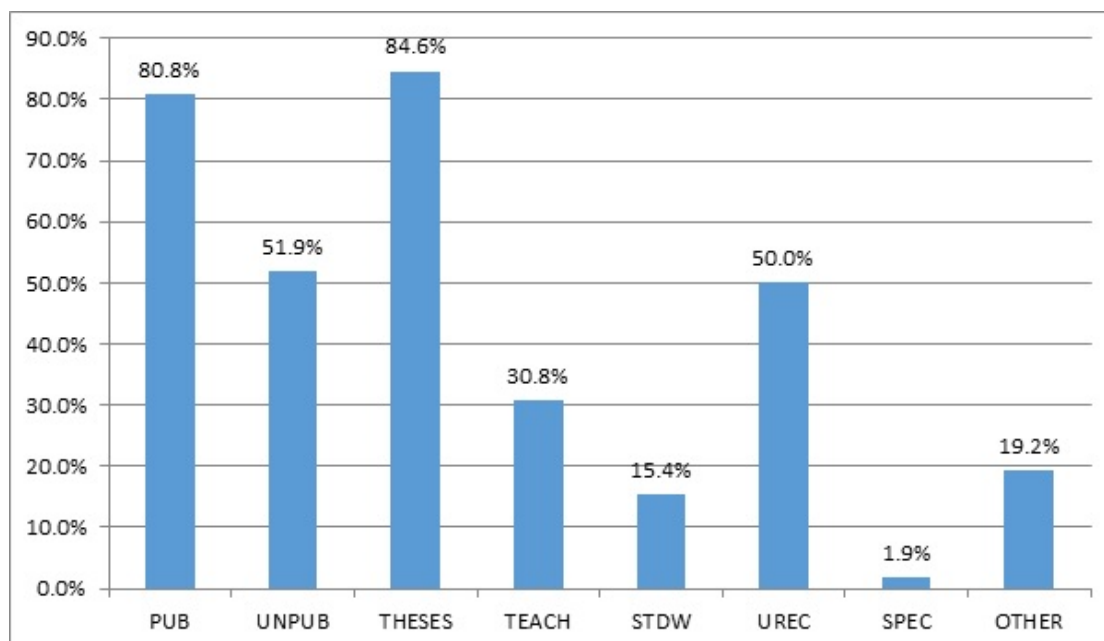


Figure 5.5 Distribution of the Types of Work found in Indonesian higher education institutional repositories (n=52)

The collection naming practices deserve additional discussion. The initial criteria set in the planning stage (Good, Fair, and Poor) did not seem to be adequate to accommodate the various local practices in naming the collection. Firstly, the initial criteria were set to assess the usefulness of the collection names in assisting users to quickly grasp the scope of each collection in the respective repository by looking at the collection names. In other words, this collection naming is practically equivalent to the hierarchical structure of the collections, the naming of directories or folders *per se* in the respective repository. Further in the data collection phase, it was found that in some repositories the collection names or the hierarchical structure of the collections was straightforward and easy to comprehend. However these repositories had some local practices that were deemed confusing for users. For example, some repositories put documents of the same work into separate records. This practice usually involved the main documents (Microsoft Word or PDF format) and the presentation slides related to the main documents. Thus, although the collection naming practices were considered to be “Good,” the overall collection management practices of these repositories could potentially create confusions for users. Upon reflection it was apparent that the initial criteria were no longer useful for assessing the navigability of

repositories and needed to be expanded to include local practices as mentioned above. On the other hand, expanding the initial criteria to include local practices may make them too broad and too time consuming to be executed; especially since – as mentioned earlier in the Data Collection section – local practices of Indonesian higher education institutions in populating and managing their repositories would only be gathered as additional qualitative observations.

Secondly, based on further observations regarding the repository software used, an observable trend emerged that certain software (EPrints) has provided generic categorization or hierarchical structure for collections based on the organizational structure of the institution, while also providing the option to completely modify the structure based on other aspects. This generic structure has helped in providing an easy-to-navigate environment. Most repositories that used EPrints have kept this generic structure to manage their collections, with very few exceptions. It was observed that other software (DSpace, GDL, or Other/In-house) allows users to define the collections freely without any generic template based on organizational structure. Thus, repositories that have used EPrints have tended to get more positive assessments in term of navigability.

Based on both aspects mentioned above it was decided to discard the assessment on collection naming practices from this content analysis study since the results would definitely be skewed by the nature of the software used. Additionally it would not add valuable information to the study since collection naming practices relate to the browsing of repository content; a feature used more likely by repository managers than users.

In terms of qualitative observations, it was found that a number of repositories provide only metadata and abstracts of theses, journal articles, etc. Other practices limiting access to the full copy of documents were observed. Some institutional repositories:

- upload only certain parts of works;
- upload all parts of (whole) works (in separate files) but limit public access to some or significant parts of the works; or
- impose an embargo period, often without a specified end-date (in some cases documents with an apparently expired embargo period still cannot be accessed).

Further, a number of apparently local and ‘non-standard’ practices in the management and population of repositories were encountered, including:

- compressed or password-protected files/documents;
- student documents that still included supervisor’s comments;
- textual documents stored as multiple image files;
- works that were separated into different records based on file format;
- broken links; and
- confusing use of categories, such as categorizing promotional materials (institutional profiles) as books merely because the materials are in the form of book(let)s.

5.3 Data collection 2 (2016-2017)

For the second phase of the content analysis study, the preliminary data gathering from Webometrics’ Ranking Web of Repositories (July 2016 edition), OpenDOAR, and ROAR was conducted in November 2016. This preliminary data gathering collected information relating to each repository, namely the URL and the number of digital objects (records). It was observed that thirteen (13) repositories that were listed in the July 2014 version of Webometrics’ Rankings of World Repositories were no longer in the July 2016 version. These thirteen repositories were still included in this second phase of the content analysis study since they were still listed in one or both of the other lists (OpenDOAR and/or ROAR), which tend to be more static since both were merely lists, not rankings.

The consolidated list produced 92 Internet addresses (URLs) of Indonesian higher education institutional repository websites. Institutions with multiple repositories (multiple URLs) listed in any one or more of the above lists needed to be assessed further by visiting all the listed URLs and determining which repository(ies) was/were to be included in this second phase of data collection (DC2). Similar cases as discussed in the first data collection period (DC1) were found, such as: repositories in a trial phase; subsidiary repositories; and repositories that were integrated with the library OPAC. However in DC2 a new case was found, which involved an institution (Duta Wacana Christian University) using a repository for managing students’ theses and dissertations, and another repository for managing other types of work; with both

repositories containing significant number of records and continuously updated. Since the types of work analyzed in this study involved both categories of content (see Table 5.3), it was decided that both repositories would be analyzed and the results combined to represent a single repository for the institution.

Table 5.5 lists a number of institutions with multiple repositories and the reason(s) for the inclusion in or exclusion from the longitudinal study (DC2).

Table 5.5 Indonesian higher education institutions with multiple repositories and reasons for the inclusion in or exclusion from the *longitudinal* content analysis study

Institution Name	Internet Address of IR	Listed in / Software	Notes for Inclusion/Exclusion
University of Indonesia	lib.ui.ac.id	ROAR / In-house	Included. ^a
	repository.ui.ac.id	Webometrics / In-house	Excluded. No longer updated. ^b
Duta Wacana Christian University	sinta.ukdw.ac.id/sinta	Webometrics / In-house	Included. ^c
	www.ukdw.ac.id/repository	ROAR / In-house	Included. ^d
Malik Ibrahim State Islamic University	repository.uin-malang.ac.id	OpenDOAR / Eprints	Excluded. Too few records. ^e
	etheses.uin-malang.ac.id	OpenDOAR / Eprints	Included. ^f
Sepuluh Nopember Institute of Technology	digilib.its.ac.id	Webometrics / GDL	Included. ^g
	repository.its.ac.id	ROAR / Eprints	Excluded. Too few records. ^h
Sunan Kalijaga State Islamic University	digilib.uin-suka.ac.id	Webometrics / Eprints	Included. ⁱ
	difarepositories.uin-suka.ac.id	ROAR / Eprints	Excluded. Too few records. ^j

^a The IR was integrated to the library OPAC. However the user interface of the OPAC still made it possible to analyze only the IR part.

^b The IR was included in DC1 (2014/2015). However based on the email correspondence with the IR Manager at the Central Library of University of Indonesia (December 12, 2016), this IR was no longer updated.

^c The IR was used to manage students' theses and dissertations only. This IR was included in DC1 (2014/2015).

^d The IR was used to manage other types of work, other than students' theses and dissertations. This IR was not included in DC1 (2014/2015) since it did not exist at the time.

^e The IR was included in DC1 (2014/2015) but was no longer included in DC2 (2016/2017) since it had too few records compared to the other (new) IR by the same institution.

^f The IR was a new IR by the same institution. This IR did not exist in DC1 (2014/2015) but was included in DC2 (2016/2017).

^g This IR was included in DC1 (2014/2015) and DC2 (2016/2017).

^h The IR was a new IR by the same institution. This IR did not exist in DC1 (2014/2015) and was not included in DC2 (2016/2017) either since it had very low number of records.

ⁱ This IR was included in DC1 (2014/2015) and DC2 (2016/2017).

^j The IR was a new IR by the same institution and used only to manage contents relating to eBooks for difable (disabled) students. This IR did not exist in DC1 (2014/2015) and was not included in DC2 (2016/2017) either.

Out of the initial 92 repositories, after the exclusions of a number of them for the reasons mentioned earlier (see Table 5.5) and the fact that seven repositories were inaccessible after three attempts to access them on different dates during the period of DC2, 81 remained. Considering that this number of repositories was still a manageable size, as was the case in DC1, it was decided that instead of taking samples from this ‘population’ that all 81 remaining repositories would be included in DC2.

The fact that DC2 was a repeat of DC1 (longitudinal study) also created complications due to some changes that had occurred in a number of institutions between the execution of DC1 and DC2. Those changes were as follows:

1. The Graduate Program of Management and Business, Bogor Agricultural University Repository (IPB-MB) had slightly changed its URL from <http://repository.mb.ipb.ac.id> to <http://repository.sb.ipb.ac.id>;
2. Indonesian Art Institute of Denpasar (ISI-DPS) had slightly changed its URL from <http://repository.isi-dps.ac.id> to <http://repo.isi-dps.ac.id>;
3. Darul ‘Ulum University (DARUL) had slightly changed its URL from <http://digilib.unipdu.ac.id/beranda> to <http://eprints.unipdu.ac.id>, with the old URL is now being used for the library OPAC;
4. Surabaya State Electronic Polytechnic (PENS) had switched the URLs between its main and subsidiary repositories;
5. Malik Ibrahim State Islamic University (UIN-MALIKI) was included in DC1 but was excluded in DC2 since it had too few records compared to a new repository by the same institution (UIN-MALIKI2), which did not exist during DC1. The new repository was included in DC2;
6. Medan State University (UNIMED) changed its repository software from Ganesha Digital Library (GDL) in DC1 to EPrints in DC2; and
7. Telkom University of Art and Design Major (TELKOM-AD) and Malang State University (UN-MLG) both experienced problems with their repositories, where all the links to the digital objects were broken. This condition had rendered manual inspection of the full-text documents to be impossible, thus automatically putting them into the “No Full-Text” category in the “Public Full-Text Availability” variable.

Some of the changes above might seem merely ‘cosmetic’ in nature but could potentially have serious consequences. Changing the URL or switching URLs, for example, could potentially render previous URL obsolete and any (outside) references or links to the content of the repository broken. Some other changes were also substantial and could potentially introduce some kind of bias into the longitudinal study since they have rendered strict comparisons between the results from DC1 and DC2 impossible to undertake with complete accuracy. This is another further limitation of this study. This limitation, however, applies only for DC2, but is not applicable for DC1.

DC2 was carried out in the period between December 1, 2016 and January 20, 2017; using the same method and tools, including the coding variables, as DC1. Thus details in the execution of DC2 that are similar to DC1 do not need to be repeated here.

There were, however, some slight differences between DC1 and DC2. In DC1, the OpenDOAR-sourced data was collected without noting the last-updated date of the data. This last-updated data has been collected in DC2, albeit only as additional information and was not part of the original variables in the coding schedule. The Collection Naming Practices variable was no longer included in DC2 due to reasons elaborated at the “Results from Data Collection 1” section. Other notable situations and the decisions taken during DC2 were as follows:

- some repositories (EPrints) that used to provide the “Browse by Type” feature for users have now disabled this option, making it difficult to sample records based on “Types of Work” in the repositories. An alternative technique for sampling the records was taken, which was by browsing by “Year” then grouping records by “Type.” Examples of this case are Sunan Kalijaga State Islamic University’s (UINSUKA) and Sebelas Maret State University (UNS) repositories;
- some repositories, such as the Computer Science College (STIKOM) and Duta Wacana Christian University (UKDW), used Viewer applications that enabled users to view or read the document(s) online but prevented them from downloading. Such conditions of access still qualified the repositories for inclusion in the study as if they have allowed the downloading of the full-text document(s);
- some repositories in the survey provided access statistics in two different ways: both general users (public) and contributors could access them, or only contributors

could access them. In this study, both conditions satisfied the requirement for the “Access Statistics” criterion since the main purpose of this criterion was to see whether the repositories provided this service mainly to their contributors or members. An example of this case was the Syarif Hidayatullah State Islamic University’s (UIN-SYARIF) repository, which provided the access statistics only to its contributors or members;

- some repositories (regardless of the software platform) populated the Subject fields (metadata) with free-text (uncontrolled) keywords. This study categorized such repositories as not using any “Standardized Subject Heading;” and
- one particular repository, the Telkom Economic and Business School (TELKOM-EBS), did not provide any user interface for browsing, hence making it almost impossible to be surveyed. However a workaround was adopted by using the keyword “a” in the search box, which apparently then listed all records in the repository (21,497 records).

5.4 Results from data collection 2

The full list of the 81 repositories analyzed in DC2 can be found as an external dataset in Microsoft Excel format (Liauw, 2017). Subset or summary tables and graphics are used in this section for the discussions to highlight aspects of the repositories surveyed.

The 81 repositories contained 1,240,879 digital objects (records), more than double the number of records in DC1 (547,451). Distribution of repositories was similar to the distribution in DC1, with Java having the highest concentration of 74.07% repositories (76.9% in DC1), and there being no repository in Maluku (Mollucans) and Papua regions.

In terms of number of digital objects, as in DC1, the numbers gathered through manual counting in DC2 generally support the data provided by OpenDOAR. OpenDOAR reported the number of Digital Objects included in 46 of the 81 repositories listed. Out of these 46 repositories, 33 were found to have a relatively substantial difference (more than 100 items) in term of number of Digital Objects compared to the OpenDOAR-provided data (see Table 5.6). Ten repositories have 100 or fewer items difference between the manual counting and OpenDOAR data, and three repositories have an exact match. Data from ROAR during this study was applicable for one repository

only, thus was not useful for comparisons. Only six repositories out of 46 had smaller number of records (manual counting) compared to the OpenDOAR-provided data.

Table 5.6 List of institutions with repository, of which number of Digital Objects have more than 100 item counts differences between manual counting and data derived from OpenDOAR in Data Collection 2

Institution	Region	Status	# Digital Objects			
			Open DOAR	Manual	Difference	% Diff.
Bogor Agricultural University (IPB)	Java	State	70,008	70,277	269	+0.38
Sepuluh Nopember Institute of Technology (ITS)	Java	State	*38,217	40,859	2,642	+6.91
Diponegoro University (UNDIP)	Java	State	44,794	44,180	-614	-1.37
Sebelas Maret State University (UNS)	Java	State	26,697	28,116	1,419	+5.31
Medan State University (UNIMED)	Sumatra	State	13,452	17,779	4,327	+32.17
Yogyakarta State University (UNY)	Java	State	39,998	40,606	608	+1.52
Sunan Kalijaga Islamic State University (UINSUKA)	Java	State	21,121	21,941	820	+3.88
Hasanuddin University (UNHAS)	Sulawesi	State	20,893	21,671	778	+3.72
University of North Sumatera (USU)	Sumatra	State	59,688	60,217	529	+0.88
Padjadjaran University (UNPAD)	Java	State	*5,932	23,945	18,013	+303.66
Walisongo University (UWS)	Java	State	5,411	5,946	535	+9.89
Dian Nuswantoro University (UDINUS)	Java	Private	12,716	15,242	2,526	+19.86
Gunadarma University (GNDRM)	Java	Private	*9,016	1,944	-7,071	-78.43
STIKOM Surabaya (STIKOM)	Java	Private	1,568	1,741	173	+11.03
Sunan Ampel State Islamic University (UINAMPEL-DL)	Java	State	10,835	11,290	455	+4.2
Syarif Hidayatullah State Islamic University (UIN-SYARIF)	Java	State	29,680	30,457	777	+2.62
Ahmad Dahlan University (ADAHLAN)	Java	Private	1,570	1,724	154	+9.81
Bengkulu University (UBENKULU)	Sumatra	State	10,824	10,971	147	+1.36
Satya Wacana Christian University (UKSW)	Java	Private	8,066	8,402	336	+4.16

Institution	Region	Status	# Digital Objects			
			Open DOAR	Manual	Difference	% Diff.
Widya Mandala Catholic University (WIMA)	Java	Private	5,860	6,369	509	+8.69
Tulungagung Islamic State Institute (IAIN-TAGUNG)	Java	State	2,304	2,745	441	+19.14
Jember University (UNEJ)	Java	State	47,232	48,575	1,343	+2.84
Sultan Syarif Kasim State Islamic University (UIN-SUSKA)	Sumatra	State	7,514	10,136	2,622	+34.89
Antasari State Islamic Institute (ANTASARI)	Kalimantan	State	5,450	852	-4,598	-84.37
Yogyakarta Arts Institute of Indonesia	Java	State	1,022	1,141	119	+11.64
North Sumatera State Islamic University (UIN-SUMUT)	Sumatra	State	680	958	278	+40.88
Syiah Kuala University (UNSYIAH)	Sumatra	State	17,985	8,494	-9,491	-52.77
Maulana Malik Ibrahim State Islamic University (UIN-MALIKI2)	Java	State	4,277	4,839	562	+13.14
Soegijapranata Catholic University (SOEGIJA)	Java	Private	10,324	11,445	1,121	+10.86
Atma Jaya University (ATMAJAYA)	Java	Private	9,744	10,313	569	+5.84
Makassar State University (UNMKSAR)	Sulawesi	State	895	1,727	832	+92.96
Yogyakarta PGRI University (UPGRI-YOGYA)	Java	Private	965	1,131	166	+17.2
Sanata Dharma University (SANATA)	Java	Private	6,821	8,402	1,581	+23.18

* OpenDOAR-provided data was older than Jan 1, 2016

Most other criteria (variables) being surveyed in DC2 have demonstrated similar characteristics as in DC1. Several notable differences were:

- the rising dominance of EPrints as the software of choice, which increased from 65.38% in DC1 to 72.84% in DC2;
- the 7.53% increase in repositories that provided access statistics (for contributors only, or both contributors and users), from 13.46% in DC1 to 20.99% in DC2;
- the 7.1% increase in repositories that implemented some level of author naming convention, from 25% in DC1 to 32.1% in DC2;
- the significant 16.83% increase in repositories that provided mixed-mode of standardized access points (standardized subject headings and free-text keywords), from 28.85% in DC1 to 45.68% in DC2;
- the substantial 9.41% increase in repositories that used a mix of Bahasa Indonesia and English as the language of access points (in the standardized subject headings and free-text keywords), from 46.15% in DC1 to 55.56% in DC2; and
- the very substantial 22.15% increase in the presence of unpublished works (UNPUB), from 51.92% in DC1 to 74.07% in DC2.

Comparisons for all criteria (variables) between DC2 and DC1 can be seen in Figure 5.6 and Figure 5.7.

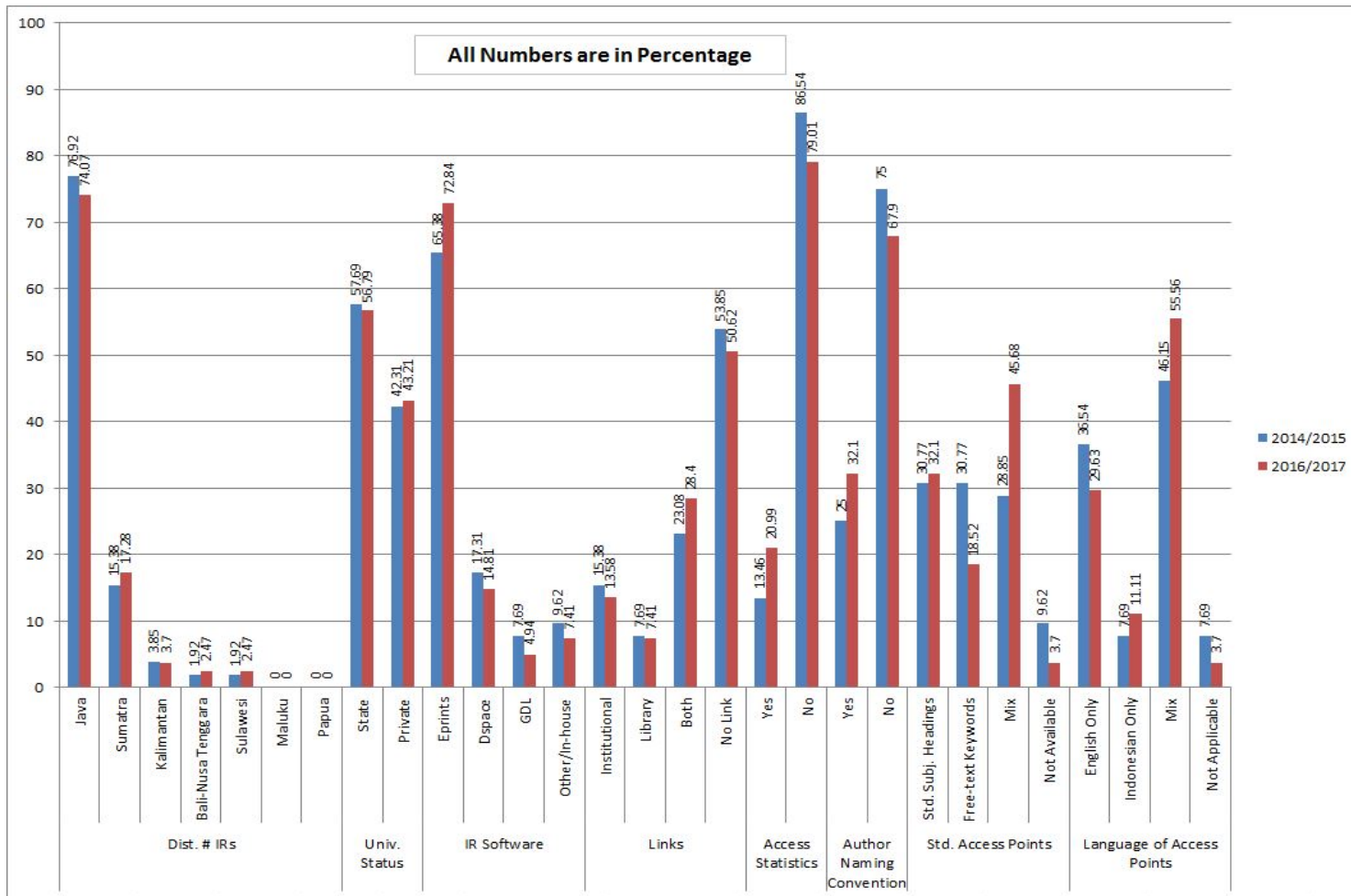


Figure 5.6 Comparisons of some criteria (Distribution of IRs, University Status, IR Software, Availability of Links, Availability of Access Statistics, Author Naming Convention, Standardized Access Points, and Language of Access Points) between DC1 and DC2

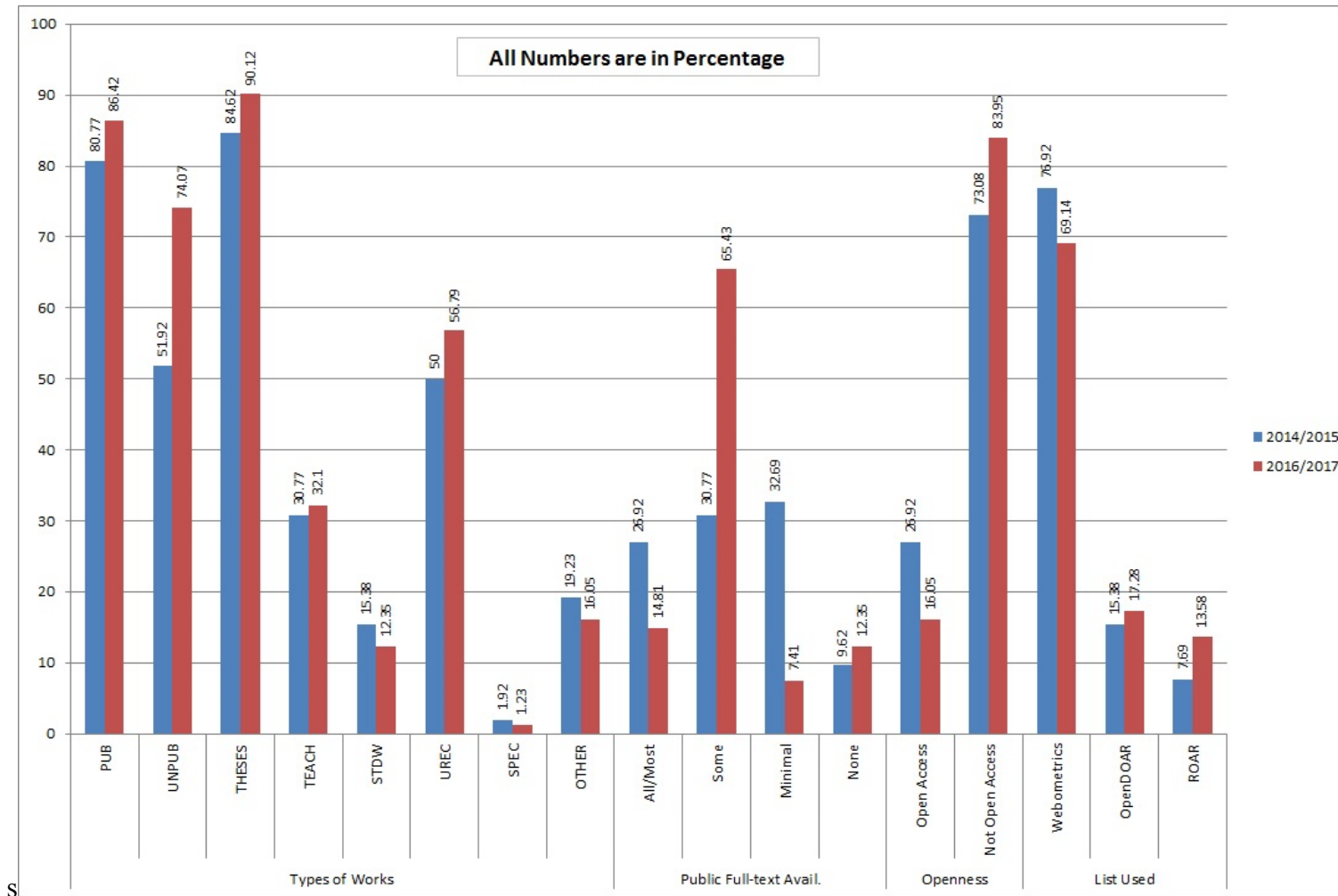


Figure 5.7 Comparisons of some criteria (Types of Work, Public Full-text Availability, Openness, and List Used) between DC1 and DC2

Further to the data presented above, some notes need to be mentioned. Firstly, repositories of Airlangga University (AIRLANGGA) and Muhammadiyah University Ponorogo (UNMUH-PONO), which were part of DC2, did not exist during DC1. At the time of DC2 these two repositories were found to be using Eprints. However, some of the digital content in the repositories used a particular file naming convention for Ganesha Digital Library (GDL). For example, some of the digital objects (files) found in Airlangga University's repository used "gdlhub-gdl-" prefix, and Muhammadiyah University Ponorogo's repository used "jkptumpo-gdl-" prefix.

Secondly, three repositories demonstrated a functionality problem in that, while the repositories could be accessed and searched/browsed, all the links to the full-text documents were broken. The researcher did not make another attempt to check the broken links at another time. Two of these repositories have been mentioned earlier, namely Telkom University of Art and Design Major (TELKOM-AD) and Malang State University (UN-MLG). Another repository, Brawijaya University (UNIBRAW), also experienced similar technical problems but was not mentioned earlier since this repository was not part of DC1, hence it had no influence in the comparability of results between DC1 and DC2. This type of technical problem was not encountered in any of the repositories surveyed in DC1.

Thirdly, University of Indonesia's repository provided a good opportunity to test the credibility of the record sampling technique employed in this content analysis study. The repository has separated each collection into two categories and labelled them respectively with "Open" where full-text document(s) of each work is/are publicly accessible, and "Membership" where full-text document(s) of each work is/are accessible *only* to members (internal/campus members). Manual inspections on each category, by taking some random sample records, had demonstrated that this accessibility status of the full-text document(s) of each work has been consistently enforced. Based on these categories, exact calculations could be made to identify the number of records where the full-text document(s) of the each work is publicly accessible. This number could then be divided by the total number of records in the repository to produce the percentage of records in the repository to which public access was granted. The figure obtained was 40%. This figure was very close to the figure

obtained by taking random samples of at least three records in each of the lowest hierarchies of collection in the repository (43.9%).

There were, however, some complicating factors in terms of the data collection for the “Public Full-Text Availability” variable. Firstly, there were some legitimate reasons why certain works in repositories could not be accessed, which should be prevented from affecting the assessments for the “Public Full-Text Availability” variable. For example, when examining the Satya Wacana Christian University’s (UKSW) repository, it was found that some records prevented public access to the full-text document(s) due to incomplete administrative document(s), such as author consent page and author’s no-plagiarism-statement page. These reasons are explicitly stated in the relevant records. In this case, the study has excluded these records from being counted in determining the value for the “Public Full-Text Availability” variable.

Secondly, the sampling method, which required a minimum of three records to be randomly sampled from each of the lowest hierarchies of collection in the repository, would introduce an unintended bias in repositories that have very ‘skewed’ distribution of collections. Two cases in DC2 could serve as examples: Computer Science College (STIKOM) and Sunan Ampel State Islamic University (UINAMPEL-DL). Table 5.7 shows the distribution of collections in both repositories.

Table 5.7 Distribution of collections in Computer Science College’s (STIKOM) and Sunan Ampel State Islamic University’s (UINAMPEL-DL) institutional repositories

Type of Work	STIKOM		UINAMPEL DL	
	# of Records	%	# of Records	%
Article	20	1.15	332	2.94
Book	3	0.17	71	0.63
Book Section	11	0.63	8	0.07
Conference or Workshop Item	190	10.91	261	2.31
Thesis	1,517	87.14	10,615	94.02
Other	0	0	3	0.03
TOTAL	1,741	100	11,290	100

Both of these repositories have very ‘skewed’ distribution of collections, where the Thesis collection consisted of 87.14% and 94.02% respectively. In repositories with very ‘skewed’ distribution of collection such as these, taking the same number of sample records from each collection could potentially misrepresent the characteristics

of the repositories, especially those that relied on the number and composition of the sampled records, which in this study it related to the “Public Full-Text Availability” variable. For example, Computer Science College’s (STIKOM) repository has five different collections. Assuming that the study took three sample records from each collection, there would be fifteen sample records in total; giving each sample record an equal weight of 6.67%. Two sampled records from the “Book” collection (with the least number of records) that didn’t provide public access to the full-text document(s) of the respective work would have been sufficient to reduce the repository’s degree of openness as much as 13.33% to the 86.67% level. In reality, when taking into account the distribution of collections in this repository, these two records would have only been worth 0.11%; keeping the repository’s degree of openness at 99.89%. On one hand, had the study stuck rigidly to the same number of sampled records in each collection, the result would not have been representative of the repository being surveyed. On the other hand, had the study strived to provide true representation of *all* the collections in a repository, it would have necessitated the taking of *too many* sample records in the dominant collection to maintain equal weighting among the sampled records; a task which was impossible to undertake manually.

As a compromise of the two difficult choices mentioned above, this study adopted a ‘middle ground’ approach, which enabled it to represent all collections while being at the same time possible to be done manually. This approach consisted of two steps. In the first step, a minimum of three sample records were selected as usual; resulting in a calculated percentage for the degree of openness of the repository. In the second step, a number of additional records was selected randomly from the dominant collection(s) to determine the consistency of public accessibility status of the full-text document(s) of each work in the collection. In the case where accessibility status has been applied consistently to *all* or *most* of these *additionally-sampled records*, then the percentage for the degree of openness for the repository should be:

- determined *only* by the additionally-sampled records from the dominant collection(s) if the dominant collection(s) singly or collectively comprised of 90% or more of the whole repository contents; or
- determined by the sampled *and* additionally-sampled records from the dominant collection(s) if the dominant collection(s) singly or collectively comprised of less than 90% of the whole repository contents.

In the case where accessibility status has *not* been applied consistently to the additionally-sampled records, then *only* the calculation from the first step was taken as the percentage for the degree of openness of the repository. This approach was not adopted in DC1 since no repository with extremely-skewed collection was detected at that time.

Thirdly, there were technical differences in the field execution of the survey between DC1 and DC2 in terms of the data collection for the “Public Full-Text Availability” variable. In DC2 all the URLs of the sampled records were recorded and categorized into two categories:

1. records that provided public access to full-text document(s) of each respective work; and
2. records that provided no document (metadata only), or provided document(s) for only certain part(s) of each respective work, or provided document(s) with restricted access (for members only).

These numbers were then used to produce an exact figure (to two decimal places) for the “Public Full-Text Availability” variable. As a comparison, in DC1 the figures (in percentage) for the “Public Full-Text Availability” variable were approximations, rather than an exact percentage figure. In DC1 the URLs of the sampled records were not recorded, instead only URLs of the sampled records that showed some ‘anomalies’ were recorded as evidence.

Some notable observations on the direction in which Indonesian higher education institutional repositories are heading in terms of open access were as follows:

- Bogor Agricultural University (IPB): full-text document(s) for journal articles in this repository used to be restricted only for members (in DC1) but are now set to be publicly accessible;
- Indonesian University of Education (UPI): public accessibility of full-text document(s) in this repository had dropped significantly from > 90% in DC1 to < 25% in DC2; and

- Muhammadiyah University Surakarta (UMS): public accessibility of full-text document(s) in this repository dropped significantly from > 90% in DC1 to 0% in DC2 due to the members-only accessibility of all its collections. The repository only allowed public access to document(s) from certain (limited) parts of the work, such as the cover, table of contents, abstract, and references.

Other notable general observations were:

- a ‘new’ university records-type of document (UREC) emerged in DC2, which is internal/institutional peer review form; a form used in the peer review conducted by colleagues from the same institution for scholarly works that are not published in journals but are accepted by DIKTI – with much lesser credit – for the tenure process of lecturers. These documents were detected in Parahyangan University (UNPAD), Duta Wacana Christian University (UKDW), Bina Nusantara University (BINUS), Lambung Mangkurat University (UNLAM), and Sanata Darma University (SANATA). Their appearance usually accompanies the relevant scholarly works, which were available either in their entirety or only part(s) of the whole works; and in some cases even in the absence of the scholarly works themselves, albeit the description of the main works in the metadata;
- several new repositories had very low number of records, namely: Banten State Institute of Islamic Studies’ (IAIN-BANTEN) repository with only twelve records and Sadra Institute of Islamic Philosophy’s (STIF-SADRA) repository with only 34 records; and
- six repositories were only accessible on the second or third attempt (on different dates), suggesting some degree of instability in the technical infrastructure of the repositories. This condition was not encountered in DC1. What made this situation interesting was the fact that these institutions are medium or large institutions, which arguably should have better technical infrastructure to support their repositories:
 - ✓ Telkom Economics and Business School (TELKOM-EBS)
 - ✓ Sunan Ampel State Islamic University (UINAMPEL-DL)
 - ✓ Darul 'Ulum University (DARUL)
 - ✓ Pelita Harapan University (UPH-JKT)
 - ✓ Soegijapranata Catholic University (SEOGIJA)
 - ✓ Pasundan University (PASUNDAN)

Chapter 6. Online survey

6.1 Data collection

The survey was conducted utilizing an online survey platform, Qualtrics, for which Curtin University has an institutional subscription. The online survey component of this study was conducted between May 15, 2015 and August 17, 2015. The target audience were academics in Indonesian higher education institutions that had been part of the previous content analysis studies.

6.1.1 The Survey: Platform, pilot, and questions

Preliminary work was undertaken by creating a ‘mock up’ survey using Qualtrics. The mock survey provided the researcher with opportunities to familiarize himself with Qualtrics’ user interface and features. The next step was to create a trial survey consisting of questions relating to Indonesian higher education institutional repositories, targeted to academics. This trial survey was then used for a pilot survey, which was conducted between March 23 and April 13, 2015, by sending emails containing the relevant URL to 21 colleagues, who were academics affiliated with Indonesian higher education institutions. The pilot survey was conducted to ascertain that the questions and terms used in the survey were understood correctly by the participants. Most colleagues spent less than ten minutes in completing the survey, with one colleague needing 18 minutes to complete it, reporting that he spent most time on questions with Likert Scale response options.

There was some valuable input obtained from the pilot survey. Firstly, each academic in Indonesian higher education institutions has two different statuses related to his/her job. One status is called *golongan*, which literally translates into “group” or “echelon.” This status only applies to the academic’s relationship to his/her affiliated institution. This status relates more toward managerial issues, such as how long he/she has been working in the institution, whether he/she has or is currently occupying a certain managerial position, etc. Another status is referred to as *pangkat*, which literally translates as “rank.” This status is bestowed by DIKTI, is recognized nationwide, and reflects an academic’s rank in the national academic tenure system. The *pangkat* was

selected as a question for this survey since it is more standardized and recognized by DIKTI, while the *golongan* can vary from institution to institution, which could potentially create confusion for participants. In addition, the survey relates more to the academic's scholarly status than his/her managerial status. Secondly, some academics were not familiar with the term "institutional repository" although they recognized it after being given a definition or description. It was therefore determined to be essential that the survey provides a description, or at least definition, of institutional repositories to participants at its commencement.

Based on the feedback obtained to the pilot survey, an operational survey was constructed and made available for participants. A 'printed' version of the survey is provided in Appendix A, which has been formatted to represent as closely as possible the survey participants' view of the online version in the Qualtrics platform. Nevertheless the 'printed' version has limitations in that it cannot show any 'skip' and/or branching capability as in the online version. Figure 6.1 compensates for this deficiency by providing an illustration that reflected the 'flow' of the survey as it was experienced by participants.

The survey first collected demographic data (Q2 to Q14), where – among others – participants' age was requested in the form of year range (Q4). The use of year range provided several advantages. Firstly, the participants would presumably feel more comfortable to select year range, instead of a particular year, even though no personally identifiable information was collected in the survey without their consent. Secondly, the year range would provide the researcher with fewer and manageable response options, compared to a numerical input that could potentially span a very long range of response options. A ten-year year range was selected under the consideration that ten years age difference would potentially start to indicate a difference in generational characteristics. Similar considerations were made for the "How long have you been working for your CURRENT institution?" question (Q10), only with shorter five-year range for the response options.

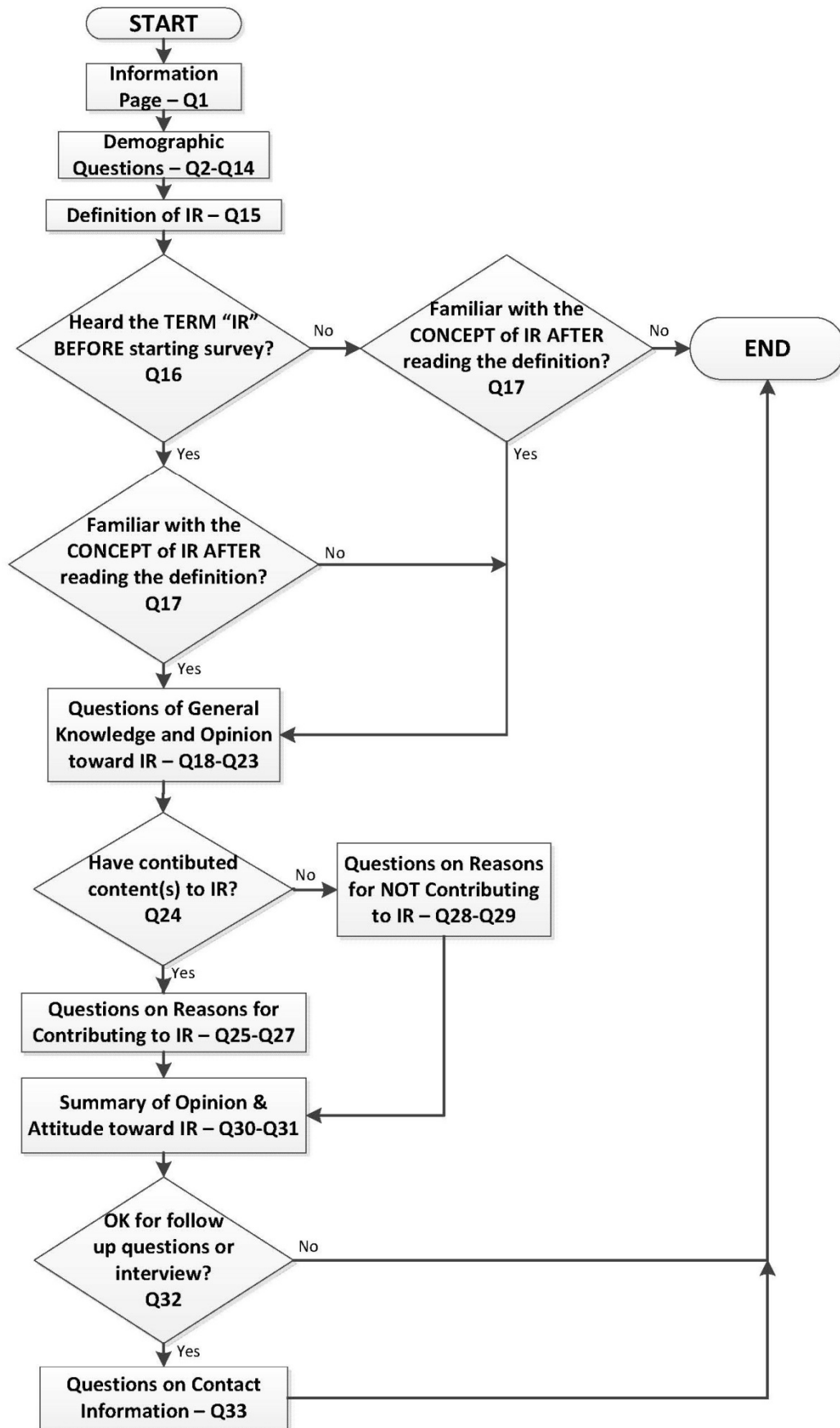


Figure 6.1 The flow of the survey at Qualtrics online survey platform

Status of the participant's institution (Q8, state vs. private) was requested in order to provide some level of mapping to the previous content analysis studies. As with the case for the geographical location of the institution (Q9), where the response options have been mapped to the previous content analysis studies. Proficiency in reading (Q5) and writing (Q6) in English, as well as the participant's language preference in reading scholarly works (Q14), were requested to provide data for possible comparisons. Other demographic questions were related to the participant's profession as academics (lecturers or researchers). Q12 in particular asked the participants about their current status in the academic tenure track with response options provided in Indonesian since the tenure track in Indonesia uses academic stratification that is very different than most English-speaking countries.

Research participants were then presented with a definition of an institutional repository (Q15), a slightly-modified version of McDowell's (2007, para. 22) list of materials in institutional repositories. Participants would then answer two questions:

1. whether they have heard the *term* "Institutional Repository" *before* starting the survey (Q16); and
2. whether they are familiar with the *concept* of "Institutional Repository" *after* they read the definition presented to them (Q17).

In cases where participants answered "No" to both questions, the survey was considered complete; leaving the survey with only the participants' demographic data. This filter was introduced to remove participants who had no familiarity whatsoever with institutional repositories with a view to reduce bias from arbitrary answers. For other participants the survey would continue by asking questions regarding their general knowledge and opinion on repositories (Q18 to Q23). Another question on language (Q23), in particular whether the language of the contents in a repository influences the participant's decision to use it or not, was asked.

The next question asked whether a participant had contributed contents created/authored by him/herself to the repository owned or managed by his/her institution (Q24). Based on the participants' answer (Yes or No), he/she would then be given a different set of questions to explore the reason(s) for him/her contributing or not contributing content to an institutional repository. Q25 to Q27 were presented to participants who answered "Yes" to Q24. Q28 to Q29 were presented to the ones

who answered “No.” Both groups of participants were then directed to the same set of questions (Q30 to Q31) that summarized their personal opinions and attitudes toward institutional repositories.

The final part of the survey asked each participant whether he/she would welcome any follow up questions or a possible interview (Q32). The survey ended for participants who answered “No” to this question, while for the ones who answered “Yes” the survey would open an online form (Q33), where they could enter their contact information such as name, email, phone, etc.

All of the response options in Q25 – with one exception – were adapted from response options provided by Markey et al. (2007) in their census of institutional repositories in the United States (MIRACLE Project). A written permission was obtained from Professor Karen Markey (project leader) on March 24, 2015 for the reuse of the aforementioned response options. Table 6.1 lists these response options and how they had been adapted for this survey. The “To comply with the DIKTI’s requirement for academic tenure” answer option in Q25 was the only original answer option.

The question “What is the name of your CURRENT institution?” (Q7) was needed to assist the researcher with the follow up in-depth interviews, where three institutions would be selected based on geographical distribution and type of institution. Based on their consent, participants’ contact information – collected in Q33 – was also gathered to facilitate the interviews. This institutional affiliation and contact information, however, would not be included in the published dataset since they were gathered and used solely to facilitate the planning and execution of the interviews; not as part of data analysis of the survey results. In order to anticipate any concern from participants regarding the collection of the institutional affiliation information, the following explanation was added to Q7: “Please be assured that no personally-identifiable information is asked. The researcher will NOT be able to associate responses to individual participants. NO institutionally-identifiable information will be reported in the research results.” Personally-identifiable information was collected only with the participants’ consent when they answered “Yes” in Q33, where another explanation had been added to inform participants that although their willingness to be contacted for a follow up interview was appreciated, it was not obligatory for the completion of the survey.

Table 6.1 Response options from Q25 and their origin

<p>Response options in Q25: “What are the reasons for contributing your works or contents to the institutional repository owned or managed by your CURRENT institution?”</p>	<p>Original Response options from Markey at al. (2007)</p>
To boost my scholarly/academic prestige	To boost the particular scholar’s prestige ²
To boost my INSTITUTION’s prestige	To boost your institution’s prestige ^{1,2}
To contribute to the reform of scholarly/academic communication and publishing	To contribute to the reform of the entire enterprise of scholarly communication and publishing ^{1,2}
To reduce the time between discovery and dissemination of research findings	To reduce the amount of time between discovery and dissemination of research findings to scholarly communities ^{1,2}
To increase citation counts to my scholarly/academic works	To increase citation counts to the particular scholar’s oeuvre ²
To increase citation counts to my INSTITUTION’s intellectual output	To increase citation counts to your institution’s intellectual output ^{1,2}
To encourage other scholars to provide open access to their works	To encourage other scholars to provide open access to their intellectual output ²
To expose my works to INDONESIAN researchers	To expose the particular scholar’s intellectual output to researchers in North America and around the world who would not otherwise have access to it through traditional channel ²
To expose my works to INTERNATIONAL researchers	
To expose my INSTITUTION's intellectual output to INDONESIAN researchers	To expose your institution’s intellectual output to researchers in North America and around the world who would not otherwise have access to it through traditional channel ^{1,2}
To expose my INSTITUTION's intellectual output to INTERNATIONAL researchers	
To comply with the DIKTI's requirement for academic tenure	N/A
To shift the burden of preservation of my works to the IR	To place the burden of preservation on the IR instead of on individual faculty members ²
To solve the problem of preserving my INSTITUTION’s intellectual output	To solve the problem of preserving your institution’s intellectual output ^{1,2}
To increase the accessibility to knowledge assets such as numeric, video, audio, and multimedia datasets	To increase the accessibility to knowledge assets such as numeric, video, audio, and multimedia datasets ^{1,2}
To increase the library’s role as a partner in the research area	To increase the library’s role as a viable partner in the research enterprise ^{1,2}
To reduce user dependence on my library’s print collection	To reduce user dependence on your library’s print collection ^{1,2}

¹ Taken from Question 7a (page 131) and/or Question 8a (page 132), which were the same set of response options

² Taken from Question 16a (page 135-136)

Out of 52 repositories surveyed in the content analysis study, only 49 were surveyed in this survey. Three institutions were excluded due to several reasons. Telkom University Repository of Art and Design Major (TELKOM-AD) and Telkom University Repository of Applied Science Major (TELKOM-AS) were two separate online entities (repositories). Both might be managed separately with different sets of policies and practices, but both were operating under the same legal entity (the institution). In terms of a survey that involved academics from higher education institutions, a communication would need to be conducted to solicit participation. This communication could only be directed to a single legal entity for both repositories. The same situation applied to Bogor Agricultural University Scientific Repository (IPB) and the Graduate Program of Management and Business Bogor Agricultural University Repository (IPM-MB). Another higher education institution, State Islamic Institute of Tulungagung (IAIN Tulungagung or IAIN-TAGUNG), was not included for a different reason; the institution was listed as a non-active entity by DIKTI at the time the survey was being prepared.

6.1.2 Sampling

The survey was initially planned for distribution to twenty institutions out of the 49 repositories being surveyed in the previous content analysis study. The twenty institutions were selected randomly using Research Randomizer (<https://www.randomizer.org>), an online service that provides – among other things – an online tool to generate a random sequence of numbers from a specified population of numbers. The tool was used on April 26, 2015 to generate a random sequence of numbers from 1 to 49. The researcher then took the first twenty numbers to be the candidates for institutions that were invited to participate in the survey.

A formal letter was then prepared to be sent to these twenty institutions to solicit their participations in the survey. The letter was prepared in English as well as in Bahasa Indonesia. Accompanying this letter was the Information Sheet, which was also available in both languages. Both documents are available in Appendix B. In an effort to save paper, cost, and time needed to print and mail these documents, they would be sent electronically via email to each of the twenty selected institutions. Initial efforts to gather institutional email addresses by visiting the website of each institution proved to be very time consuming, as not every institution has its institutional email address

on the first (home) page of its website; with some institutions providing no email address. It was then decided to use the Pangkalan Data Pendidikan Tinggi. Data in this system is gathered through the nationally-mandated periodic reporting from Indonesian higher education institutions. It has also been used widely by the Indonesian higher education sector as an important point of reference for anything related to higher education in Indonesia. The database contains email addresses that have been used by institutions as the point of contact for their reporting obligation. The database also contains the postal address for each institution that could be used in the mail merge for the formal letter.

Anticipating ‘bounce’ emails or delays in the responses – or even inaction – by the institutions contacted, the researcher gathered a list of colleagues from the targeted institutions. These colleagues – mostly librarians – would serve as informal contact persons, who potentially could help the researcher in facilitating responses from the targeted institutions. The list was compiled from personal networks and a mailing list of Indonesian librarians named Indonesian CyberLibrary Society (ICS, the_ics@yahoogroups.com).

The formal letter and the Information Sheet – as a PDF document attachment – were sent via email to twenty institutions on May 15, 2015. Each email was blind copied to the respective contact person in each institution. The email consisted of four different parts:

1. short introduction about the email and the research;
2. soliciting response from the institution by replying the email, stating its approval in participating in the survey;
3. forwarding the bottom part of the email – that contained the URL for the survey – to the lecturers/researchers in the institutions and requesting them to participate; and
4. the PDF file attachment (formal letter and Information Sheet).

Two out of the twenty institutions did not register any email address in the Pangkalan Data Pendidikan Tinggi. An email address for State Development University Yogyakarta (UPN-YOGYA) was later acquired through a contact person in the institution. The contact person at University of North Sumatra (USU) helped by

printing out the attached PDF document and delivering it to the university administrator.

The survey was initially planned to run between May 18 and June 30, 2015. However there were only 59 responses obtained from six institutions as of June 22, 2015. Of these 59 responses only 38 were valid. An effort was made to contact all contact persons, reminding them about the one week time period before the closing of the survey. However this strategy did not have the desired result. In responding to this low response rate the researcher therefore decided to undertake the following actions:

- announcing on June 30, 2015 the extension of the survey from the previous deadline (June 30, 2015) to a new deadline (August 17, 2015) for the twenty institutions and their respective contact persons;
- expanding the survey to institutions relating to all 49 repositories by including the other 29 repositories in the list, informing them that the survey would run between July 01 to August 17, 2015; and
- requesting all contact persons (on July 07, 2015) to forward the email that had been blind copied to them (the same email sent to the institutional email address) to the lecturers/researchers in their institutions without first waiting for a formal response from their institutions.

The initial design of the survey was to wait for a formal response from each institution before requesting the contact person for that institution to forward the email to lecturers/researchers in the institution; (presumably) supplementing the forwarding of the same email by the university administrator to the lecturers/researchers. However this approach did not seem to work as was apparent from the very low response, where only six institutions – out of twenty – responding formally by replying to the researcher's email and indicating their approval. The request to contact persons to forward the researcher's email was made under the following considerations:

- the survey would only involve the academics' personal opinions with the formal letter sent as courtesy informing the targeted institutions about the survey;
- no information regarding institutional affiliation would be made in analysing and reporting the survey results; and

- the researcher could later delete the responses from institutions in cases where they formally declined to participate in the survey.

The considerations above had been communicated to all contact persons when the researcher requested them to forward the email to lecturers/researchers in their respective institution.

The new strategy had the desired response, with 161 responses (104 valid or completed responses) obtained from 19 institutions as of July 13, 2015. Another email was sent on July 28, 2015 to contact persons from institutions with less than five responses, politely requesting them to encourage their academic colleagues to participate in the survey. This email reminder seemed to be effective in boosting responses, with an increase from 187 responses by July 28, to 262 responses by July 29.

In total the survey was conducted between May 18 and August 17, 2015. After the closing of the survey, an email was sent to each contact person, thanking them for their support as well as informing them of the number of responses obtained from their respective institution.

6.2 Results

At the closing of the survey on August 18, 2015 at 00.15am the following had been obtained:

- total number of responses: 506;
- total number of responses *without* the Q1-type responses, where participants only opened/viewed the Information Page of the survey: 438;
- total number of *partial responses*, where participants did not finish answering all the questions in the survey: 96; and
- total number of *completed responses*: 342.

The 438 responses were obtained from 35 institutions, with seven participants not indicating any institutional name. These responses without institution name would not affect the analysis of the survey results since – as noted earlier – the institution name was only used to facilitate the follow up interviews. The survey results are available as a separate dataset in Microsoft Excel format (Liauw, 2018a).

The survey data has been processed and analyzed using the Statistical Package for the Social Sciences (SPSS) software. The following sections also assume 438 as the total number of survey participants (n=438) unless otherwise noted (missing data from partial responses or participants responded to a different set of questions).

Numbers and percentages are rounded up to the nearest decimal point by SPSS. The descriptions and discussion of the survey data includes references to both numbers and percentages represented in the various tables (in case there are slight differences in the rounding-ups of decimal points between tables and figures). The percentage values used are the “Valid %” column, where they were slightly different than the “%” column in variables that contained null responses (partial responses); but identical in variables that did not contain null responses.

In this chapter survey results are presented in the same sequence as the appearance of each variable in the survey. Three variables contained text responses from the survey participants in response to the following questions:

- “Main reason(s) for supporting or not supporting your CURRENT institution’s decision in establishing institutional repository;”
- “Reasons for NOT contributing to IR – Others, please specify:”; and
- “If you have anything else to add about your experience with ANY institutional repositories, please type it below:”

Due to their nature as text responses, results for these three variables will be analyzed in conjunction with the interview transcripts from in-depth interviews.

In order to reduce ‘clutter’ and improve the readability, all tables relating to the Factor Analysis and Reliability Analysis have been provided as appendices (see Appendix C and Appendix D). However Chi-square statistics – this includes all Cross-tabulated tables (descriptive statistic) and Chi-square tables (inferential statistic) – will be provided in the discussion text.

6.2.1 Demographic makeup of survey participants

6.2.1.1 Gender

Of the 438 participants, 251 (57.3%) were male and 187 (42.7%) were female. Table 6.2 and Figure 6.2 indicates the gender distribution of the participants.

Table 6.2 Gender

	Freq.	%	Valid %	Cumulative %
Valid Male	251	57.3	57.3	57.3
Female	187	42.7	42.7	100.0
Total	438	100.0	100.0	

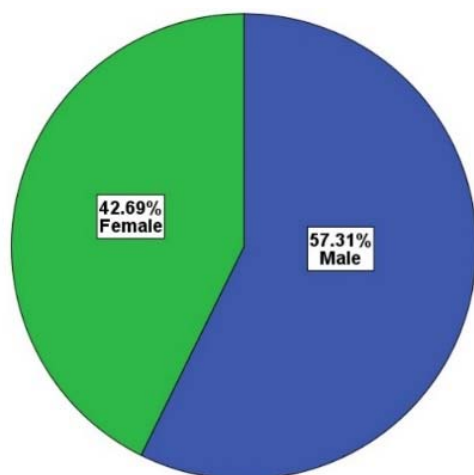


Figure 6.2 Gender

6.2.1.2 Age

The mode for the age distribution of the participants was the group of people born in 1976-1985 (34.7%); followed closely by the people born in 1966-1975 (34.2%). These two groups comprised 68.9% of all participants. Table 6.3 and Figure 6.3 show the age distribution of the participants, while Figure 6.4 represents the age distribution of the participants by gender.

Table 6.3 Age (based on year of birth)

	Freq.	%	Valid %	Cumulative %
Valid 1986-1995	34	7.8	7.8	7.8
1976-1985	152	34.7	34.7	42.5
1966-1975	150	34.2	34.2	76.7
1956-1965	80	18.3	18.3	95.0
1946-1955	19	4.3	4.3	99.3
1936-1945	3	.7	.7	100.0
Total	438	100.0	100.0	

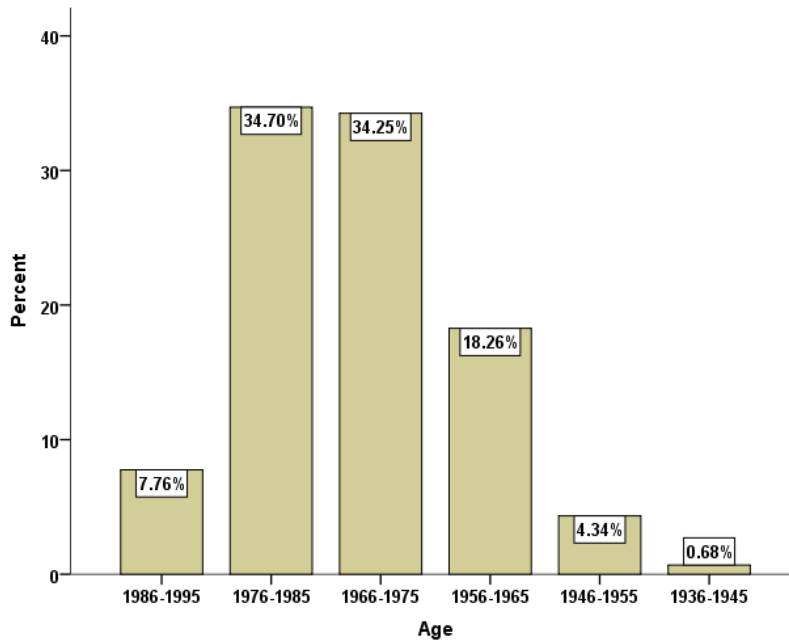


Figure 6.3 Age (based on year or birth)

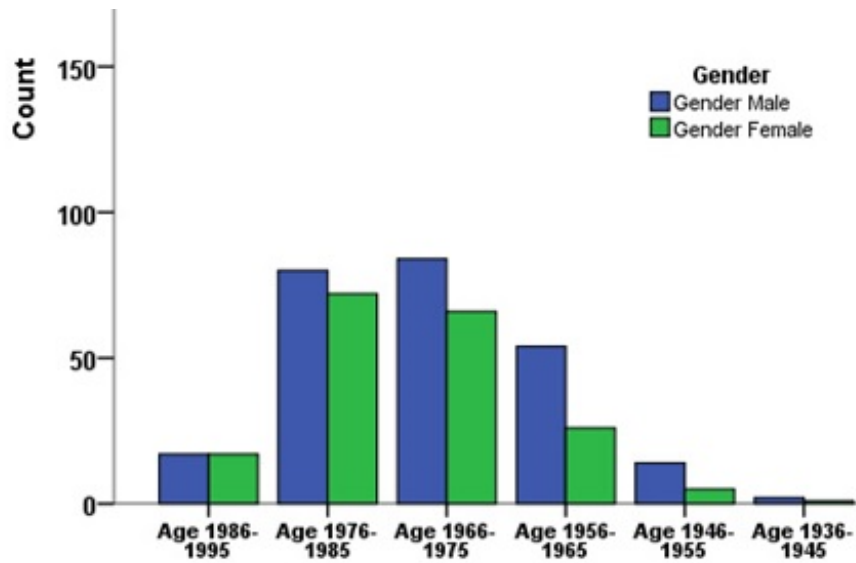


Figure 6.4 Age (based on year of birth) by gender

6.2.1.3 English proficiency in reading

The mode for the distribution of the “English proficiency in Reading” of the survey participants was the “Intermediate” level (40.6%), followed very closely by “Advanced” (40%). Participants with fluent/native/bilingual proficiency comprised 7.3% of the survey participants. Table 6.4 and Figure 6.5 show the distribution of English proficiency in reading of the survey participants.

Table 6.4 English proficiency in reading

		Freq.	%	Valid %	Cumulative %
Valid	No proficiency	5	1.1	1.1	1.1
	Beginner	48	11.0	11.0	12.1
	Intermediate	178	40.6	40.6	52.7
	Advanced	175	40.0	40.0	92.7
	Fluent/Native/Bilingual	32	7.3	7.3	100.0
	Total	438	100.0	100.0	

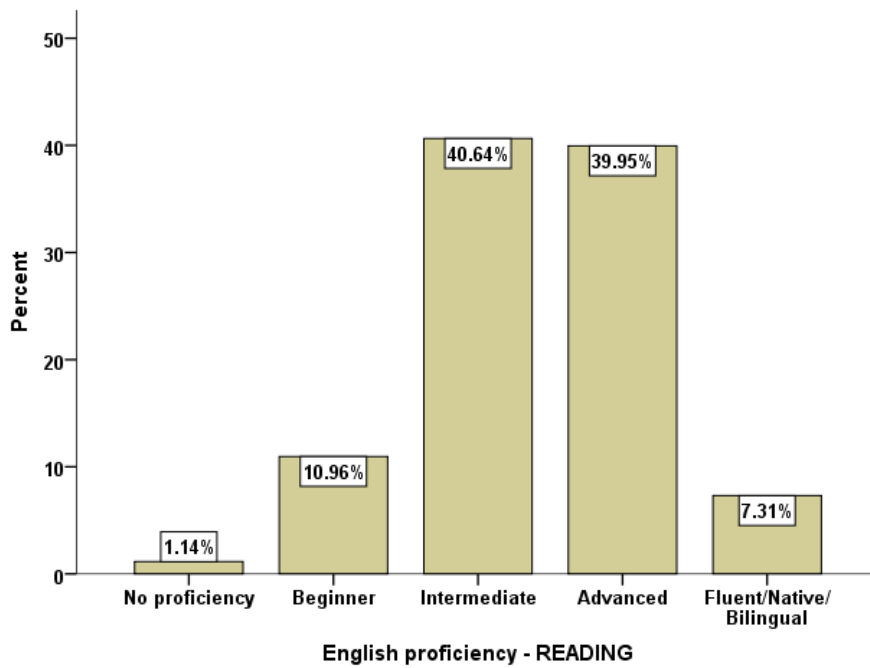


Figure 6.5 English proficiency in reading

6.2.1.4 English proficiency in writing

The mode in the distribution of the “English proficiency in Reading” of the survey participants is “Intermediate” (53.9%). 21% reported that they have had “Advanced” proficiency, and only 3.4% reported having, “Fluent/native/bilingual” proficiency. Table 6.5 and Figure 6.6 show the distribution of English proficiency in writing among the participants.

Table 6.5 English proficiency in writing

		Freq.	%	Valid %	Cumulative %
Valid	No proficiency	10	2.3	2.3	2.3
	Beginner	85	19.4	19.4	21.7
	Intermediate	236	53.9	53.9	75.6
	Advanced	92	21.0	21.0	96.6
	Fluent/Native/Bilingual	15	3.4	3.4	100.0
	Total	438	100.0	100.0	

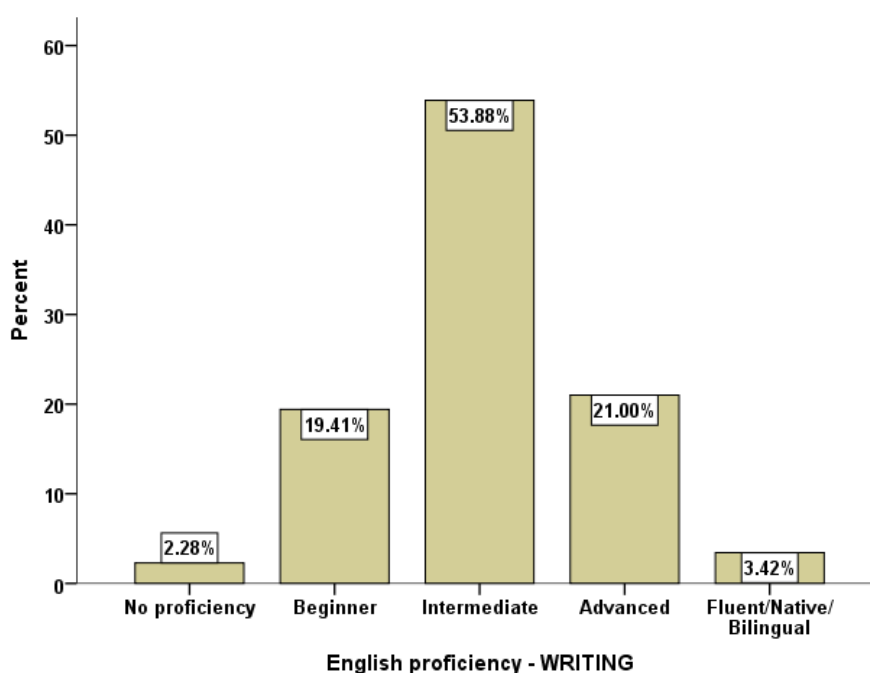


Figure 6.6 English proficiency in writing

6.2.1.5 Status of institution

Almost three quarters (73.7%) of the participants reported affiliations to state universities, while only 26.3% reported affiliations to private universities. Table 6.6 and Figure 6.7 show the distribution of the institutional affiliation of the survey participants. Table 6.7 and Figure 6.8 report the distribution of the institutional affiliation of the participants by gender.

Table 6.6 Status of institution

	Freq.	%	Valid %	Cumulative %
Valid State University	323	73.7	73.7	73.7
Private University	115	26.3	26.3	100.0
Total	438	100.0	100.0	

Table 6.7 Status of institutional affiliation by gender

		Status of Institution		Total
		State University	Private University	
Gender	Male	197	54	251
	Female	126	61	187
Total		323	115	438

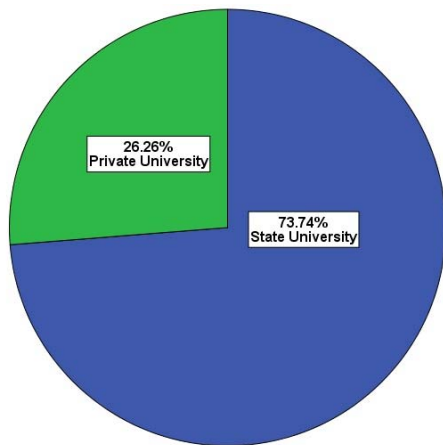


Figure 6.7 Status of institution

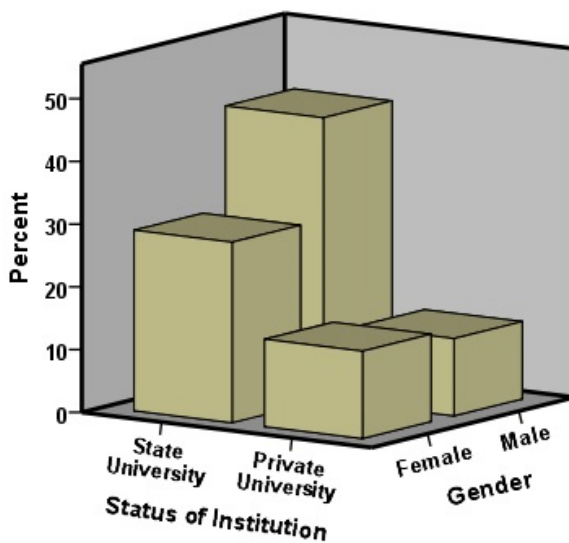


Figure 6.8 Status of institutional affiliation by gender

6.2.1.6 Geographical location of institution

A very significant proportion (81.5%) of the participants was affiliated to universities located in Java. Sumatra had the second highest proportion (13.7%) although it was significantly less than Java. A very small percentage came from Bali or Nusa Tenggara (2.5%) and Kalimantan (2.3%). Other response options (“Sulawesi” and “Other”) did not produce any response. Table 6.8 and Figure 6.9 report the geographical distribution of the institutional affiliation of the survey participants.

Table 6.8 Geographical location of institution

		Freq.	%	Valid %	Cumulative %
Valid	Java	357	81.5	81.5	81.5
	Sumatra	60	13.7	13.7	95.2
	Bali/Nusa Tenggara	11	2.5	2.5	97.7
	Kalimantan	10	2.3	2.3	100.0
	Total	438	100.0	100.0	

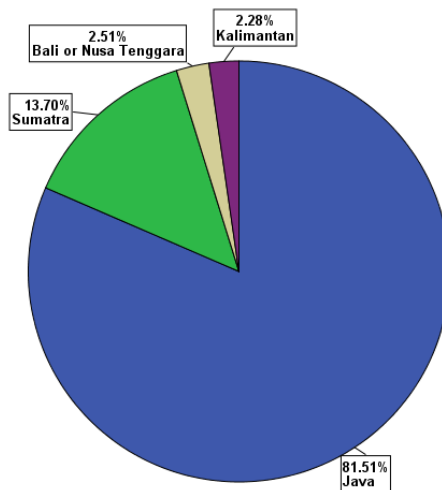


Figure 6.9 Geographical location of institution

6.2.1.7 Length of work

There were two modes in the distribution of the length of work (the years a participant has worked in his/her current institution) for the participants: 6-10 years and 11-15 years, each reported a response of 21.7%. Participants with 1-5 years of work comprised 16.7% of the sample. These three categories comprised 60.1% of the sample. Table 6.9 and Figure 6.10 show the distribution of participants' length of work.

Table 6.9 Length of work

		Freq.	%	Valid %	Cumulative %
Valid	1 - 5 years	73	16.7	16.7	16.7
	6 - 10 years	95	21.7	21.7	38.4
	11 - 15 years	95	21.7	21.7	60.0
	16 - 20 years	61	13.9	13.9	74.0
	21 - 25 years	53	12.1	12.1	86.1
	More than 25 years	61	13.9	13.9	100.0
	Total	438	100.0	100.0	

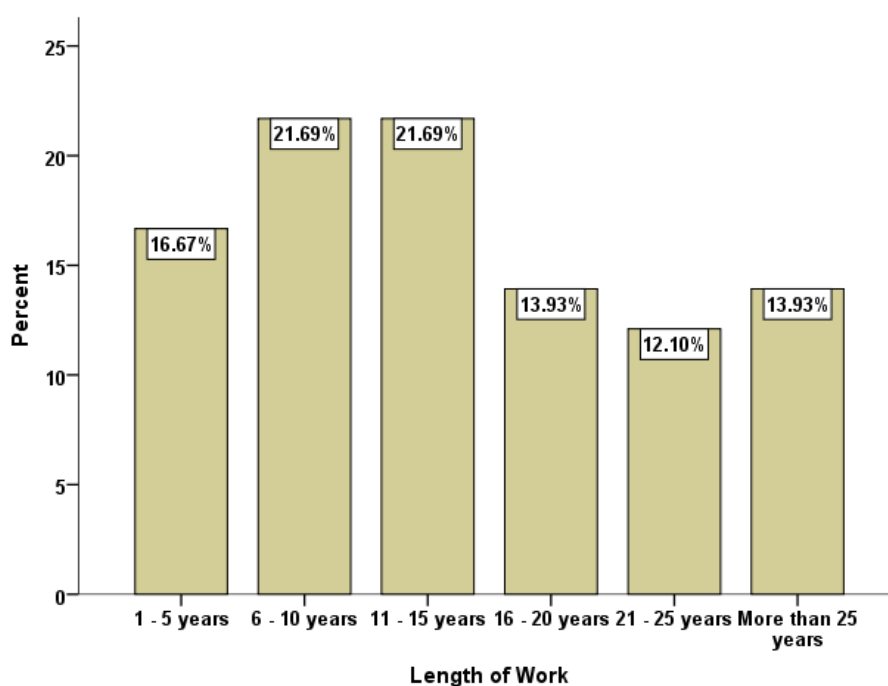


Figure 6.10 Length of work

6.2.1.8 Academic role

Almost all of the participants (90.2%) reported “Teaching and research” as their academic role. 7.5% of participants reported their role as “Teaching only” and only 2.3% reported their role as “Research only.” Table 6.10 and Figure 6.11 indicate the distribution of the academic role of the survey participants.

Table 6.10 Academic role

		Freq.	%	Valid %	Cumulative %
Valid	Teaching Only	33	7.5	7.5	7.5
	Research Only	10	2.3	2.3	9.8
	Teaching & Research	395	90.2	90.2	100.0
	Total	438	100.0	100.0	

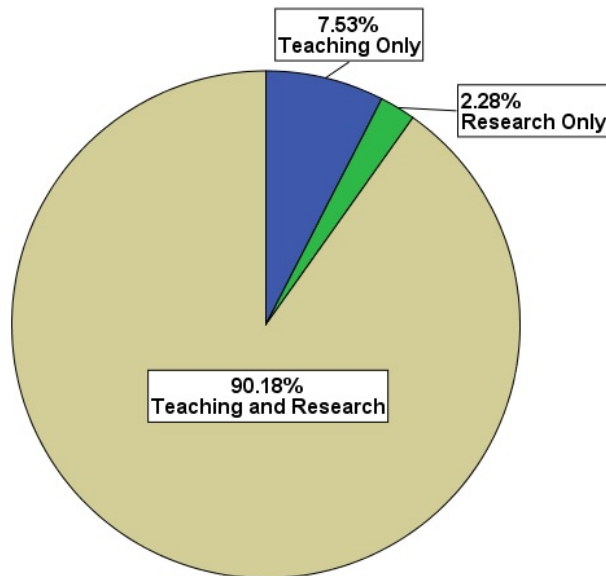


Figure 6.11 Academic role

6.2.1.9 Academic status

The mode in the distribution of the academic status of the survey participants is “ASISTEN AHLI – Penata Muda” (19.9%). This is the entry level academic status in Indonesian higher education institutions. The highest level of academic status (“Guru Besar – Pembina Utama”) comprised 3% of the survey participants. The English equivalent for “Guru Besar” is “Professor.” Table 6.11 and Figure 6.12 represent the distribution of the academic status of the survey participants.

The categories of academic status in Indonesian higher education institutions is regulated by DIKTI and differ from the categories in most western countries. The Indonesian categories were intentionally not translated to avoid any confusion.

Table 6.11 Academic status

		Freq.	%	Valid %	Cumulative %
Valid	ASISTEN AHLI - Penata Muda	87	19.9	19.9	19.9
	ASISTEN AHLI - Penata Muda Tingkat I	79	18.0	18.0	37.9
	LEKTOR - Penata	57	13.0	13.0	50.9
	LEKTOR - Penata Tingkat I	77	17.6	17.6	68.5
	LEKTOR KEPALA - Pembina	54	12.3	12.3	80.8
	LEKTOR KEPALA - Pembina Tingkat I	42	9.6	9.6	90.4
	LEKTOR KEPALA - Pembina Utama Muda	19	4.3	4.3	94.7
	GURU BESAR - Pembina Utama Madya	10	2.3	2.3	97.0
	GURU BESAR - Pembina Utama	13	3.0	3.0	100.0
	Total	438	100.0	100.0	

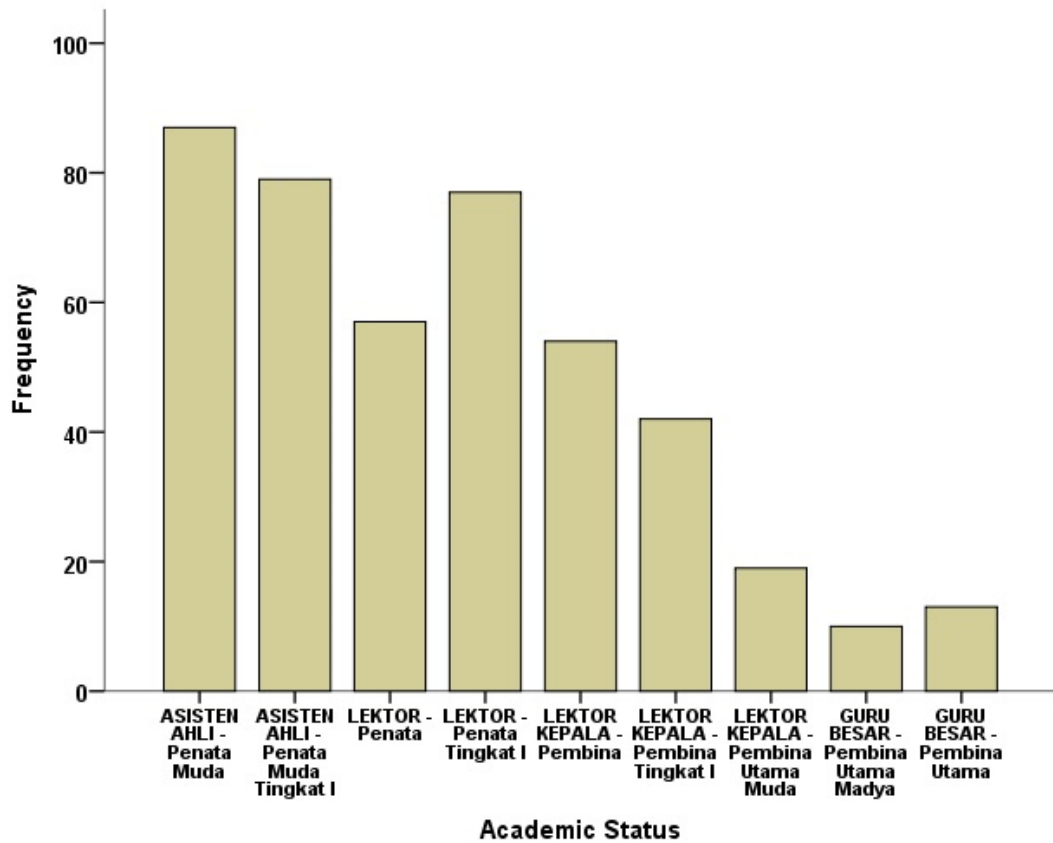


Figure 6.12 Academic status

6.2.1.10 Field of study

Based on broad categories of field of study, the survey participants were relatively evenly spread to the three categories. The “Social sciences” comprised 40.4%,

followed by “Sciences” with 37% and “Humanities” with 22.6%. Table 6.12 and Figure 6.13 report the field of study distribution of the participants.

Table 6.12 Field of study

		Freq.	%	Valid %	Cumulative %
Valid	Sciences	162	37.0	37.0	37.0
	Social Sciences	177	40.4	40.4	77.4
	Humanities	99	22.6	22.6	100.0
	Total	438	100.0	100.0	

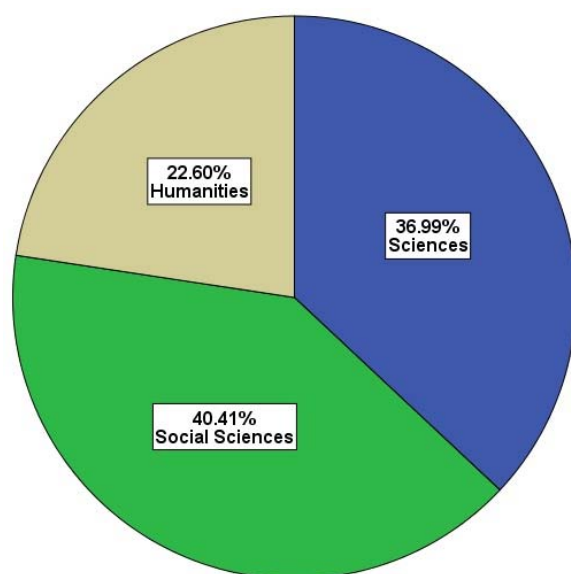


Figure 6.13 Field of study

When cross tabulated by gender, a similar pattern emerged in all three categories, where there were more male participants than female participants. Table 6.13 and Figure 6.14 show the distribution of the field of study of the participants by gender.

Table 6.13 Field of study by gender

		Field of Study			Total
		Sciences	Social Sciences	Humanities	
Gender	Male	95	100	56	251
	Female	67	77	43	187
Total		162	177	99	438

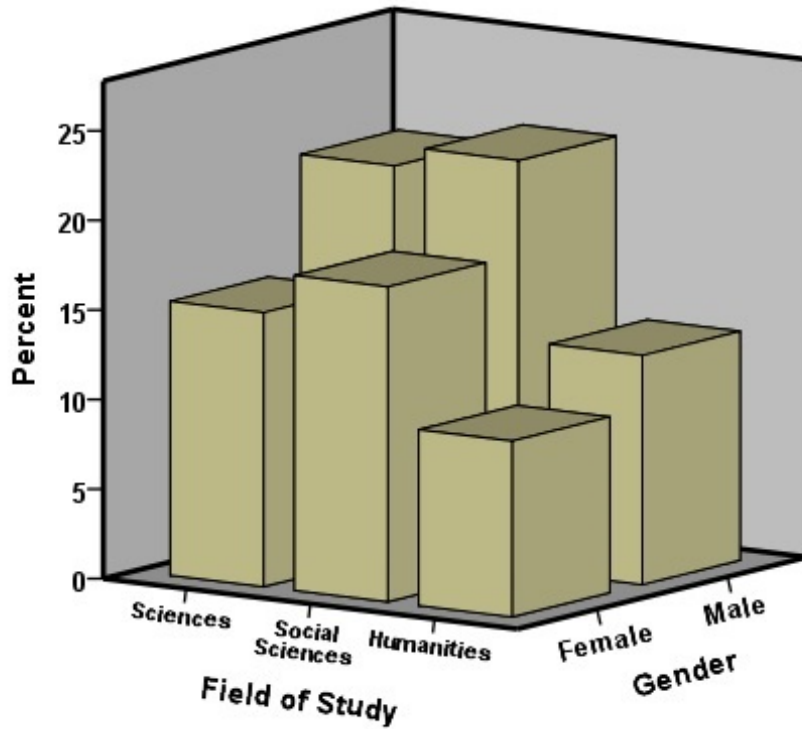


Figure 6.14 Field of study by gender

6.2.1.11 Language preference in reading scholarly works

Almost half of the survey participants (46.3%) reported that they have had no language preference when reading scholarly works. 34.9% reported that they preferred to read scholarly works in Bahasa Indonesia. Table 6.14 and Figure 6.15 report the distribution of the preferred language in reading scholarly works.

Table 6.14 Language preference in reading scholarly works

		Freq.	%	Valid %	Cumulative %
Valid	Bahasa Indonesia	153	34.9	34.9	34.9
	English	82	18.7	18.7	53.7
	No preference	203	46.3	46.3	100.0
	Total	438	100.0	100.0	

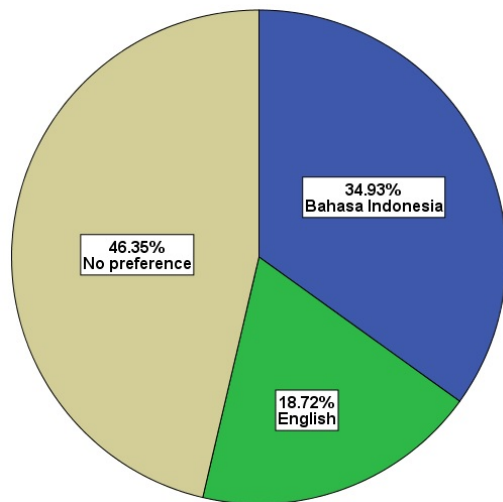


Figure 6.15 Language preference in reading scholarly works

When analyzed further by gender, a similar pattern emerged in all three categories of language preference, where there were more male than female participants. In the “No Preference” category the difference between the percentage of male and female is almost negligible. However the difference in the “Bahasa Indonesia” category is notable with almost 50% difference. Table 6.15 and Figure 6.16 show the distribution of the preferred language in reading scholarly works by participants’ gender.

Table 6.15 Language Preference in Reading Scholarly Works by gender

		Preferred language in READING scholarly works			Total
		Bahasa Indonesia	English	No preference	
Gender	Male	98	49	104	251
	Female	55	33	99	187
Total		153	82	203	438

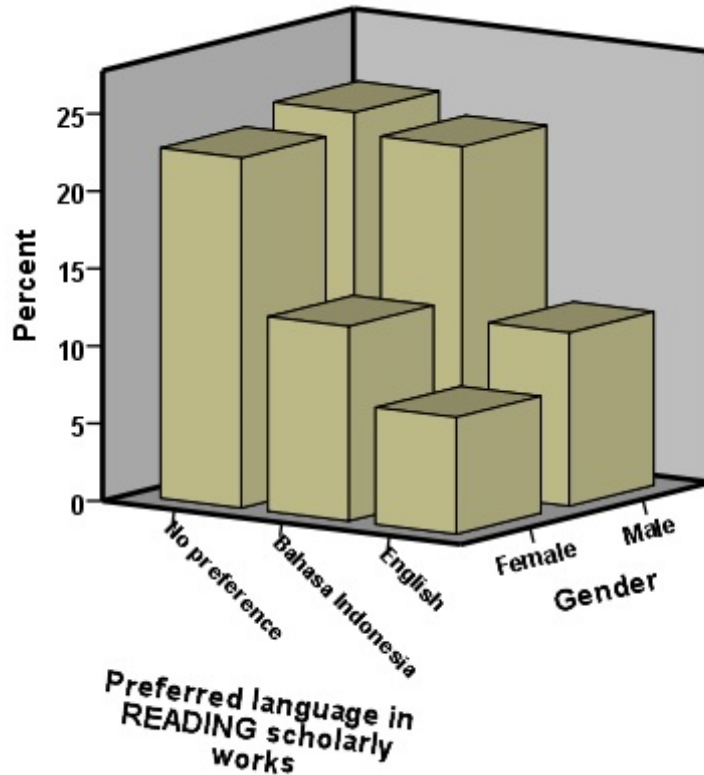


Figure 6.16 Language preference in reading scholarly works by gender

6.2.1.12 Knowledge about institutional repositories (n=428)

Of the participants (n=428) the majority (67.8%) reported that they have *heard* the term “institutional repository” *before* they participated in the survey *and* that they are *familiar* with the *concept* of repository *after* reading the definition of an institutional repository presented in a text box, and before they answered both questions relating to their knowledge about institutional repositories. 16.8% of participants reported that although they have *never heard* the *term before*, they have had some *familiarity* with the *concept after* reading it in the survey; and, 7.94% of participants reported that although they have *heard* the *term before*, they reported having *no familiarity* with the *concept after* reading the definition presented in the survey.

A small percentage of survey participants (7.5%) reported they *neither* have *heard* the *term before* nor have they had any *familiarity* with the *concept after* reading the survey definition. For this group of participants, the survey was terminated since it would be of no relevance to ask their opinions on matters about which they had no knowledge. Table 6.16 and Figure 6.17 present the distribution of the participants’ knowledge about institutional repositories.

Table 6.16 Knowledge about institutional repositories

		Freq.	%	Valid %	Cumulative %
Valid	Heard and Understand	290	66.2	67.8	67.8
	Heard but don't Understand	34	7.8	7.9	75.7
	Never Heard but Understand	72	16.4	16.8	92.5
	Never Heard and don't Understand	32	7.3	7.5	100.0
	Total	428	97.7	100.0	
Missing System		10	2.3		
Total		438	100.0		

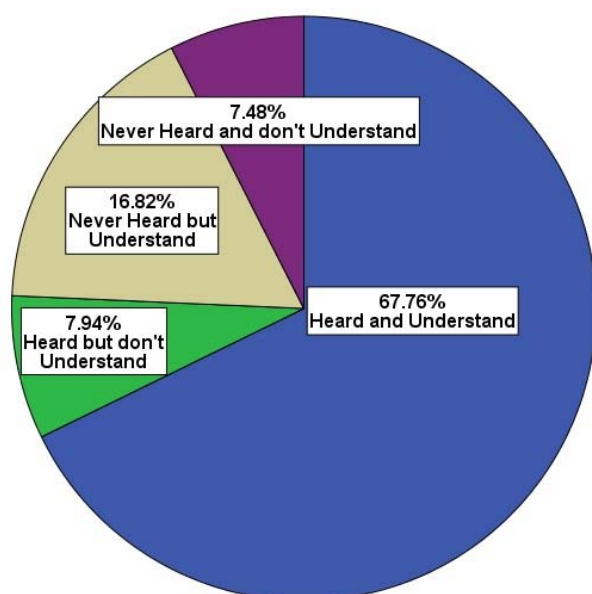


Figure 6.17 Knowledge about institutional repositories

6.2.2 General opinions and attitudes toward institutional repositories

6.2.2.1 Interactions with institutional repositories (n=362)

Interactions with repository were measured using three variables assessing whether survey participants have previously:

- interacted with their own institution's repository;
- interacted with other institutional repositories (other than the one established by their own institution); and
- contributed content to their own institution's repository.

Table 6.17 and Figure 6.18 present the distribution of responses in the three variables, indicating that in all three categories a clear majority of participants reported that they have actively interacted with their institution’s repository.

Table 6.17 Interactions with institutional repositories

	Yes	No
Interacted with OWN IR	87.3%	12.7%
Interacted with OTHER IR	82.0%	18.0%
Contributed contents to OWN IR	70.1%	29.9%

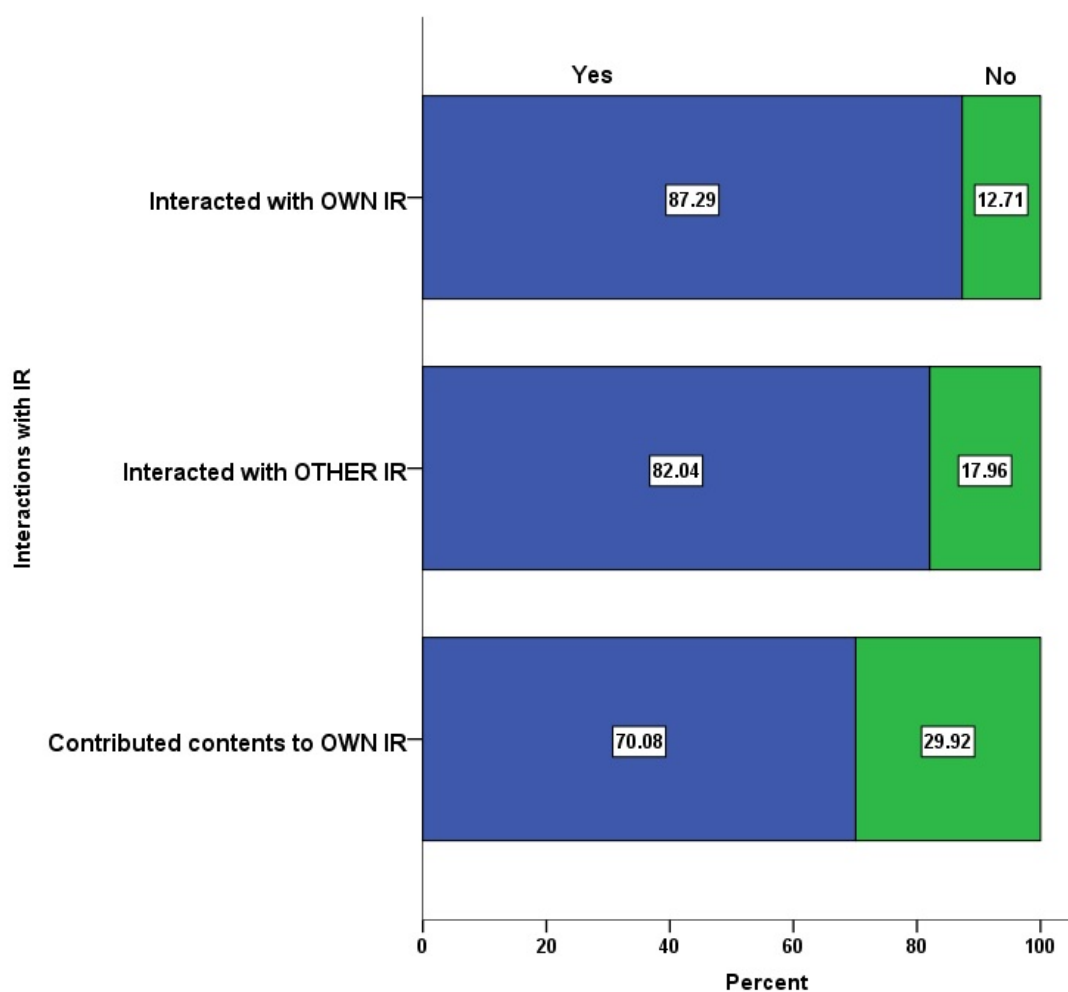


Figure 6.18 Interactions with institutional repositories

6.2.2.2 Support for institutional repositories (n=362)

A very high proportion of the survey participants (n=362) reported that they supported their institution’s decision to establish a repository (87.6%). Only 3% reported that they did not support their institution’s decision. There were 9.4% of the survey

participants who reported that they have had “No opinion” on the matter. These responses are shown in Table 6.18 and Figure 6.19.

Table 6.18 Support for institutional repositories

		Freq.	%	Valid %	Cumulative %
Valid	Yes	317	72.4	87.6	87.6
	No	11	2.5	3.0	90.6
	No Opinion	34	7.8	9.4	100.0
	Total	362	82.6	100.0	
Missing	System	76	17.4		
Total		438	100.0		

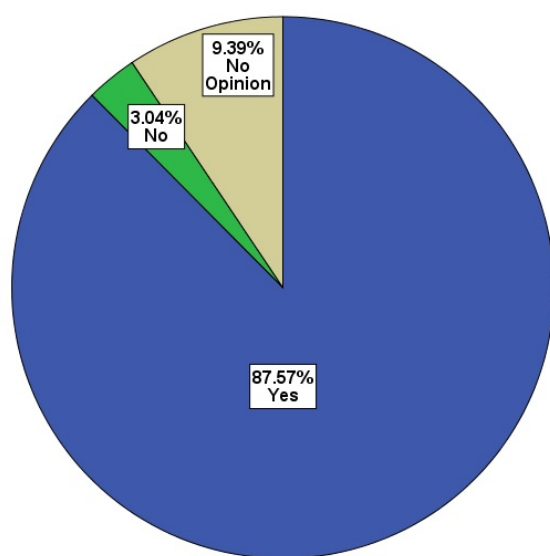


Figure 6.19 Support for institutional repositories

6.2.2.3 Influence of language of institutional repository content on usage (n=362)

The survey participants reported an almost 50/50 response as to whether the language of the contents (or documents) in a repository influences their decision to use the repository or not. A little bit more than half (51.1%) reported that the language did have an influence on their decisions, while slightly less than half (48.90%) reported that the language did not have an influence on their decisions. These results are shown in Table 6.19 and Figure 6.20.

Table 6.19 Influence of language of institutional repository content on usage

		Freq.	%	Valid %	Cumulative %
Valid	Yes	185	42.2	51.1	51.1
	No	177	40.4	48.9	100.0
	Total	362	82.6	100.0	
Missing System		76	17.4		
Total		438	100.0		

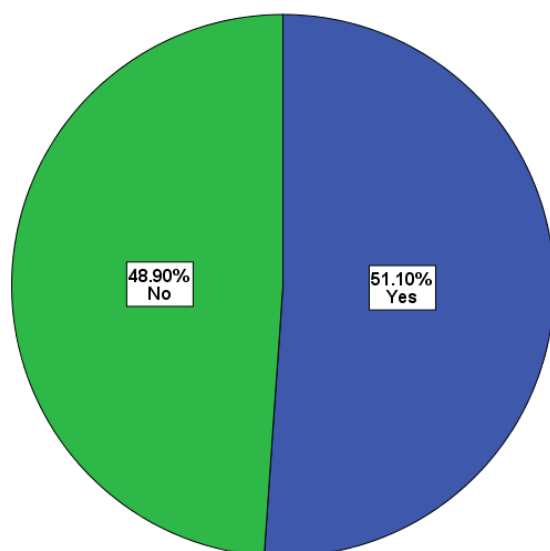


Figure 6.20 Influence of language of institutional repository content in usage

6.2.2.4 Impacts of institutional repositories (n=319)

Impacts of institutional repositories were measured using three variables on the impact at personal, institutional, and national level. The impact on national level was worded in the survey question as the “Impact on Indonesian higher education sector.” Table 6.20 and Figure 6.21 show the distribution of the three variables describing the participants’ assessment of the impacts of institutional repositories.

Table 6.20 Impacts of institutional repositories

	Very Positive	Positive	Neutral	Negative	Very Negative
PERSONALLY	26.3%	55.5%	16.6%	1.6%	0.0%
INSTITUTIONALLY	35.7%	53.6%	9.4%	1.3%	0.0%
NATIONALLY	35.1%	50.8%	13.2%	0.9%	0.0%

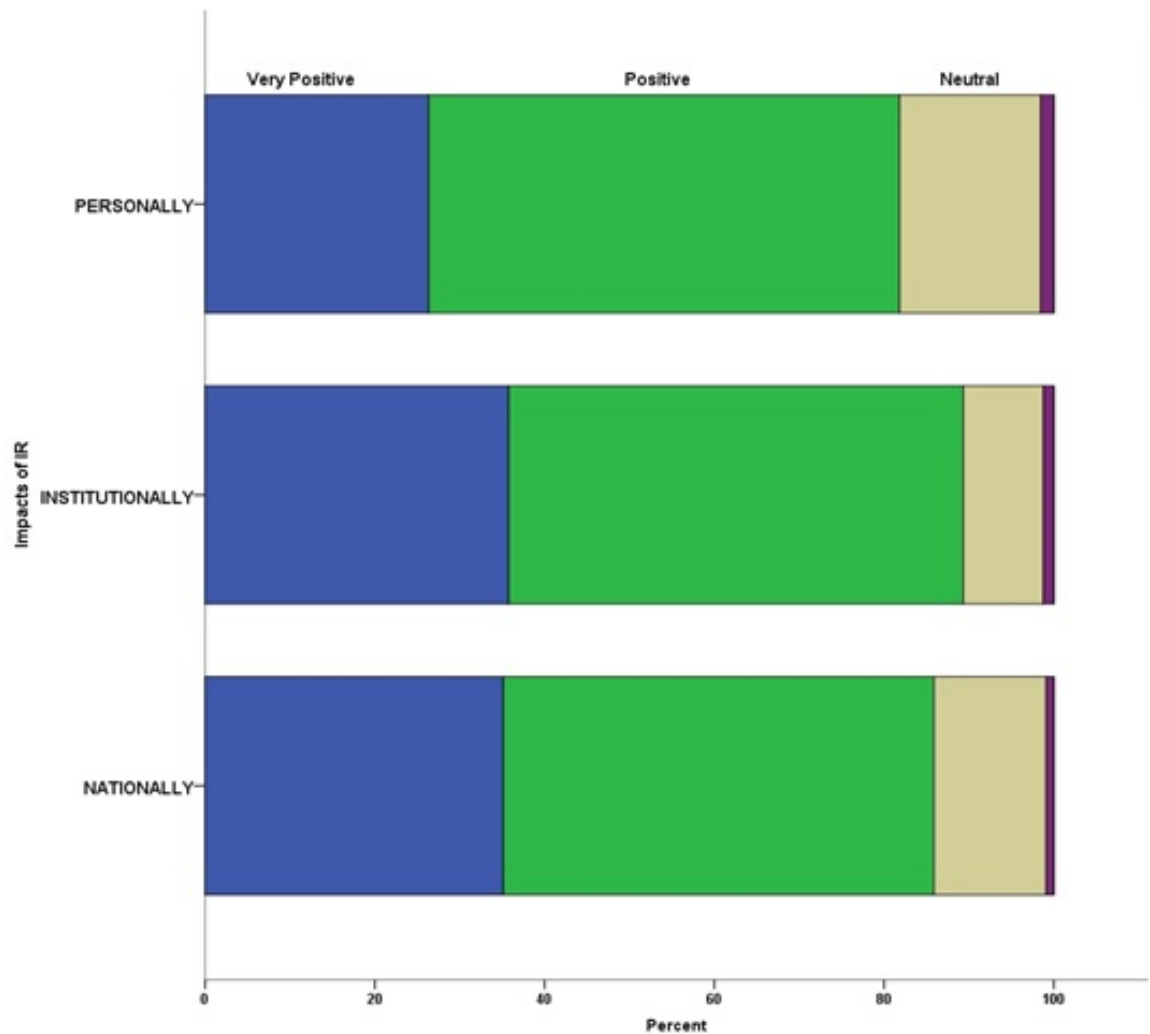


Figure 6.21 Impacts of institutional repositories

6.2.3 Reasons to contribute to institutional repositories

6.2.3.1 Specific reasons to contribute to institutional repositories (n=234)

Among the survey participants who reported that they have contributed to their own institutional repository, 17 individual variables were provided regarding the specific reasons that have motivated them to contribute. Table 6.21 and Figure 6.22 record the distribution of the 17 variables describing the specific reasons for participants to contribute to a repository. In order to enhance readability and comprehensibility, the responses have been sorted in descending order based on the total value of the participants reporting that they either “Strongly Agree” or “Agree.” The combined percentage values for “To boost INSTITUTION’s prestige” statement (ranked fourth)

and “To expose INSTITUTION’s intellectual output to INTERNATIONAL researchers” (ranked fifth) were identical (89.3%), however the “To boost INSTITUTION’s prestige” statement has a higher value for “Strongly Agree” (49.6% compared to 46.6%) thus putting it in a higher ranked position.

Table 6.21 Specific reasons to contribute (sorted in descending order based on the total value of responses from “Strongly Agree” and “Agree”)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	(%)				
1. To expose INSTITUTION's intellectual output to IND researchers	45.70	46.20	4.70	0.90	2.60
2. To contribute to the reform of scholarly communication	45.30	46.20	5.10	1.70	1.70
3. To expose my works to IND researchers	44.40	45.70	5.60	2.10	2.10
4. To boost INSTITUTION’s prestige	49.60	39.70	6.80	1.30	2.60
5. To expose INSTITUTION's intellectual output to INTL researchers	46.60	42.70	7.30	1.70	1.70
6. To increase the library’s role as a partner in the research area	43.20	44.90	8.50	2.10	1.30
7. To boost my scholarly prestige	40.60	46.60	8.10	1.30	3.40
8. To increase citation to INSTITUTION’s intellectual output	47.40	39.70	9.40	1.30	2.10
9. To increase citation to my scholarly works	41.50	45.30	9.00	2.10	2.10
10. To expose my works to INTL researchers	43.20	43.60	9.40	1.70	2.10
11. To reduce the time between discovery and dissemination	36.80	48.70	9.00	3.40	2.10
12. To increase the accessibility to knowledge assets	40.60	44.40	10.70	3.00	1.30
13. To encourage other scholars to provide OA to their works	35.00	49.10	11.50	2.60	1.70
14. To solve the problem of preserving INSTITUTION’s intellectual output	25.20	56.00	14.50	2.60	1.70
15. To comply with the DIKTI's requirement for academic tenure	28.20	53.00	14.50	2.10	2.10
16. To reduce user dependence on library’s print collection	36.80	39.30	17.90	4.30	1.70
17. To shift the burden of preservation of my works to the IR	19.20	51.70	20.50	5.60	3.00

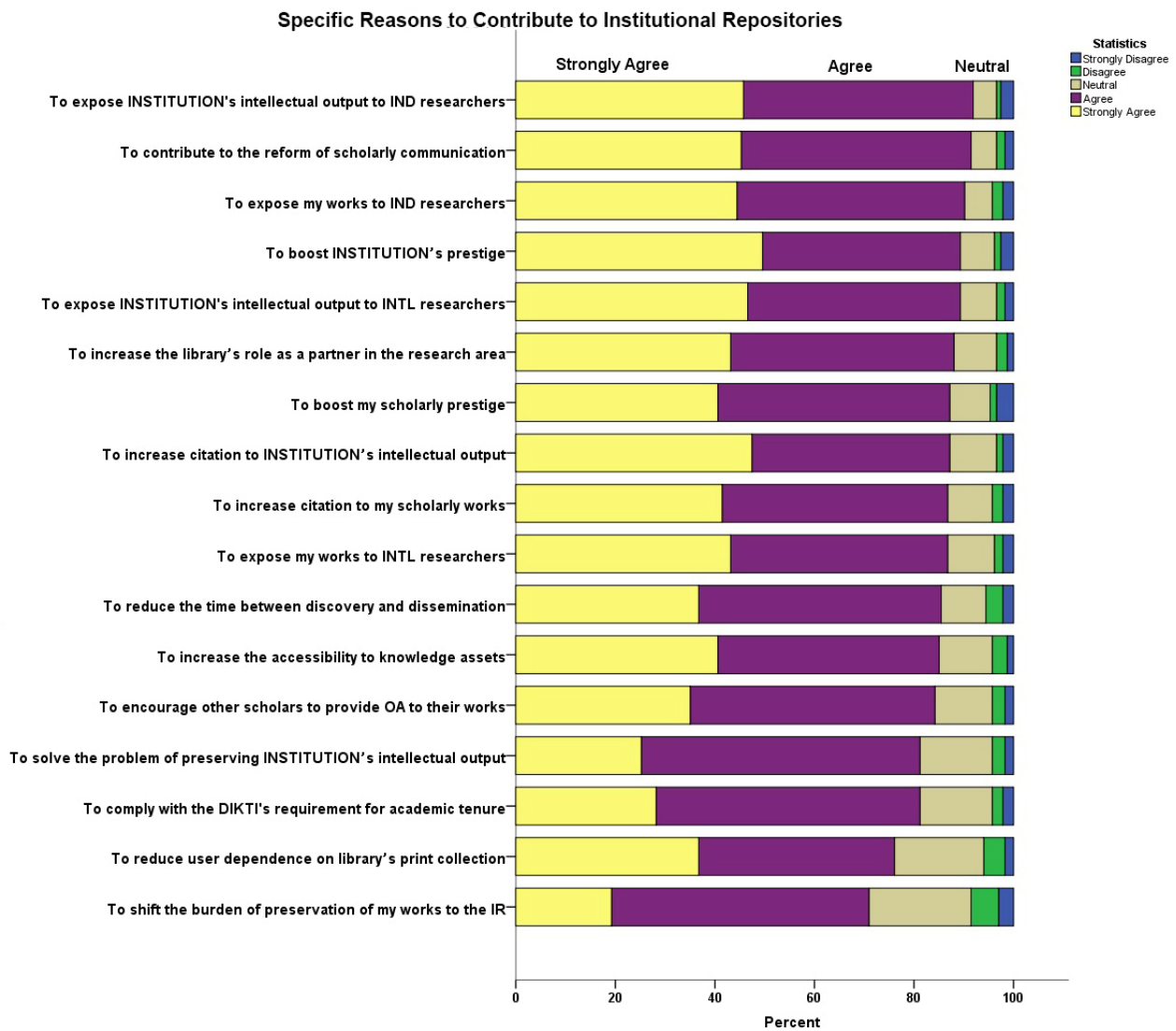


Figure 6.22 Specific reasons to contribute (sorted in descending order based on the total value of responses from “Strongly Agree” and “Agree”)

6.2.3.2 TOP specific reasons to contribute to institutional repositories (n=234)

Among the 17 specific reasons to contribute to a repository, the survey participants were also asked to select one specific reason as their ‘top’ reason to contributing to a repository. Table 6.22 and Figure 6.23 report the distribution of the 17 statements making up the distribution of top reasons for contributing to a repository. In order to enhance readability and comprehensibility, the table and figure have been sorted in descending order based on the value of “Valid %.”

Table 6.22 TOP specific reasons to contribute to institutional repositories (sorted in descending order)

		Freq.	%	Valid %	Cumulative %
Valid	1. To boost my scholarly prestige	47	10.7	20.1	20.1
	2. To contribute to the reform of scholarly communication	41	9.4	17.5	37.6
	3. To boost INSTITUTION's prestige	37	8.4	15.8	53.4
	4. To increase the accessibility to knowledge assets	15	3.4	6.4	59.8
	5. To expose my works to INTL researchers	14	3.2	6.0	65.8
	6. To expose my works to IND researchers	13	3.0	5.6	71.4
	7. To reduce the time between discovery and dissemination	12	2.7	5.1	76.5
	8. To expose INSTITUTION's intellectual output to INTL researchers	10	2.3	4.3	80.8
	9. To reduce user dependence on library's print collection	10	2.3	4.3	85.0
	10. To increase citation to my scholarly works	7	1.6	3.0	88.0
	11. To encourage other scholars to provide OA to their works	6	1.4	2.6	90.6
	12. To expose INSTITUTION's intellectual output to IND researchers	5	1.1	2.1	92.7
	13. To solve the problem of preserving INSTITUTION's intellectual output	5	1.1	2.1	94.9
	14. To increase the library's role as a partner in the research area	4	.9	1.7	96.6
	15. To comply with the DIKTI's requirement for academic tenure	3	.7	1.3	97.9
	16. To shift the burden of preservation of works to the IR	3	.7	1.3	99.1
	17. To increase citation to INSTITUTION's intellectual output	2	.5	.9	100.0
	Total	234	53.4	100.0	
	Missing System	204	46.6		
Total		438	100.0		

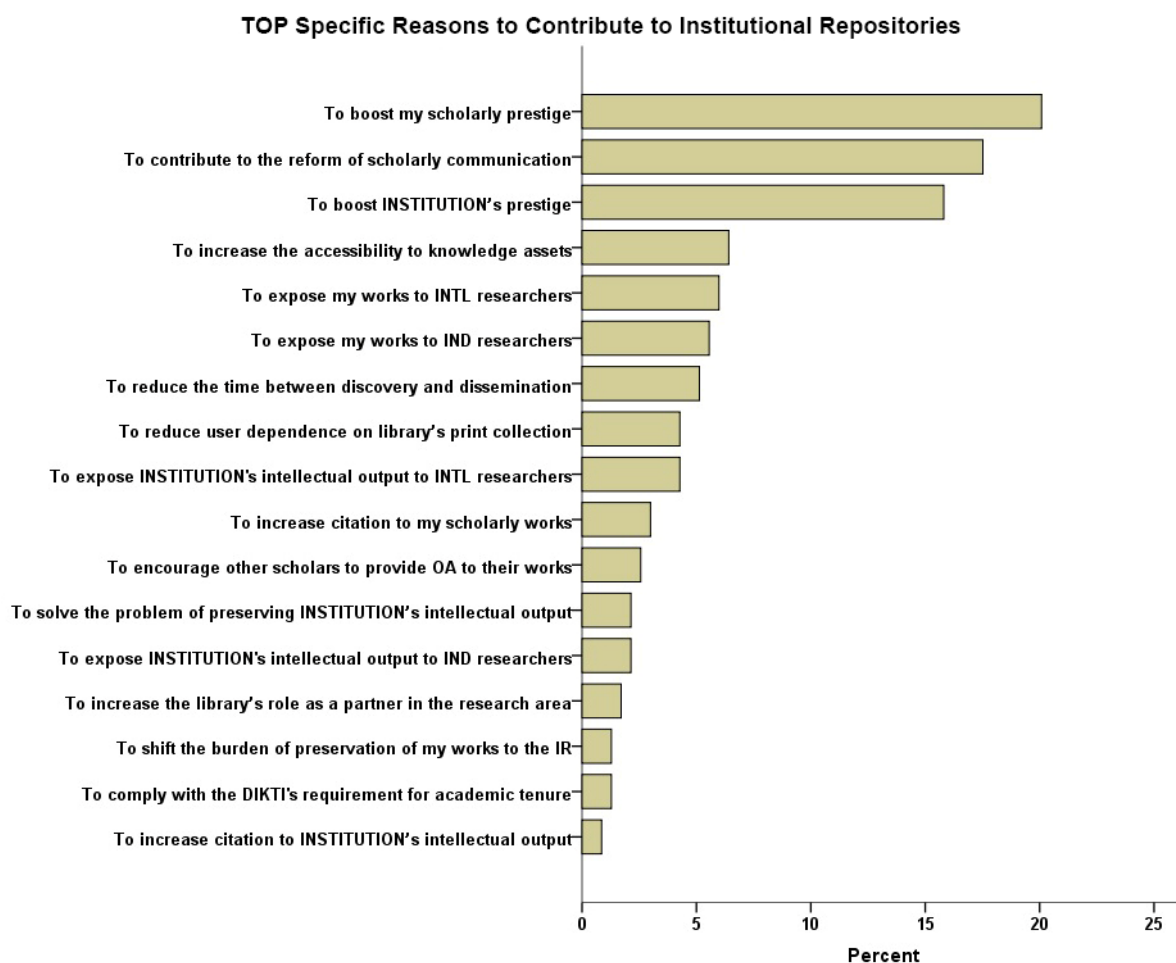


Figure 6.23 TOP specific reasons to contribute to institutional repositories (sorted in descending order)

6.2.3.3 Type of works contributed to institutional repositories (n=234)

Another follow up question was asked to participants who reported that they have contributed their works to their repositories. This question asked participants to select what type of works they have contributed to their repositories, with six possible response options: “Published Works,” “Unpublished Works,” “Theses/Dissertations,” “Teaching Materials,” “University Record-type Materials,” and “Other.” Each participant could select more than one response option. Table 6.23 and Figure 6.24 show the distribution of responses to these six options, which altogether comprise the distribution of contributed works to the participants’ repositories. In order to enhance readability and comprehensibility, the table and figure had been sorted in descending order based on the value of “%” (percentage).

Table 6.23 Contributed works to institutional repositories (sorted in descending order)

		Freq.	%*
Contributed Works in IR	Published Works	191	81.6
	Theses/Dissertations	101	43.2
	Unpublished Works	95	40.6
	Teaching Materials	93	39.7
	University Record-type Materials	19	8.1
	Other	5	2.1

* Each survey participant could select more than one response option (values do not add up to 100%)

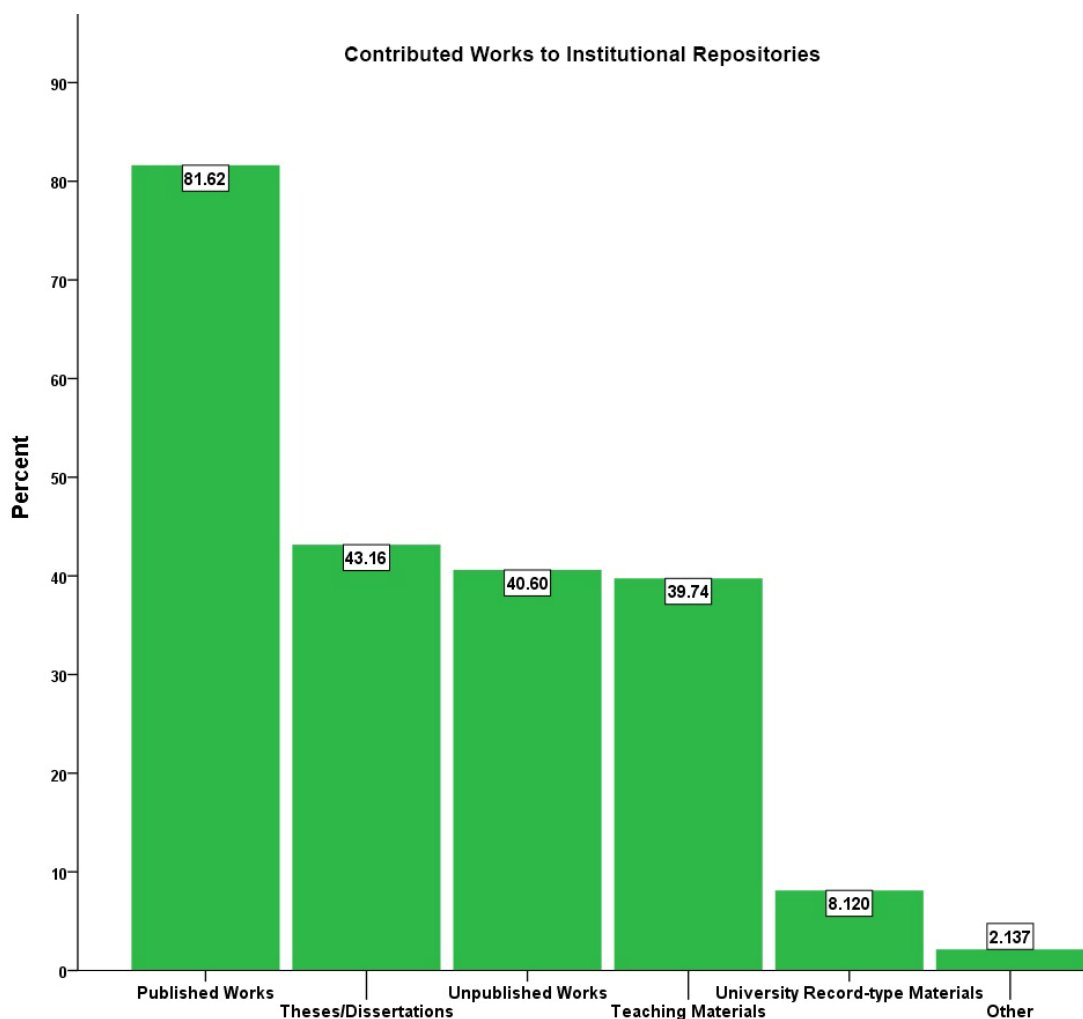


Figure 6.24 Contributed works to institutional repositories (sorted in descending order)

* Each survey participant could select more than one response option (values do not add up to 100%)

6.2.3.4 Factor Analysis and Reliability Analysis of the reasons to contribute to institutional repositories (n=234)

An Exploratory Factor Analysis, Principal Component Analysis (PCA), was conducted to the 17 specific statements (variables) for the reasons to contribute to institutional repositories question. Factor Analysis is “a technique for identifying

groups or clusters of variables”, or “to measure things that cannot directly be measured (so-called **latent variables**)” and this technique “has three main use: (1) to understand the structure of a set of variables ...; (2) to construct a questionnaire to measure an underlying variable ...; and (3) to reduce a data set to a more manageable size while retaining as much of the original information as possible” (Field, 2009, p. 628). Thus in this research Factor Analysis was used to summarize the individual statements (observable variables) for reasons to contribute to institutional repositories question into a smaller set of factors or themes in order to determine the latent variables behind those observable variables. Factors or themes that were found through the Factor Analysis were further analyzed individually for their reliability.

The Factor Analysis and Reliability Analysis have produced many tables and some were substantial since the reasons to contribute to institutional repositories question consisted of 17 individual statements (variables). Due to this condition and the limitation of space, tables for Factor Analysis and Reliability Analysis have been placed separately in Appendix C. For the discussions in this section, all tables and figures numbering that start with “FA” refer to the tables and figure(s) in Appendix C.

In terms of Factor Analysis, the Correlation Matrix table (Table FA.2) indicates that among the 17 individual statements (variables) for the reasons to contribute to institutional repositories:

1. *no* variable was correlated highly to other variables (measuring the same thing), which would have been indicated by correlation coefficients > 0.9 (see the upper half of the table);
2. *no* variables without any correlations at all to other variables, which would have been indicated by significance levels > 0.05 in the majority of the values in the lower half of the table; and
3. there might be a multicollinearity issue, which was indicated by the Determinant value of $1.985E-7$ (which should have been > 0.00001 , see the note at the bottom of the table).

For a Factor Analysis to be appropriately applied, there needs to be “variables that correlate fairly well, but not perfectly” and “any variables that correlate with no other should be eliminated” (Field, 2009, p. 657). Thus, the first and second conditions above indicate that Factor Analysis would be appropriately applied to the individual

statements that answer the reasons to contribute to institutional repositories question. A multicollinearity issue is a signal that there might be a need to remove one or more variables from the analysis. It was decided to put the signal for a multicollinearity issue aside and proceed with the analysis since the correlation coefficients and significance levels provided very good results, and other tests (see following section) also confirmed that the analysis was appropriate. Field (2009) has noted that the Determinant value from a Correlation Matrix table can sometimes provide “contradictory evidence about whether multicollinearity is a problem”, and that researchers do not need to be overly-concerned about multicollinearity when performing PCA for the Factor Analysis (p. 658).

The KMO and Bartlett’s Test table (Table FA.3) indicates that the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy was 0.936. A value of zero (0) would indicate that the Factor Analysis would have been inappropriate, while a higher value (closer to 1) would indicate that the analysis produced reliable and distinct factors. As a general rule, the interpretation of KMO value is as follows:

- < 0.5 Unacceptable
- 0.5 Bare minimum
- > 0.5 and ≤ 0.7 Mediocre
- > 0.7 and ≤ 0.8 Good
- > 0.8 and ≤ 0.9 Great
- > 0.9 Superb/Excellent (Field, 2009, p. 659).

The value of KMO Measure of Sampling Adequacy provides evidence that the Factor Analysis was appropriate. The Bartlett’s Test of Sphericity, $\chi^2(136) = 3495.431, p < .001$, indicates that “correlations between [variables] were sufficiently large” for the application of PCA as factor extraction method (Field, 2009, p. 671).

Regarding the Anti-image Matrices, Field (2009) notes that while “[t]he KMO values for individual variables are produced on the diagonal of the anti-image correlation matrix ... the anti-image covariance matrix can be ignored;” and that the value of “the diagonal elements of the anti-image correlation matrix ... should be above the bare minimum of 0.5 for all variables (and preferably higher)” and “the off-diagonal elements represent the partial correlations between variables,” where smaller correlations will produce better Factor Analysis (p. 659). In Table FA.4, the diagonal

elements of the Anti-image Correlation matrix (bottom half of the table) report values that are well above the minimum of 0.5. These values indicate that no variable needed to be excluded from the analysis.

The Communalities table (Table FA.5) indicates the common variance between the variables once the factors have been extracted. For example, the first statement (“To boost my scholarly prestige”) has 66.9% of its variance explained by the factors, the second statement (“To boost INSTITUTION’s prestige”) has 62.9% of its variance explained by the factors, and so on.

In the Total Variance Explained table (Table FA.6) it should be noted that “there are as many components ... as there are variables,” and that in order “to determine which factors to retain and which to discard ... [b]y default SPSS uses Kaiser's criterion of retaining factors with eigenvalues greater than 1 ...” (Field, 2009, p. 660). Table FA.6 indicates that there are only two components (factors) with eigenvalue greater than 1. This indicates that among the 17 specific reasons to contribute to a repository there have been only two latent variables. This, however, does not mean that these two latent variables were equivalent to statement number one and statement number two in the list according to Table FA.1 (or any other statement in the list). The two latent variables were the overarching themes that represent those 17 specific reasons to contribute to a repository.

The Scree Plot in Figure FA.1 reports the same concept – as Table FA.6 – in a graphical manner.

[The scree test] procedure also employs eigenvalues. However, instead of using 1.0 cutoff value, the user plots successive eigenvalues on a graph and arrives at a decision based on the point at which the curve of decreasing eigenvalues changes from a rapid, decelerating decline to a flat gradual slope (Loehlin, 1998, p. 159).

In Figure FA.1 it can be seen that there were two components (factors) with eigenvalue greater than 1. The Point of Inflection in this case was component (factor) number three; after which the line has the tendency to flatten out, representing “error factors” (Loehlin, 1998, p. 160).

Returning to Table FA.6, the first component (factor) has been responsible in explaining 60.766% of variance and the second component (factor) 6.465% of variance. Together both components (factors) have been responsible for explaining

67.231% of variance. The columns in the “Initial Eigenvalues” (before extraction) are similar to the columns in “Extraction Sums of Squared Loadings” (after extraction). They only differ in the elimination of components (factors) with eigenvalues less than 1 in “Extraction Sums of Squared Loadings” columns. In components (factors) extraction it is usually the case that “the first few factors explain relatively large amounts of variance (especially factor 1) whereas subsequent factors explain only small amounts of variance,” where ‘imbalances’ in the factor structure will be ‘equalized’ or optimized by rotation and “one consequence for these data is that the relative importance of the ... factors is equalized” (Field, 2009, p. 660). This optimizing effect can be seen in the columns for “Rotation Sums of Squared Loadings” (after rotation), where component (factor) 1 has been ‘equalized’ from 10.330 to 6.948 in terms of eigenvalue and from 60.766% to 40.870% in terms of percentage of variance explained. The same ‘equalization’ has occurred to component (factor) 2, which has been ‘equalized’ from 1.099 to 4.481 in terms of eigenvalue, and from 6.465% to 26.362% in terms of percentage of variance explained.

Table FA.7 (Component Matrix) lists all variables along with each variable’s loading to component (factor) 1 and 2 *before* rotation. It can be seen from the table that “most variables load highly onto the first factor” (Field, 2009, p. 661). The blank spaces are the result of SPSS suppressing any loadings less than 0.4. “The original logic behind suppressing loadings less than 0.4 was based on Stevens’ (2002) suggestion that this cut-off point was appropriate for interpretative purposes (i.e. loadings greater than 0.4 represent substantive values)” (Field, 2009, p. 666).

Table FA.8 (Rotated Component Matrix), on the other hand, reports the same information as Table FA.7 *after* rotation. Again, the optimizing effect could be seen, where each variable’s loading to component (factor) 1 and 2 has been more ‘equalized’ (distributed). For variables that have loadings to both components (factors), it can logically be assumed that the variables have gravitated toward the component (factor) with higher loadings. The rotation method used was orthogonal (Varimax) with Kaiser Normalization. An orthogonal procedure produces “factors that are uncorrelated with one another; that is, after the transformation the factors remain independent” (Loehlin, 1998, p. 173). An orthogonal procedure can still be utilized in cases where factors are

“moderately correlated” since it “will often identify the main factors correctly” (Loehlin, 1998, p. 174).

The last table in Factor Analysis is the Component/Factor Transformation Matrix (Table FA.9), which “provides information about the degree to which the factors were rotated to obtain a solution;” but which Field (2009) has advised to ignore due to the complexity in interpreting the matrix (p. 666). The last section of Appendix C has listed the SPSS syntax used to generate all tables and figure.

Referring back to Table FA.8, it can be observed which *specific reasons to contribute to institutional repositories* gravitating toward component (factor) 1 and which ones toward component (factor) 2. Then the final step in Factor Analysis is;

to look at the content of questions that load onto the same factor to try to identify common themes. If the mathematical factor produced by the analysis represents some real-world construct then common themes among highly loading questions can help us identify what the construct might be (Field, 2009, p. 666).

Table 6.24 is an adaptation from Table FA.8 and shows the common themes based on the similarities of the variables that have gravitated toward component (factor) 1 and 2. Among the ten specific reasons to contribute to a repository, a common theme on “Scholarly Communication” has been observable. “Corporate Information Management” has been observed as a common theme among the other seven specific reasons to contribute to a repository.

Table 6.24 Common themes for components (factors) related to the reasons to contribute to institutional repositories identified by Factor Analysis

	Component	
	1	2
To expose INSTITUTION's intellectual output to IND researchers	Scholarly Communication	
To expose my works to INTL researchers		
To expose INSTITUTION's intellectual output to INTL researchers		
To expose my works to IND researchers		
To increase citation to my scholarly works		
To boost my scholarly prestige		
To increase citation to INSTITUTION's intellectual output		
To encourage other scholars to provide OA to their works		
To boost INSTITUTION's prestige		
To contribute to the reform of scholarly communication		
To shift the burden of preservation of my works to the IR		Corporate Information Management
To solve the problem of preserving INSTITUTION's intellectual output		
To reduce user dependence on library's print collection		
To increase the accessibility to knowledge assets		
To increase the library's role as a partner in the research area		
To comply with the DIKTI's requirement for academic tenure		
To reduce the time between discovery and dissemination		

When considering Table 6.24 one might observe that among the individual specific reasons to contribute to a repository, there has been one statement (“To reduce time between discovery and dissemination”) that might seem, at first glance, to have been better related to the “Scholarly Communication” factor than the “Corporate Information Management” factor. Upon further inspection of Table FA.8, it has been found that this specific statement has gravitated almost equally to factor 1 (49.9%) and factor 2 (54.4%). One might consider if this small difference in percentage value (4.5%) has been a sufficient ground on which to switch the ‘affiliation’ of this specific statement from “Corporate Information Management” factor to “Scholarly Communication” factor. This possibility can be explored further in the next section on Reliability Analysis.

After discovering two factors (themes) in the survey data utilizing Factor Analysis, the next step was to test the consistency of responses across individual specific reasons to contribute to a repository by conducting Reliability Analysis. Cronbach's Alpha is a value that tells us “how much correlation [we can] expect between the present scale

and all other possible [x]-item scales measuring the same thing” (Norušis, 2008, p. 433). The internal consistency measure using Cronbach’s Alpha is only one of “[t]hree ways of estimating reliability” with the other two are “test-retest reliability, which is the degree to which a test yields similar results on several administrations or with parallel tests; and inter-rater reliability, which is the degree to which multiple raters assign the same scores” (Norušis, 2008, p. 427). In this analysis only the internal consistency method has been applied.

Since “Cronbach (1951) suggested that if several factors exist then the formula should be applied separately to items relating to different factors” (Field, 2009, p. 675), a Reliability Analysis has been conducted for both factors individually. In Appendix C all tables related to the “Scholarly Communication” (SC) factor have had their labels starting with “FA1” and with “FA2” for the “Corporate Information Management” (CIM) factor. In Reliability Analysis statistics, it is also the case that only two tables are worth examining: the “Reliability Statistics” table and the “Item Total Statistics” table.

In the “Reliability Statistics” table (Table FA1.2a) the Cronbach’s Alpha value is 0.955, a value which reflects a very high degree of reliability. Regarding the Cronbach Alpha value, ”Kline (1999) notes that although the generally accepted value of .8 is appropriate for cognitive tests such as intelligence tests, for ability tests a cut-off point of .7 is more suitable” (Field, 2009, p. 675). This 0.7 (or higher) value has been adopted as the ‘de-facto standard’ for an acceptable Cronbach’s Alpha value in “most social science research situations,” as stated by the University of California at Los Angeles’ Institute for Digital Research and Education (IDRE, 2017, para. 7).

In the “Item Total Statistics” table (Table FA1.4a) attention needs to be drawn to the column labelled “Cronbach’s Alpha if Item Deleted.” The values in this column “reflect the change in [overall] Cronbach’s α [value] that would be seen if a particular item were deleted” (Field, 2009, p. 678). Any value in this column that is higher than the value of Cronbach’s Alpha in the “Reliability Statistics” table is desirable. As can be seen from Table FA1.2a the overall Cronbach’s Alpha value has been 0.955; and there has been *no* value greater than 0.955 in the “Cronbach’s Alpha if Item Deleted” column of Table FA1.4a. It can therefore be concluded that all the ten statements

relating to the reasons to contribute to institutional repositories have had internal consistency to the SC factor, and that no individual variable has needed to be excluded.

The Reliability Analysis so far provides sufficient ground to accept the internal consistency of all the ten statements that have made up the SC factor. However referring to Table 6.24 in the Factor Analysis section above, an additional analysis has been conducted to test whether the final variable (“To reduce the time between discovery and dissemination”) in the other factor (CIM) would be better correlated to the SC factor. Table FA1.2b has produced the Cronbach’s Alpha value for this additional analysis. The new value has been the same (0.955). This signifies that the inclusion of the “To reduce the time between discovery and dissemination” statement has *not* affected the internal consistency of the statements in the SC factor. In other words, this additional analysis has not provided any basis to make decisions regarding the factor to which the statement is better affiliated. Thus the same additional analysis would be needed to be conducted to the CIM factor; as the following paragraphs will explain.

The same Reliability Analysis was conducted regarding the original seven individual statements relating to the reasons to contribute to institutional repositories that have related to the CIM factor. Table FA2.2a shows that the analysis has resulted in the Cronbach’s Alpha value of 0.881, well above the 0.7 cut-off point. Further inspection on the “Cronbach’s Alpha if Item Deleted” column of Table FA2.4a did not reveal any value greater than 0.881, which indicates that all seven individual statements relating to the reasons to contribute to institutional repositories have had internal consistency with the CIM factor; and that no individual variable has needed to be excluded.

Out of curiosity, another Reliability Analysis has been conducted by removing the “To reduce the time between discovery and dissemination” statement (variable) from the factor. Table FA2.2b reports that the analysis results in the Cronbach’s Alpha value of 0.867; a value that was lower than the previous value of 0.881 (see Table FA2.2a). Further inspection on the “Cronbach’s Alpha if Item Deleted” column of Table FA2.4a did not reveal any value greater than 0.867; indicating that further removal of more variables – any variable – would have resulted in lower internal consistency.

Based on all the values of Cronbach's Alpha from the four different Reliability Analysis (Tables FA1.2a, FA1.2b, FA2.2a, and FA2.2b) it can be demonstrated that although the "To reduce the time between discovery and dissemination" variable could be associated to the SC factor, it would provide more internal consistency when it was associated to the CIM factor. It could then be concluded that there have been the following two factors (themes) identified by Factor Analysis and then confirmed by Reliability Analysis:

1. "Scholarly Communication" (SC) factor, and
2. "Corporate Information Management" (CIM) factor.

6.2.4 Reasons NOT to contribute to institutional repositories

6.2.4.1 Specific reasons NOT to contribute to institutional repositories (n=90)

Among the survey participants who reported that they have *not* contributed to their own repository, twelve individual follow up statements were provided regarding their specific reasons that have motivated them *not* to contribute. Table 6.25 and Figure 6.25 show the distribution of the twelve statements making up the distribution of reasons *not* to contribute to a repository. In order to enhance readability and comprehensibility, the table and figure had been sorted in descending order based on the total value of the participants reporting that they either "Strongly Agree" or "Agree."

Among the reasons participants provided when they selected the "Other" response option, there were some that could have been categorized into one of the available options. However they were left as they were, taking into account the fact that to the participants they were not the same as one of the available options; and thus selected "Other" as their responses. Other reasons that were considered to be unique were as follows:

- a. lack of or limited Internet access to enable contribution;
- b. assumed that their works will automatically be added to the repository by an "administrative team;"
- c. lack of familiarity with the repository in their institutions (information/awareness, procedure, etc.);
- d. have not produced any scholarly works as yet;

- e. just joining the institution (presumably early career lecturers/researchers);
- f. lack of knowledge on the policies regarding self-archiving and their relation to scholarly publishing;
- g. lack of or no (technical) support for contributing; and
- h. repository is used solely for students' theses/dissertations.

Table 6.25 Specific reasons NOT to contribute (sorted in descending order based on the total value of “Strongly Agree” and “Agree”)

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
	(%)				
1. No time/Administrative burden	13.3	31.1	27.8	20.0	7.8
2. Concerns my works will be plagiarized	12.2	25.6	16.7	32.2	13.3
3. Other	10.0	24.4	55.6	5.6	4.4
4. Plan to patent my works	4.4	27.8	35.6	25.6	6.7
5. IR user interface is not user-friendly	10.0	17.8	38.9	27.8	5.6
6. Concerns of confidentiality/privacy issues in my works	3.3	21.1	25.6	41.1	8.9
7. Concerns of copyright issues in my works	2.2	18.9	17.8	48.9	12.2
8. IR gives no feedback to me as an author	6.7	14.4	44.4	28.9	5.6
9. Concerns of security issues in my works	1.1	15.6	28.9	41.1	13.3
10. Concerns in quality of my works	1.1	13.3	14.4	50.0	21.1
11. Topic is sensitive/controversial	0.0	7.8	23.3	48.9	20.0
12. Topic is not interesting	0.0	4.4	14.4	63.3	17.8

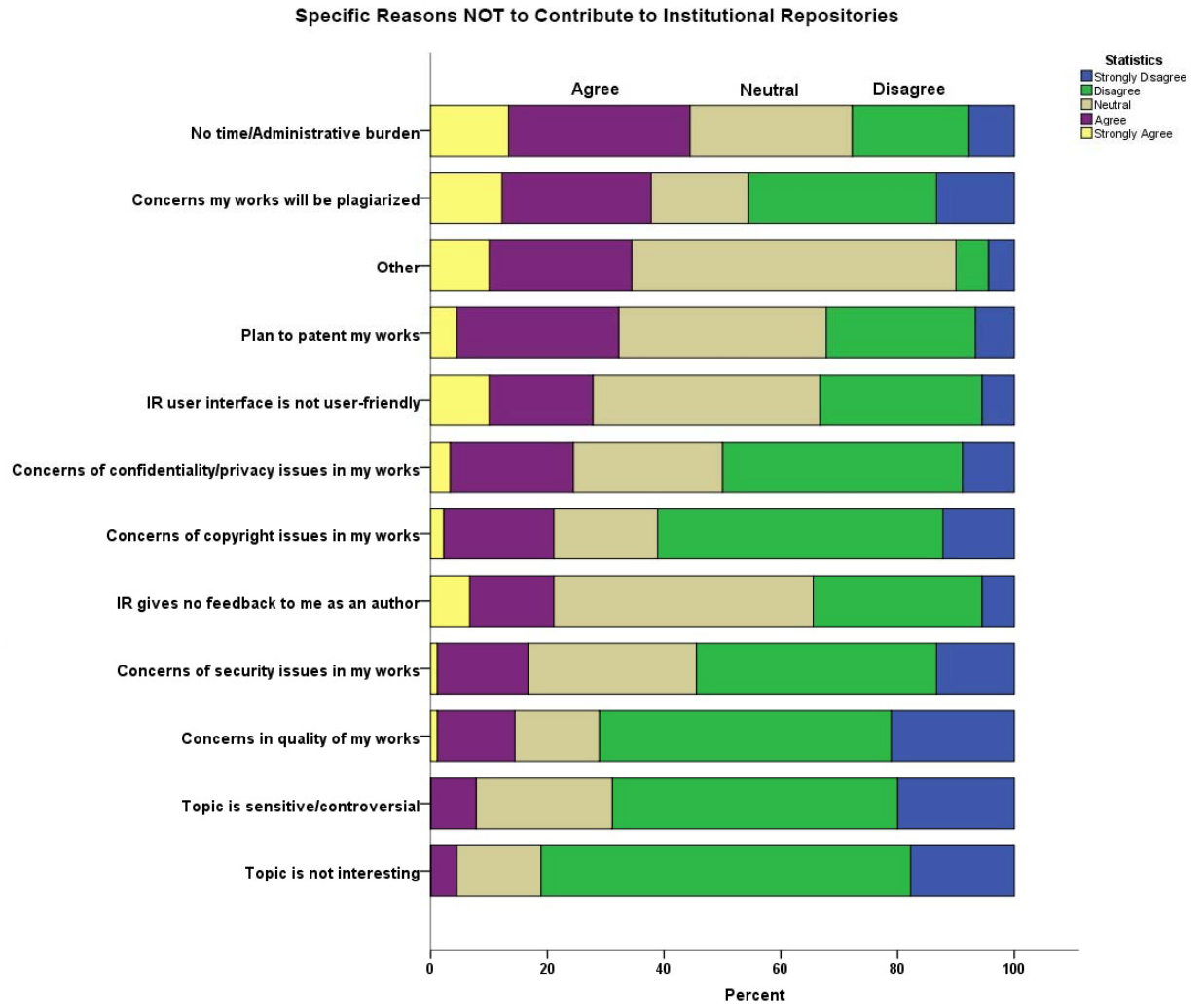


Figure 6.25 Specific reasons NOT to contribute (sorted in descending order based on the total value of “Strongly Agree” and “Agree”)

6.2.4.2 TOP specific reasons NOT to contribute to institutional repositories (n=88)

Among the specific reasons *not* to contribute to institutional repositories, survey participants were requested to pick one specific reason as their *top* reason *not* to contribute. Table 6.26 and Figure 6.26 show the distribution of the statements making up the distribution of the top reasons *not* to contribute to a repository. No participant selected “Topic is sensitive/controversial” as the *top* reason *not* to contribute to a repository. Thus there are only eleven statements presented in Table 6.26. In order to enhance readability and comprehensibility, the table and figure had been sorted in descending order based on the value of “Valid %.”

Table 6.26 TOP specific reasons NOT to contribute to institutional repositories (sorted in descending order)

	Freq.	%	Valid %	Cumulative %
Valid 1. No time/Administrative burden	26	5.9	29.5	29.5
2. Other	19	4.3	21.6	51.1
3. Concerns my works will be plagiarized	13	3.0	14.8	65.9
4. IR user interface is not user-friendly	9	2.1	10.2	76.1
5. Plan to patent my works	6	1.4	6.8	83.0
6. Concerns in quality of my works	5	1.1	5.7	88.6
7. Concerns of confidentiality/privacy issues in my works	3	.7	3.4	92.0
8. Concerns of copyright issues in my works	2	.5	2.3	94.3
9. Topic is not interesting	2	.5	2.3	96.6
10. IR gives no feedback to me as an author	2	.5	2.3	98.9
11. Concerns of security issues in my works	1	.2	1.1	100.0
Total	88	20.1	100.0	
Missing System	350	79.9		
Total	438	100.0		

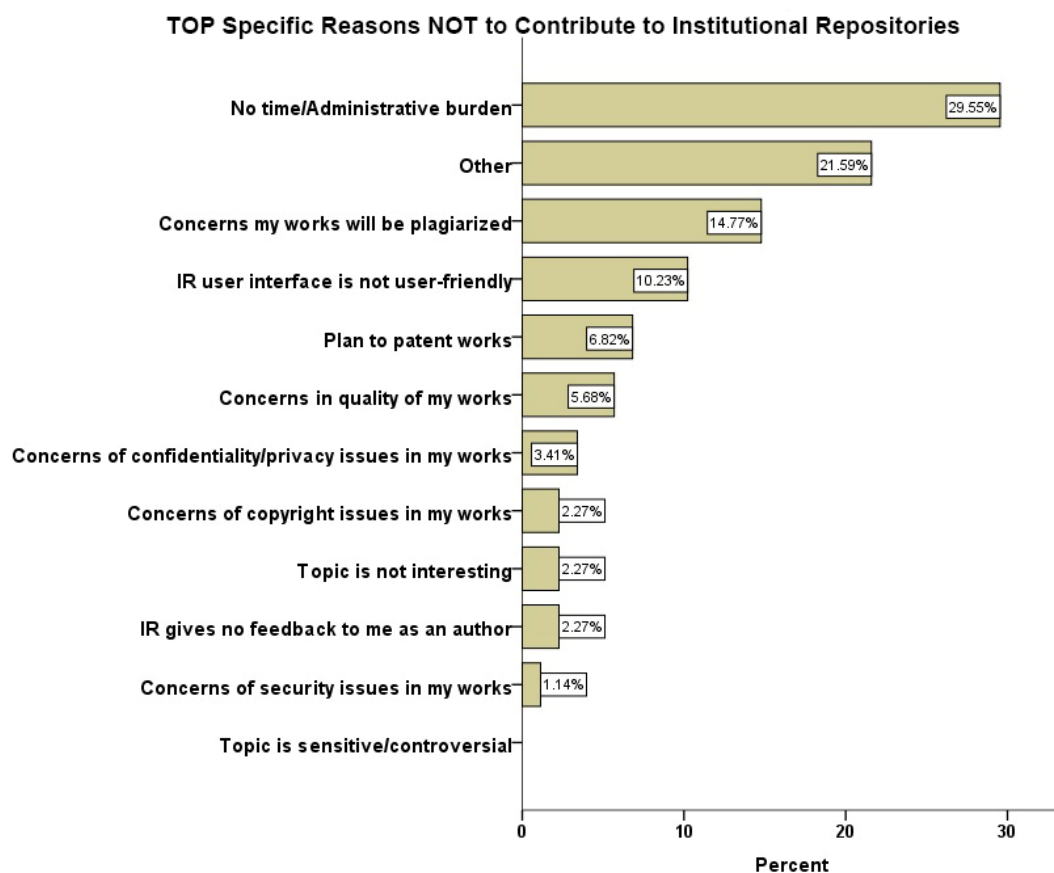


Figure 6.26 TOP specific reasons NOT to contribute to institutional repositories (sorted in descending order)

6.2.4.3 Factor Analysis and Reliability Analysis of the reasons NOT to contribute to institutional repositories variable (n=90)

An Exploratory Factor Analysis was conducted on the twelve specific statements (variables) for the reasons *not* to contribute to institutional repositories question in order to summarize them into a smaller set of factors or themes in an attempt to uncover the latent variables behind those observable variables. Factors or themes that were found through the Factor Analysis were then analyzed individually to test their reliability. Due to space limitations, tables for Factor Analysis and Reliability Analysis have been placed separately in Appendix D. For the discussions in this section, all tables and figures numbering that start with “FB” refer to the tables and figures in Appendix D.

Detailed explanations for Factor Analysis and Reliability Analysis will not be provided in this section since they are similar to the previous section relating to the analyses for the reasons to contribute to institutional repositories. This section will only provide the necessary statistical information for each step in the Factor Analysis and Reliability Analysis for the twelve specific statements mentioned above.

In terms of Factor Analysis, the Correlation Matrix table (Table FB.2) indicates that among the twelve individual statements (variables) for the reasons *not* to contribute to institutional repositories:

1. no variable was correlated too highly to other variables (measuring the same thing), which would have been indicated by correlation coefficients > 0.9 (see the upper half of the table);
2. *some* variables have no correlation to other variables, which was indicated by significance levels > 0.05 in some of the values in the lower half of the table; and
3. there was *no* multicollinearity issue, which was indicated by the Determinant value of 0.010 (which is > 0.00001 , see the note at the bottom of the table).

In terms of the first condition above, even though there was no variable that correlated highly to other variables, there was one fairly high correlation (the coefficient was still below 0.9) between variable 10 (“Concerns of confidentiality/privacy issues in my works”) and variable 11 (“Concerns of security issues in my works”). Although this condition did not place any barrier to the implementation of Factor Analysis, it would manifest in certain phenomenon in the Reliability Analysis. The negative value in

some of the coefficients was an indication that as one variable (statement) increased the other decreased. In terms of correlation strength only the *absolute* value matters.

It was the second condition that gave an early indication that the variables were not well correlated, but some correlations did exist nevertheless. Thus the Factor Analysis could still be performed. The KMO and Bartlett's Test table (Table FB.3) confirmed the early indication by producing a value of 0.687 (> 0.5 and ≤ 0.7) for the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy. The Bartlett's Test of Sphericity, $\chi^2(66) = 383.569, p < .001$, indicated that "correlations between [variables] were sufficiently large" for the application of Principal Component Analysis (PCA) as factor extraction method (Field, 2009, p. 671).

Table FB.4 reports that the diagonal elements of the Anti-image Correlation matrix (bottom half of the table) have values that were all above the bare minimum of 0.5. This condition indicates that no variable (statement) needed to be excluded from the analysis.

The Communalities table (Table FB.5) indicates the common variance between the variables once the factors have been extracted. The Extraction Method used in this Factor Analysis was the Principal Component Analysis.

In (Table FB.6) "there are as many components ... as there are variables" but "to determine which factors to retain and which to discard ... [b]y default SPSS uses Kaiser's criterion of retaining factors with eigenvalues greater than 1" (Field, 2009, p. 660).

Total Variance Explained table (Table FA.6) indicates that there were only three components (factors) with eigenvalue greater than 1. This means that among the twelve specific reasons *not* to contribute to institutional repositories there have indicatively been only three latent variables. These three latent variables were the overarching themes that represented those twelve specific reasons *not* to contribute to institutional repositories.

The Scree Plot in Figure FB.1 shows the same concept – as Table FB.6 – in a graphical manner. In Figure FB.1 it can be seen that there were three components (factors) with eigenvalue greater than 1. The Point of Inflection in this case was component (factor)

number four. It can also be observed in Figure FB.1 that component five has a slightly ‘raised’ decline before dropping back and flattening out. Loehlin (1998) has also made the same observation and stated that the “decline [of the eigenvalues in scree plot] is seldom absolutely linear out to the last eigenvalues – often ... it may shift to a more gradual slope somewhere enroute” (p. 159).

In Table FB. 8 (Rotated Component Matrix), it can be observed which specific reasons *not* to contribute to a repository have gravitated toward component (factor) 1, 2, or 3. These groupings of variables provide some measure to identify the common theme for each of the variable group. Table 6.27 is an adaptation from Table FB.8 and reports the common themes based on the similarities of the variables that have gravitated toward component (factor) 1, 2, and 3. Among the first five specific reasons *not* to contribute to institutional repositories, a common theme on “External Aspects” of scholarly works has been observable. “Administrative and Tool Aspects” has been observed as a common theme among the next four specific reasons *not* to contribute to a repository. “Internal Aspects” of scholarly works has emerged as the common theme for the last three variables.

Table 6.27 Common themes for components (factors) related to the reasons NOT to contribute to institutional repositories identified by Factor Analysis

	Component		
	1	2	3
Concerns of confidentiality/privacy issues in my works	External Aspects		
Concerns of security issues in my works			
Plan to patent my works			
Concerns my works will be plagiarized			
Topic is sensitive/controversial			
IR gives no feedback to me as an author	Administrative & Tool Aspects		
IR user interface is not user-friendly			
No time/Administrative burden			
Other			
Concerns in quality of my works			Internal Aspects
Topic is not interesting			
Concerns of copyright issues in my works			

When considering Table 6.27 it can be observed that among the individual specific reasons *not* to contribute to institutional repositories, there is one statement (“Topic is sensitive/controversial”) that might seem, at first glance, to have been better related to

“Internal Aspects” factor than “External Aspects” factor. Upon further inspection of Table FB.8, it has been found that this specific statement has gravitated toward factor 1 with the least percentage (44%) compared to other statements. No percentage values for this statement in the other two factors, which indicates that the percentage values were less than 40% (the cut-off point set for SPSS to display the values). One might consider if this statement could instead be moved to the “Internal Aspects” factor. This possibility can be explored further in the next section on Reliability Analysis.

Similar to the previous Reliability Analyses, three different analyses were carried out against each individual factor (theme) as identified in Table 6.27. For “External Aspects” (EA) factor, the original Cronbach’s Alpha value was 0.808 (see Table FB1.2a). However upon inspection of the “Cronbach’s Alpha if Item Deleted” column of Table FB1.4a, it could be observed that a higher Cronbach’s Alpha value of 0.829 would have been achieved by removing the “Topic is sensitive/controversial” variable. When the Reliability Analysis was repeated with the “Topic is sensitive/controversial” variable removed, the Cronbach’s Alpha value has increased to 0.829 (see Table FB1.2b). However in Table FB1.4b it can be observed that – again – by removing the “Concerns my works will be plagiarized” variable, the Cronbach’s Alpha value is increased to 0.849. When the Reliability Analysis was repeated with the “Concerns my works will be plagiarized” variable removed, the Cronbach’s Alpha value increased to 0.849 (table not provided). Another increase in the Cronbach’s Alpha value to 0.905 was – again – detected by removing the “Plan to patent my works” variable (table not provided). This last iteration of Reliability Analysis, however, would have left the EA factor with only two remaining variables. These two remaining highly-correlated variables have been identified in the Factor Analysis phase; see the Correlation Matrix table (Table FB.2), where variable 10 (“Concerns of confidentiality/privacy issues in my works”) and variable 11 (“Concerns of security issues in my works”) have the highest coefficient for correlation (0.828) among the twelve statements (variables) answering the reasons *not* to contribute to institutional repositories question.

It was decided that the Reliability Analysis iterations should stop at the Cronbach’s Alpha value of 0.829, which left the EA factor with four remaining variables. This decision was made based on several considerations. Firstly, there should be a middle

ground between achieving a higher Cronbach's Alpha value *and* "reducing a data set to a more manageable size" (Field, 2009, p. 628). The last two iterations of Reliability Analysis as mentioned in the previous paragraph would have achieved a higher value of Cronbach's Alpha *but* at the same time failed to achieve a meaningful reduction in the data set. Secondly, 0.829 has been a sufficiently good *value* for Cronbach's Alpha as the indicator for internal consistency. Thirdly, the four remaining variables at the Cronbach's Alpha value of 0.829 demonstrate *meaningful* correlations among them as "External Aspects" of the reasons *not* to contribute to a repository. The four remaining variables have similar characteristics of aspects that were external from the scholarly works themselves, but which might have had some influence in the decision of the survey participants to *not* share (or contribute) them through their own institution's repository. This third consideration also strengthens the second argument above (that 0.829 has been a sufficiently good value) and was in line with the purpose of conducting Factor Analysis, which is "to understand the structure of a set of variables" (Field, 2009, p. 628).

Thus the EA factor has been left with only four remaining variables and the "Topic is sensitive/controversial" variable has been treated as a separate variable. Based on its meaning, this variable – at first glance – could have been better correlated with the "Internal Aspects" (IE) factor. This possibility could be tested later.

In terms of "Administrative & Tool Aspects" (ATA) factor, the original Cronbach's Alpha value was 0.670 (see Table FB2.2a), which was lower than the cut-off point (0.7). However upon inspection of the "Cronbach's Alpha if Item Deleted" column of Table FB2.4a, it could be observed that a higher Cronbach's Alpha value of 0.741 could be achieved by removing the "Other" variable. When the Reliability Analysis was repeated with the "Other" variable removed, the Cronbach's Alpha value increased to 0.741 (see Table FB2.2b). However in Table FB2.4b it could be observed that – again – by removing the "No time/Administrative burden" variable, the Cronbach's Alpha value could be increased to reach 0.834. This last iteration of Reliability Analysis, however, would have left the ATA factor with only two remaining variables.

Using similar considerations as previously discussed, it was decided to stop at Cronbach's Alpha value of 0.834, which left the "Administrative and Tool Aspects"

(ATA) factor with only two remaining variables. Based on the remaining two variables (“IR gives no feedback to me as an author” and “IR user interface is not user-friendly”), the ATA factor could be renamed as “Tools Aspect” (TA) factor. The “Other” and “No time/Administrative burden” variables have been treated as meaningful entities, ‘detached’ from the TA factor.

In terms of “Internal Aspects” (IA) factor, the original Cronbach’s Alpha value was 0.680 (see Table FB3.2a), which was lower than the cut-off point (0.7). Table FB3.4a has not shown any higher value for Cronbach’s Alpha in the “Cronbach’s Alpha if Item Deleted” column, which indicates that no variables should be removed from the IA factor. As mentioned above, the “Topic is sensitive/controversial” variable – which has been ‘detached’ from the EA factor – could be ‘attached’ to the IA factor to see whether this new ‘attachment’ (inclusion) could increase the Cronbach’s Alpha value. Table FB3.2b, however has shown that ‘attaching’ the “Topic is sensitive/controversial” variable into IA factor would only decrease the Cronbach’s Alpha value to 0.634. Thus the Cronbach’s Alpha value of 0.680 should be used for IA factor that has consisted of three variables. This lower than 0.7 Cronbach’s Alpha value was not ideal, but neither was it unreasonable. Kline (1999) has argued that “when dealing with psychological constructs values below even .7 can, realistically, be expected because of the diversity of the constructs being measured” (p. 675).

The Reliability Analysis so far has left three variables being ‘separated’ (or ‘detached’) from the three factors identified by Factor Analysis, as follows: “Topic is sensitive/controversial,” “Other,” and “No time/Administrative burden.” Further Reliability Analysis using any combinations of those three variables would have only resulted in very low or even negative values of Cronbach’s Alpha (tables not provided), which indicates that these three separate variables were indeed three separate (or independent) factors.

It could therefore be concluded that using Factor Analysis and Reliability Analysis the following factors (themes) for the reasons *not* to contribute to institutional repositories have been identified:

1. “External Aspects” (EA) factor;
2. “Topic is sensitive/controversial” (Controversy/CTR) factor;
3. “Tools Aspect” (TA) factor;

4. “Other” factor;
5. “No time/Administrative burden” (Administrative Aspect/AA) factor; and
6. “Internal Aspects” (IA) factor.

Table 6.28 summarizes the individual statements for reasons *not* to contribute to institutional repositories and their respective ‘affiliation’ to the factors (themes) identified.

Table 6.28 Common themes for components (factors) related to the reasons NOT to contribute to institutional repositories based on Reliability Analysis

	Component			
	1	2	3	Misc.
Concerns of confidentiality/privacy issues in my works	External Aspects			
Concerns of security issues in my works				
Plan to patent my works				
Concerns my works will be plagiarized				
Topic is sensitive/controversial				Controversy
IR gives no feedback to me as an author		Tool Aspects		
IR user interface is not user-friendly		Administrative Aspect		
No time/Administrative burden				
Other				Other
Concerns in quality of my works			Internal Aspects	
Topic is not interesting				
Concerns of copyright issues in my works				

Chapter 7. In-depth interviews

7.1 Data collection

A total of 22 in-depth semi-structured interviews were conducted in three universities in three different cities in Indonesia during November and December 2015. This section describes the preparation and execution of the interview project, including the transcription and coding processes.

7.1.1 The planning stage

The interviews were conducted as a follow up to the online survey conducted earlier (May to August 2015), where participants were asked specifically if they wanted to be contacted for possible follow up to the survey. A number of participants responded affirmatively and provided their contact information. Based on the number of responses obtained from each institution, some institutions were selected as being representative of Indonesian higher education institutions. The selections were made by taking into account the number of responses obtained from the institutions, and the representativeness of the institutions in terms of state vs. private institutions and Java-based vs. institutions outside Java. Due to limitations in funding and time, only three institutions were selected. A state university in Java generated the most number of responses (101 responses). This university (referred to as University A) was selected to represent state institutions in Java. Another Java-based representative was required as 81.51% of responses were generated from Java-based institutions. To provide a counter point the second representative should be a private institution. The first choice was a private institution that generated the most number of responses (40 responses) among Java-based private institutions. However to avoid any possible bias or conflict of interest – since the researcher is affiliated to this institution – another institution needed to be selected. The second choice was the private institution that generated the second-most number of responses (15 responses). However this institution is located in a city adjacent to University A. In an effort to provide better geographical variety, a different selection was made; a private institution that generated the third-most number of responses (14 responses, referred to as University B). Formal approval was obtained from these two institutions. The third institution was selected as the

representative from Sumatra-based state institutions, considering that institutions in Sumatra generated 13.70% of the responses – the second-most after Java. The first choice was an institution that has generated the most number of responses (27 responses) among Sumatra-based institutions, which happened to be a state institution. However since a formal approval was not able to be obtained from this institution, another needed to be selected. Another state institution had generated the second-most number of responses (14 responses), and a formal approval was obtained from this institution (referred to as University C).

After three institutions had been selected, potential participants were identified. There were two categories of participants in this interview project: 1) academics (lecturers or researchers), who would be expected to provide their *personal* opinions; and 2) university administrators (officials), who would be expected to provide their respective *institutional* (professional) opinions. Participants who are academics from each institution were identified and approached using the contact information provided during the survey. It was decided to interview a maximum of three lecturers or researchers from each institution, as it was determined that three would be sufficient to provide diversity of opinions.

An email was sent to each potential participant to confirm their willingness to take part in the interview, and an interview appointment was scheduled. In selecting these individuals, efforts had been made to introduce diversity in terms of academic disciplines and opinions (as indicated by their survey returns) toward institutional repositories. However in two cases there were limited options available, as there were only three survey participants from University C who indicated their willingness to be contacted for an interview; and with University A only four participants indicated willingness to participate in an interview, of which only three had provided contact information. An issue also arose with a lecturer from University B, who was selected since he had a negative opinion of repository in his institution. However after being contacted he declined an interview request, citing that he have thought that he did not have sufficient knowledge on institutional repositories to contribute to the research.

In the case of university officials, the following positions were targeted as interview participants: 1) Vice Rector for Academic Affairs; 2) Director of the Office of Research and Development; 3) head of library; and 4) repository manager. Contacts

with these officials was made using the information provided by each university. The majority of preliminary contacts with these university officials were conducted using email correspondence. An additional interview was scheduled with the official from the Ministry of Research, Technology, and Higher Education (KemenristekDikti), since Garuda, the national portal for Indonesian repositories, was administered under this ministry.

In conjunction with the process of identifying and contacting interview participants, the following documents were developed:

1. Formal Letter to the institutions, which provides brief description of the research, the interview, the candidates to be interviewed, and request to the institution to appoint a contact person (see Appendix E);
2. Information Sheet, providing a brief description of the research, the interview, and the confidentiality aspects of the interview data (see Appendix E);
3. Consent Form, to be signed by each interview participant (see Appendix E);
4. In-depth Interview Protocol, listing the steps to be taken during the preparation of the interview, in the interview, and after the interview (see Appendix E);
5. In-depth Interview Participants Coding Table, listing all the names of the interview participants alongside their codenames used to mask their names in the interview transcripts (see Appendix E, all names have been removed due to privacy considerations);
6. List of Questions for In-depth Interview (Interview Schedule), listing all the questions that would be asked to the interview participants (see Appendix F); and
7. A Questionnaire for Repository Manager, which asked about the types of works available in the repository, statistics on access, usage, and services, as well as requesting some relevant documents from the repository manager (see Appendix G).

There are four different categories of interview schedule (sets of questions) that were used for the interviews, depending of the role of each participant:

1. Vice Rector for Academic Affairs and Director of the Office of Research and Development, which was also used for the interview with KemenristekDikti officials;
2. Head of Library;

3. Repository Manager; and
4. Academics (lecturers or researchers).

Some questions overlapped between categories and some questions were unique to a category.

The development of the interview schedule was informed by a number of sources. Firstly, the preliminary findings from the content analysis and survey, which helped the formulation of interview questions. These questions served two purposes: to confirm or disconfirm the preliminary findings, and to enable further exploration of some of the issues that had been confirmed or to facilitate the emergence of new issues that were not detected in the previous stages. Secondly, some questions in the interview schedule and questionnaire for the repository manager were taken from previous research on institutional repositories conducted by the Primary Research Group. Written permission (via an email dated March 25, 2015) from the Primary Research Group Inc.'s President (James Moses) had been obtained to use the questions in this interview project. The list of questions as well as the email correspondence is attached as Appendix H.

The interview schedule was tested in pilot interviews with two Indonesian Ph.D. colleagues. Based on the pilot interviews the need for some improvements were identified, including:

- the use of everyday language in formulating questions;
- more flexibility with the use of interview schedule (not following the scheduled wording and sequence of questions too rigidly) based on each participant's responses; and
- providing a brief introduction to institutional repositories at the beginning of the interview, including the difference between repositories and online journal databases.

The pilot interviews also gave the researcher good opportunities to test the audio quality of the recording device that would be used for the interviews.

A questionnaire was also prepared and sent to repository managers in three universities via email. A number of questions in this questionnaire have been developed by adopting some questions from previous survey conducted by the Primary Research Group (2011). These questions have been translated into Bahasa Indonesia and adapted

for local conditions in Indonesia. The repository managers were requested to fill in the questionnaire and send it back via email to the researcher before the interview, or hand it back to the researcher during the scheduled interview.

7.1.2 The interviews

The interviews were conducted in November to early December 2015. As part of the formal procedures, formal letters (as email attachments) were sent to all the interview participants at the end of October, together with the Information Sheets and Consent Forms. At this stage, due to some local conditions, contact information for some participants had not yet been obtained, necessitating further on-site arrangements once the researcher arrived in Indonesia. For example University C had just had a new Rector elected, which meant that the new Rector would appoint staff for senior positions but at the time many of these positions were vacant or newly occupied. This situation resulted in one failed interview and improvisation regarding the arrangements for other interviews. Fortunately the schedule for interviews with lecturers in the institution could be made well in advance.

Other improvisations had to be made to accommodate unforeseen circumstances. For example, the Director of the Office of Research and Development in University A was new in his position and has requested his deputy to assist him in the interview. The Director spoke a little at the beginning of the interview but for the duration of the interview the deputy undertook the answering of questions. Before ending the interview, the researcher requested the Director to give his closing remarks, with the intention of establishing his presence in the room during the whole interview and therefore providing endorsement of the statements made by his deputy. A similar situation arose in KemenristekDikti, where the Secretary General of Empowerment of Research and Development asked one of his staff to assist with the interview. In this case both participants contributed evenly to the discussion. In both cases (University A and KemenristekDikti) the same interview protocol was read to the dual interviewees. Both were also given the Information Sheet and asked to sign the Consent Form. This situation would also have some impact later in the transcription and coding stage, where both participants' statements were transcribed in the same interview transcript and treated as one entity since both were interviewed in their official capacity and did not contradict each other.

Other changes occurred on site and adjustments needed to be made. At University B, the Vice Rector for Academic Affairs did not grant an interview and delegated the task to the Head of Library, whom was already in the list of interview participants. In University C additional ad-hoc adjustments were necessary. Firstly, when interviewing the Rector (used to be the Vice Rector for Academic Affairs, whom then was elected as the new Rector), he allowed another person in the room during the interview. For the most part this person just sat in silence during the interview. However at one particular point he interjected and contributed to the discussion. This person's statements would later not be transcribed since he only spoke a few sentences without adding any substance to the discussion. Secondly, the contact person in the institution had set up an interview schedule for the Director of the Office of Research and Development. However this participant did not show up at the scheduled time and place. Further efforts to set up another appointment was not successful. Thirdly, at the time of the interview the position for the Head of the (main) library was vacant. It was then suggested to interview the Head of the Postgraduate Library instead. This suggestion was approved and an interview was conducted. Fourthly, there was more than one repository manager in the institution and it was initially planned to do the interview with only one of them. However during the interview, this particular repository manager recommended that the researcher also conduct an interview with the other – more senior – repository manager, who was involved in the establishment of the institutional repository. Thus there were two interviews with repository managers in University C.

Two repository managers from University A and University B had returned the questionnaire sent to them prior to the scheduled interviews. The researcher did not manage to get the questionnaire back from repository managers in University C since it was not ready during the scheduled interviews with both interviewees. Subsequent efforts to obtain it did not yield any result.

7.1.3 Post interviews

After the interviews were completed, a number of logistical activities were undertaken. Firstly, the audio recordings were backed-up from the audio recording device. The use of digital audio recording device had made the process much easier since the audio recordings were already in digital format, as a result of which they were easily copied

between devices and/or computers. Secondly, all the Consent Form and interview notes were scanned, stored, and backed-up digitally.

7.1.4 Transcription

In this interview project the researcher was also the transcriber and in transcribing the interview recording into text, a naturalized style was adopted. The decision for a naturalized style was based on the need to provide as-faithful-as-possible representations of the interview recordings, of which access cannot be provided to the public due to privacy and confidentiality considerations. Since all the interviews were conducted in Bahasa Indonesia, many of which have involved the use of colloquial forms of the language, and even local languages such as Javanese. In order to provide some level of standardization, guidelines for transcribing the interview recordings was developed (see Appendix I). The guidelines provide detailed instructions on how the transcription process should be undertaken. These instructions include the use of special characters that function as markers in the transcripts, such as cross-talking, inaudible word(s), start and end of interview, etc. Each participant is represented with a codename to protect his/her privacy.

Based on the researcher's experience in transcribing interview recordings, for every minute of audio recording some five to eight minutes of transcription is required. The time required for transcription depends on several factors, such as the use of colloquial form of language, clarity of audio recording, the frequency of cross talks, and participant's habit in talking (e.g., a lot of mumbling sounds, unclear pronunciation of words, etc.). The use of transcription software was also very helpful, which in this case Express Scribe from NCH Software was used.

7.1.5 Participant checks

As part of quality control and acknowledging the contributions from the participants, all transcripts were emailed individually to each interviewee. The email explained the following matters:

- that the transcripts had been de-identified by masking all personally or institutionally identifiable information to respect the participant's privacy and the confidentiality of his/her institution;

- that some symbols (special characters) and technical terms had been used in the transcripts to keep the transcripts as faithful as possible to the interview, and that these symbols and terms might cause the transcript to be harder to read; and
- that spoken language is very different than written language, such that it is normal for participants to feel some discomfort in reading their own statements in written form.

The last point was made in an effort to attend to Mero-Jaffe's (2011) assertion that "when speech is represented as written text, readers evaluate it according to the conventions of written text" (p. 240), which might create a desire to make corrections or changes just to make the text 'read' better. The email also asked each participant to give his/her approval to the transcript while retaining the rights to make editorial corrections. Substantial corrections or updates that reflect new developments after the interview were recommended to be made as an addendum. The participants were informed that in case of no response, the assumption would be that approval has been given. Each participant was also informed that the de-identified transcripts will be made available and accessible as a dataset in an open access digital repository as part of the research data management. The participant was asked to inform the researcher if he/she did not want the relevant transcript to be made available (opt out) in a repository. Lastly, the email also informed the participants about the published journal article that reported on the results of the content analysis stage of the research. Although these results were not directly related to the interviews, it was considered to be a gesture to the participants and another sign of appreciation for their assistance with the research.

Fifteen responses were obtained from the participants. In general they gave their approval for the use and storage of the transcripts. Some participants gave their feedback regarding some issues:

- names and/or official positions were still appearing in some of the transcripts and needed to be masked;
- some abbreviations and/or names of academic department were unique to certain institution and also needed to be masked; and
- some corrections on words that were transcribed incorrectly and/or misspellings of words.

These issues were followed up and the corrected version of transcripts sent back to the respective participants.

7.1.6 Translation

After the final version of the interview transcripts in Bahasa Indonesia were produced, the initial plan was to translate these transcripts into English for the coding stage. The researcher experimented with an as-verbatim-as-possible approach in the translation process. However this approach proved to be very time consuming given the difficulties in translating colloquial forms of language in Bahasa Indonesia and Javanese into English. In addition, this approach produced English text that was deemed not useful for the coding stage since the English translation would be difficult to understand. The ‘verbatim’ approach was then abandoned and a summary style approach to translation was adopted. This approach attempts to maintain the question and answer (Q&A) style of the interview while providing the English summary of each iteration of Q&A. However after some trials this approach was also deemed to be not satisfactory. Firstly, it would cause a considerable loss in granularity of the interview data since the English translation would only provide summaries. Secondly, the translations may introduce additional bias since the process would rely upon the researcher’s interpretation. Thirdly, it was often the case that a topic or theme would involve more than one iteration of Q&A. All these conditions would have significantly impacted the coding process.

Considering these difficulties, and the fact that the researcher himself, who is a native Bahasa Indonesia and Javanese speaker, would do the coding of the interview transcripts, it was then considered that there was no real necessity to translate the interview transcripts into English. The researcher could use the transcripts in Bahasa Indonesia for the coding stage and would only translate into English those parts of the transcripts that he would be using or quoting in the report (thesis). This approach has had several advantages: 1) it saved considerable amount of time; 2) it preserved the granularity of the interview data in the transcripts during the coding process; and 3) it reduced potential bias and errors that would have been introduced had the transcripts been translated into English. Once this issue was resolved the researcher moved to the next stage, which was the coding of the interview transcripts into results with identifiable patterns and relationships.

7.2 Results

The researcher used NVivo 11 for Windows from QSR International for coding the interview transcripts. The software assisted considerably in managing the coding, and allowed the researcher to focus on identifying patterns and relationships in the interview data. In addition to the interview transcripts, the coding stage has also included text-based responses obtained from the survey that was conducted prior to the interviews. However the questionnaires for repository managers were not included in this coding stage using NVivo since there are only two documents with very minimal text-based responses. The de-identified interview transcripts are available as a separate dataset in PDF format (Liauw, 2018b).

7.2.1 The coding of the interview transcripts

Preliminary codes were prepared by using the Nodes feature in NVivo. These preliminary codes were derived from several different sources:

1. Research question and/or objectives;
2. Preliminary findings obtained from the previous stages of research (content analysis and online survey); and
3. The researcher's familiarity with the transcripts acquired during the transcription process.

The codes derived from the research objectives and preliminary findings of the previous stages of research were the "apriori codes" as per Gibson and Brown's (2009) definition, since they reflected the "prespecified interest" (p. 142) of the researcher. The codes derived from the researcher's familiarity with the transcript were, however, rather ambiguous. Technically speaking they "emerge through the exploration of data," which has made them "empirical codes" (p. 143). By transcribing the interview recordings the researcher has effectively immersed himself in the interview data. On the other hand these codes were formulated *before* the coding, the 'formal' examination of interview data, in NVivo was started. Thus, while these codes are empirical codes, for practical purposes they can also be categorized as a priori codes.

Some preliminary codes also have the combined characteristics of a priori and empirical codes. For example, the researcher created the "Uptake Drivers" as one of the preliminary codes since it was one of the research objectives. Based on the

preliminary findings from the content analysis and online survey it was decided to divide this code into two 'child' codes: "Scholarly Communication" and "Corporate Information Management." Then, based on the researcher's familiarity with the interview transcripts, it was apparent that "Scholarly Communication" incorporates more specific aspects, such as the use of institutional repositories as "Information Source," "Information Dissemination" platforms, and a tool to increase "Scholarly Prestige/Citation." Further, regarding the "Corporate Information Management," from transcribing interview recordings, it was also apparent that the information management aspect has two dimensions: "Personal" and "Institutional." Thus it was decided that the word "Corporate" should be deleted and the code would be more appropriately labelled as "Information Management" with two child codes: "Personal" and "Institutional." Furthermore, based on the researcher's familiarity with the transcripts, each child code was assigned some relevant 'grandchild' codes. This process seemingly confirms that the categories of codes (a priori and empirical) are not mutually exclusive, as noted by Harding (2015).

Based on the preliminary codes, the coding was conducted by assigning certain segments of the interview transcripts (some words, a phrase, a sentence, a 'paragraph,' or even multiple 'paragraphs') to one or more relevant codes. During this process some new parent codes were created; child codes were added to parent codes; or some code labels were modified to better reflect their scope. For example, "Potential of IR & OA" was created as a preliminary code based on the research objective. Any portion of the transcripts that indicated some request or prediction for future repositories were categorized within this preliminary code. However after coding a number of transcripts it was noticed that some newly-recognized patterns emerged from the text that had been categorized into this code. The patterns indicated the need to assign the following child codes to this parent code: 1) "General Ideas;" 2) "Collaborative Platform;" 3) "Fear of Plagiarism;" 4) "Grey Literature;" 5) "Open Access;" and 6) "System Integration." The emergence of these 'new' child codes did not happen immediately but has evolved through a number of iterative processes, such as reading, coding, re-coding, re-labelling codes, adding child codes, and then re-assigning child codes. After the emergence of each child code, it was necessary to return to all the previously-coded texts in the parent code category and re-assign the 'new' child code whenever appropriate.

A similar situation applied with other preliminary codes. For example, the preliminary code “Management Issues” initially produced three child codes, namely “Jurisdictional Issues,” “Management of Information,” and “Use of Information.” However after going through the iteration process a new child code was added: “Institutional Policies.” After some further iterations, another child code was generated: “Advocacy.” There were also new parent codes that were later added during the coding process:

- “Language Issues,” which relates to any discussion on the language aspects of scholarly works and how language influences the use of scholarly works and their dissemination;
- “Publish vs. Accessible,” which relates to the mixed (confusing) use of the word “publish” among Indonesian academics and university administrators to describe formal (peer-reviewed) publication and making works publicly accessible online; and
- “Technology Issues,” which relates to technical matters associated with institutional repositories.

“Potential Quotes” code was used only to identify quotes from participants that might potentially be used in the report. During the coding process the researcher also used the Memo feature of NVivo, which allows the creation of notes or reflections. These memos have then been linked to the relevant code(s) and used as sources, in addition to the interview transcripts and the textual responses from the survey. Thus three different categories of sources were involved in the coding process: 1) interview transcripts; 2) three different text responses from the preceding survey (reasons for supporting own institutional repository, *other* reasons for not contributing to own institutional repository, and comments); and 3) memos.

The final list of codes is presented in Figure 7.1, in the form of a ‘mind map’ graphic, which gives an overview of the codes, their hierarchical structure, and the number of sources and number of references for each code. Number of *sources* refers to the number of interview *transcripts*; *survey text responses*; or *memos* that are relevant to a particular code. Number of *references* refers to the number of parts from interview transcripts; survey responses, or memos that have been referred to by a particular *code*. The number of references can never be smaller than the number of sources. A table with more detailed information regarding each code (description, number of sources,

and number of references assigned or mapped to each code) is provided in Appendix J. Figure 7.2 (produced using NVivo), providing a different type of visualization for the distribution of references in each code in the form of a hierarchical chart. The size of the area for each (parent and child) code in the hierarchy chart was created based on the percentage of (text) coverage from all the sources used in the coding process, not merely the number of sources and references as in Figure 7.1.

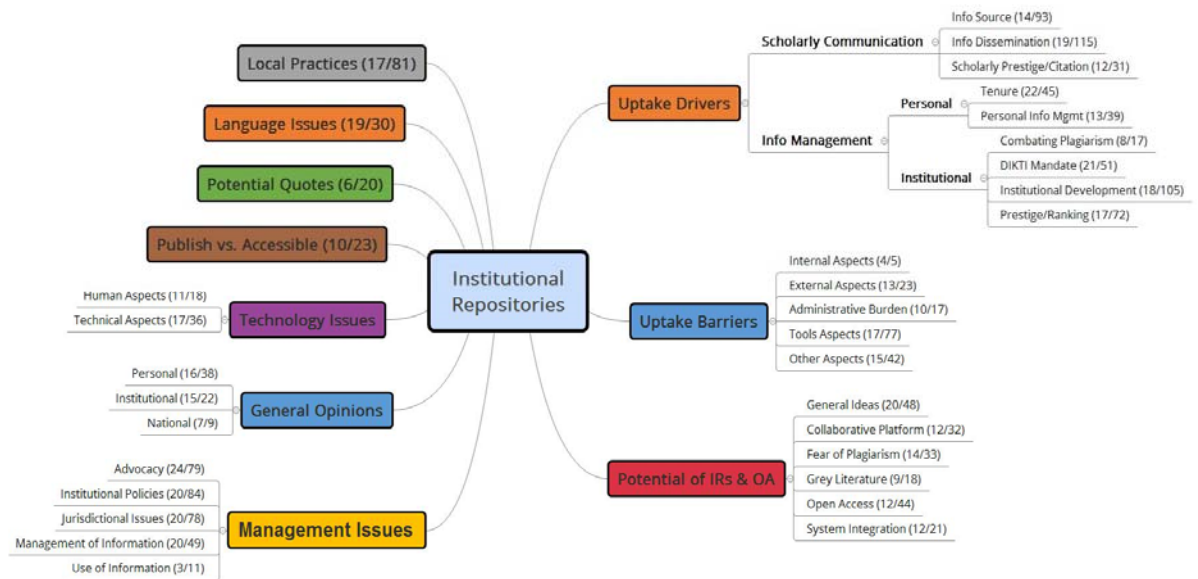


Figure 7.1 Mind map of codes including the number of sources and references referred to by each code

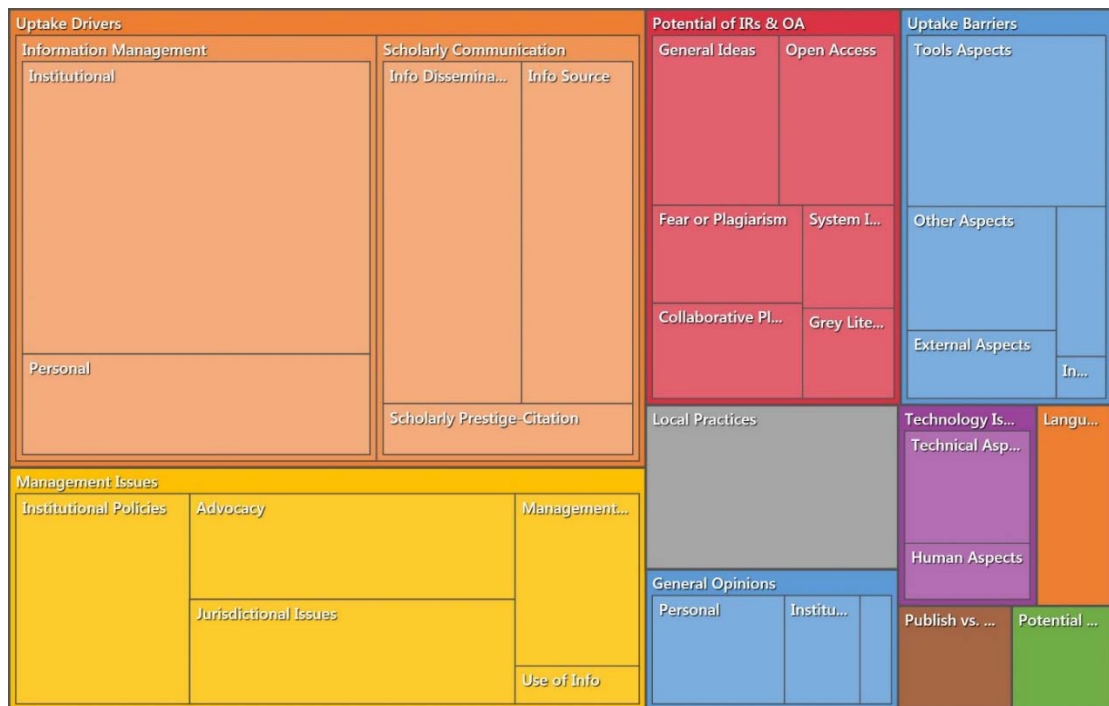


Figure 7.2 Hierarchy chart of codes based on the number of sources and references referred to by each code

It should be noted that the number of sources and references need to be treated with some caution. The higher the number *does* indicate that the issue described in the code was mentioned or discussed, directly or indirectly, by interviewer and/or survey participants with greater frequency. However, this does *not* mean that the participants were all in agreement on the issue. Further, the fact that an issue was mentioned or discussed more does *not* necessarily mean that the particular issue is more important than other issues with lower numbers of sources and references. Some participants might only mention the issue in passing or touch on the subject lightly. Other issues with lower number of sources and references might produce more meaningful discussions and reflections, making them more important in terms of their contribution to the research.

Further compilations of the interview data has produced charts that provide an overview of the coverage of various codes (topics) by academics (lecturers or researchers), administrators (Vice Rectors, Directors of the Office of Research and Development, Heads of Library, and Repository Managers) and DIKTI officials; as can be seen in Figure 7.3, Figure 7.4, and Figure 7.5. The figures were produced using NVivo by taking the percentage coverage for each code (topic) in each interview, summing them for all participants in the same category, and dividing the result with

the number of interviews in each category. An interview participant (B8LC) was an academic at the time of the interview. She was, however, categorized as an administrator since she was specifically interviewed for her experience as an administrator and her involvement in the establishment of the repository in her institution. It should also be noted that since one particular segment of (transcript) text could be assigned to one or multiple codes, the aggregated percentage coverage can add up to more than 100%; as in the case of Figure 7.3 and Figure 7.4. Conversely, since not all (transcript) text was assigned a code, the aggregated percentage coverage can be less than 100%, as in the case of Figure 7.5. Further, it is also the case that some codes unavoidably have overlapping boundaries, meaning that these codes have similarities but have been treated as separate to facilitate the discussions, which are the outcome of the analysis.

The raw data, in the form of individual quotes from interview participants, will not be presented in this chapter. Quotes from participants will be incorporated into the discussion in Chapter 8.

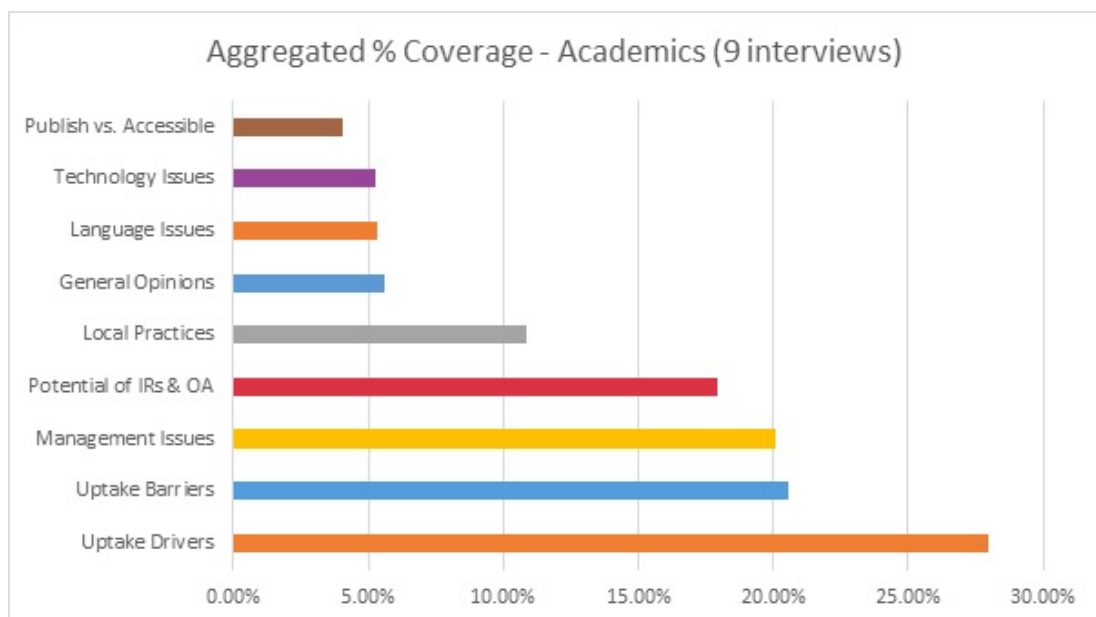


Figure 7.3 Aggregated percentage coverage of topics by Academics (9 interviews)

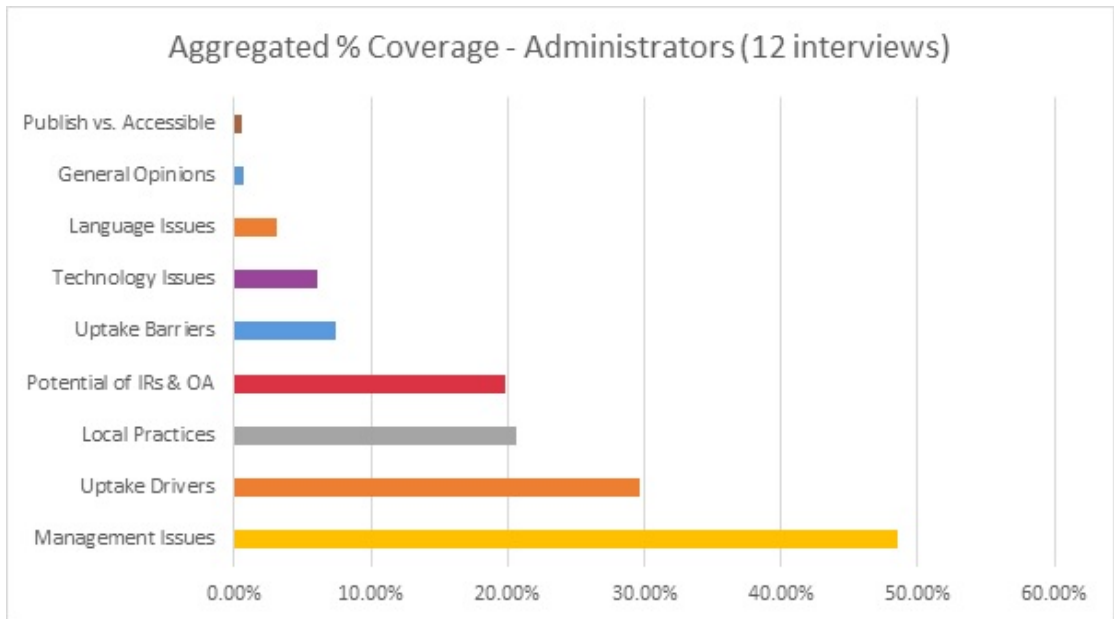


Figure 7.4 Aggregated percentage coverage of topics by Administrators (12 interviews)

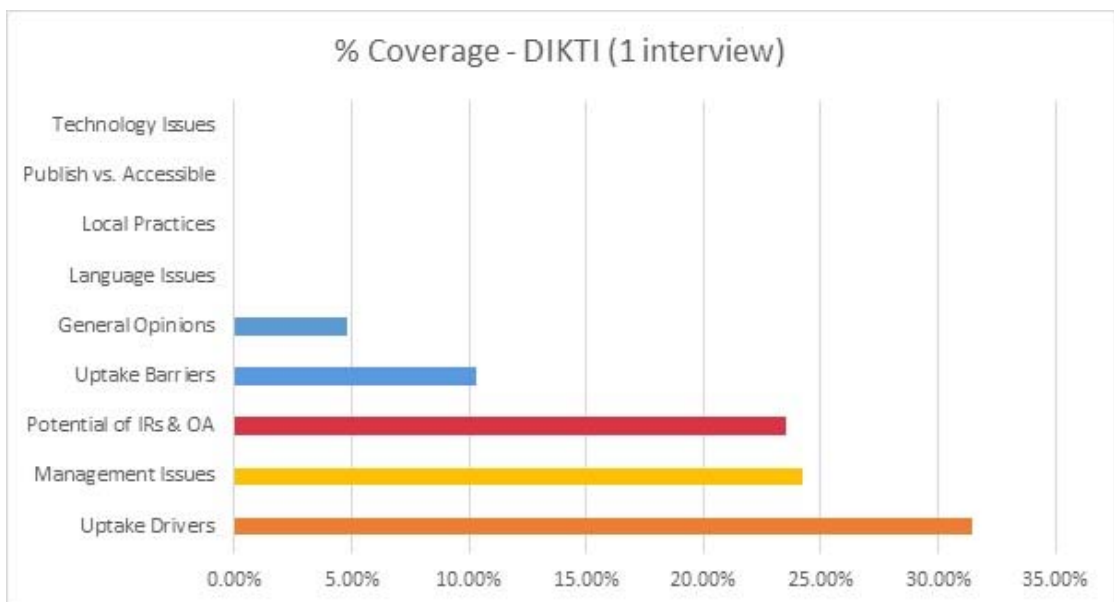


Figure 7.5 Percentage coverage of topics by DIKTI officials

7.2.2 Individual participant's reports

As a gesture of appreciation, an individual participant's report was emailed to each interviewee, containing the individual's percentage coverage of topics in his/her interview (see a sample in Figure 7.6). The figure for each participant was produced using NVivo by taking the percentage coverage for each code (topic) in the relevant interview. The individual report was also accompanied by other figures that depict the aggregated information from all interview participants (Figure 7.1, Figure 7.2, Figure 7.3, Figure 7.4, and Figure 7.5) that could provide some comparisons.

The sending of the report also provided another opportunity to remind the seven participants who did not respond to the first email that the researcher provided along with the de-identified interview transcripts. Three participants later responded, leaving only four participants (out of 22 interviews) who did not give any response.

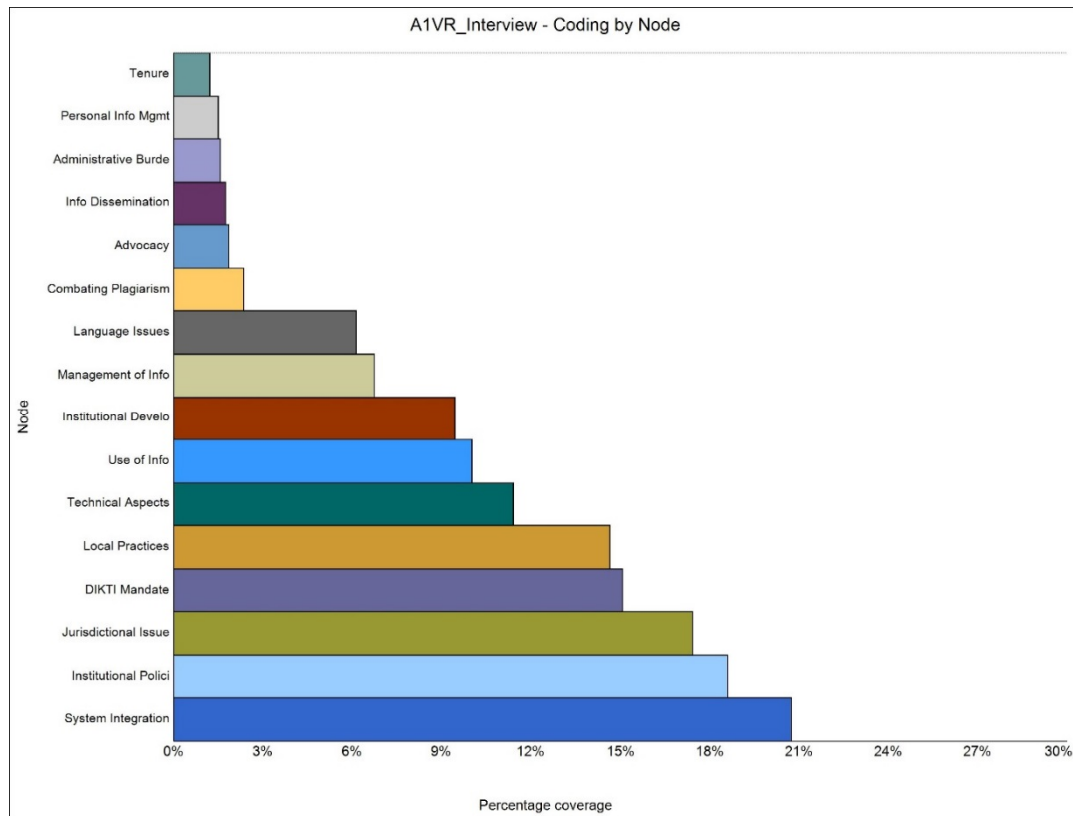


Figure 7.6 A sample of individual participant’s percentage coverage of topics during the interview

7.2.3 Questionnaire for repository managers

Although the questionnaires for repository managers were not coded in NVivo, some interesting information were obtained from them that might provide insights into the inner working of the repository in the respective institutions. Repository manager from University C did not return the questionnaire despite the researcher’s efforts. Some of the information gathered from the questionnaire is presented in Table 7.1.

Table 7.1 Some characteristics of institutional repository in University A and University B

University A	University B
IR is NOT linked or integrated to the library management system (LMS)	IR is linked or integrated to the library management system (LMS)
Content contributors: academics, master and doctoral students, undergraduate students, librarians, archivists, staff of public relations office, staff of computing center, university administrators, and other non-academic staff in the university	Content contributors: academics, master and doctoral students, and undergraduate students
Undergraduate students (S1) are the top contributor of contents	Undergraduate students (S1) are the top contributor of contents
Provides promotional materials for IR	Provides promotional materials for IR
Provides annual (internal) report on IR	No annual report on IR
Never sent any press release to media promoting the institution's repository	Never sent any press release to media promoting the institution's repository
Sent press release to campus internal media promoting the institution's repository	Sent press release to campus internal media promoting the institution's repository
Use information literacy classes for new students to promote the IR, especially postgraduate students	Use personal/informal contacts with academics to promote the IR
	Users from outside the institution are more dominant than internal users

Chapter 8. Discussions

8.1 Content analysis (longitudinal) study

Based on the data collection (DC) described in earlier chapter, there are some noteworthy aspects of the results. Firstly, in DC1 (2014/2015) as well as DC2 (2016/2017) the distribution of institutional repositories in Indonesia is consistent with the distribution of higher education institutions in the country, which generally reflects also the distribution of the country's population. The distribution of digital objects also corresponds to the population distribution in each region. The distribution of institutional repositories has also reflected the country's distribution of Internet users in general, as reported by APJII (2017, p. 7). Comparisons of these distributions are presented in Table 8.1.

Table 8.1 Comparisons of population of people, and number of repositories and digital objects in various regions of Indonesia

Region	% Population*	% Internet Users**	% IRs		% Digital Objects	
			2014/2015	2016/2017	2014/2015	2016/2017
Java	56.82	58.08	76.9	74.1	78.06	86.64
Sumatera	21.64	19.09	15.4	17.3	17.56	11.04
Sulawesi	7.33	6.73	1.9	2.45	2.13	1.89
Kalimantan	6	7.97	3.9	3.7	1.92	0.26
Bali & Nusa Tenggara	5.52	5.63	1.9	2.45	0.33	0.17
Maluku	1.12	2.49	0	0	0	0
Papua	1.57		0	0	0	0
TOTAL	100	99.99	100	100	100	100

*(Statistics Indonesia, 2014) **Asosiasi Penyelenggara Jasa Internet Indonesia (APJII)

Secondly, the exact matches in terms of the number of digital objects between the OpenDOAR data and manual counting, nine repositories in DC1 (seven used EPrints, two used DSpace, and one used in-house developed software) and three repositories in DC2 (all used EPrints), justifies the method used in this study in manually counting the number of digital objects in each repository. The differences that did occur between OpenDOAR data and manual counting (see Table 5.4 and Table 5.6) could be explained by recent updates by the respective repositories.

Thirdly, it was found that the manual counting in DC1 usually (56.25% of 32 repositories) provided a smaller number of digital objects than OpenDOAR-sourced data. This strongly suggests that some institutions have deleted records from their repositories since OpenDOAR last updated its records. One repository (Universitas Gunadarma) has shown an 84.38% decrease in its number of digital objects (OpenDOAR record dated January 30, 2014, while DC1 was conducted on Jan 16, 2015), suggesting a change of software or a recommencement of the repository. It has raised speculation that this trend implied that some institutions were experimenting with the composition of their repositories at the time DC1 was conducted. The case of Medan State University (UNIMED) in DC2 has confirmed this speculation. This institution switched its repository software from GDL in DC1 to EPrints in DC2, which is presumably associated with the substantial decrease in the number of records (manual counting) in its repository, from 33,143 records in DC1 to 17,779 records in DC2 (a 46.36% decrease). Other cases of Airlangga University (AIRLANGGA) and Muhammadiyah University Ponorogo (UNMUH-PONO), as described earlier in Chapter 5.5, have only reinforced the suggestion that a number of institutions did change their repository software. The “gdlhub-gdl-” prefix and “jkptumpo-gdl-“ prefix used by these institutions respectively, were the commonly known file naming convention used in GDL. Both institutions were using EPrints as their repository software during DC2, a switch from GDL as the previous software.

Fourthly, despite the fact that during DC1 and DC2 some institutions were observed as still experimenting with their repositories, including changing the repository software, a different pattern emerged in DC2 in terms of the growth rate of contents compared to DC1. The difference is clearly demonstrated in a comparison of Table 5.4 and Table 5.6. In DC1 (see Table 5.4) out of 32 repositories (with data that can be compared) there were only twelve repositories that had a relatively substantial difference (more than 100 items) in terms of number of Digital Objects between manual counting and OpenDOAR-provided data. Out of these twelve repositories only one had a positive difference, meaning only this single repository had added more than 100 records between the last time the OpenDOAR data was updated and the manual counting was undertaken. In DC2 (see Table 5.6), however, out of 46 repositories there were 33 that had substantial difference in terms of number of Digital Objects. Out of these 33 repositories, 29 had a positive difference and only four repositories had a

negative difference. It was a strong indication that in DC2 Indonesian repositories have demonstrated positive growth in their deposit profile compared to DC1. Table 5.6 also reported a number of repositories with significant growth rate, in particular Makassar State University (UNMKSAR) with 92.96% growth and Padjadjaran University (UNPAD) with an impressive 303.66% growth (albeit the OpenDOAR data was last updated on August 5, 2014).

Fifthly, with regards to the “Public Full-Text Availability” variable, several points need to be made. The technical differences in the field execution of the survey between DC1 and DC2 relating to the “Public Full-Text Availability” variable and other complicating factors, as discussed in the “Results for Data Collection 2” section, have introduced a challenge in the comparability of the results for this particular variable obtained by the two data collection periods. This study cannot provide valid comparison between the results of DC2 and DC1. It can be established, however, that the DC2 results for this variable was more accurate, thus can be taken as reliable references. The case of University of Indonesia’s (UI) repository in DC2 has lent some credibility to the results of DC2. There was only 3.9% difference between the sampling (43.9%) and the ‘real’ figure (40%) of the records in the repository with publicly accessible full-text documents (see the discussion in Chapter 5.5). Although this comparison could only be obtained from a single repository, it nevertheless provides some justification for the results in DC2 in terms of the “Public Accessibility of Full-Text” variable. Moreover, lessons learned from this study would be beneficial for future similar studies. The complicating factors discussed earlier could also be anticipated for any future more-automated studies (e.g. more representative sampling by taking sample records proportionately based on the distribution of collections in the repository and/or taking into account the distribution of records based on the Year).

Sixthly, the finding that the majority of the repositories surveyed provide access points to facilitate discoverability (using at least keywords), and that the language used for these access points is mostly English, suggests that Indonesian higher education institutions intend to make their repository’s content available to both domestic and international users. As many developing countries lack access to formal channels of scholarly communication, particularly in their native languages, repositories (and open access more generally) are seen as an important means of increasing the profile and

availability of their research outputs. It is a reality, however, of the global domination of English as the international language of scholarship that this will only be achieved if these outputs are widely discoverable, and this requires the use of English metadata.

Seventhly, with regard to open access, only 16.05% of the repositories surveyed in DC2 (81 repositories) made all or most of the full-text documents freely-accessible to the public. In the original context of the Open Access movement, where repositories were initially developed and implemented as a Green (self-archiving) open access strategy in response to the business model of commercial publishers, this result is relatively low. A consideration of the types of works available in Indonesian repositories might be helpful in understanding the relatively low degree of openness in these repositories.

Regarding types of works, there were some notable characteristics of the repositories surveyed: (see Figure 5.7)

- Theses & Dissertations were found in most of the repositories surveyed (84.62% in DC1 and 90.12% in DC2);
- Published Works (80.77% in DC1 and 86.42% in DC2) were highly represented;
- Unpublished Works were the third most-common with a significant increase from 51.92% in DC1 to 74.07% in DC2;
- University Records were relatively common and consistently represented in 50% of the repositories in DC1 and 56.79% of the repositories surveyed in DC2;
- Teaching Materials were found in only 30.77% of the repositories surveyed in DC1 and 32.1% of the repositories surveyed in DC2; and
- Student Works (15.4% in DC1 and 12.35% in DC2), Special Collections (1.9% in DC1 and 1.23% in DC2), and other types of works were also present, but only minimally.

The finding that Theses and Dissertations are the most common inclusion might suggest that they were the first type of work populating institutional repositories. This suggestion is in line with Lippincott's (2006) assertion that "an ETD [(Electronic Theses and Dissertations)] program has frequently served as the foundation or pilot for institutional repository content," on the basis that they constitute the "low-hanging fruit" (p. 3). The MIRACLE Project also reported a similar finding, when it concludes that in the pilot-test and operational repositories the most dominant type of works are

“traditional text-based document types that result from the research enterprise of faculty and students at postsecondary institutions” (Markey et al., 2007, p. 57). However in the Indonesian context, due to the local practices of managing undergraduate theses, the works by undergraduate students are more dominant than works by postsecondary (postgraduate) students. Due to the sheer number of undergraduate students in the country, these works undergraduate students have dwarfed the works by faculty/academics.

In the context of the origin of repositories as the ‘brain child’ of the Open Access movement, one would expect Published Works to be the dominant category included in repositories. However this is evidently not the case for Indonesian repositories. Even though the category of Published Works used in this study has been *broadened* to include conference articles/papers (proceedings), they nonetheless remain *secondary* to Theses and Dissertations. The significant increase of Unpublished Works between DC1 and DC2 was also an interesting phenomenon. This Type of Works consists mostly of research and community service reports authored by academics that were not formally (peer-reviewed) published. Instead they were written and submitted, either to the respective institution or to DIKTI, as part of academic tenure obligation. In addition, there are two interesting characteristics of the full-text documents provided in a number of Indonesian repositories: 1) incomplete scholarly works, such as abstract only for journal articles, or cover and table of content only for books; and 2) the presence of institutional/administrative documents, such as internal peer-review forms, that accompany the scholarly works, even in the absence of the associated main works.

Based on these observations and the data discussed above, it is highly likely that many Indonesian higher education institutional repositories were not conceived as a response to a scholarly communication problem, but rather as a corporate information management system, especially to manage students’ theses and dissertations and/or faculty tenure. It can also be concluded that the issue of open access, as a response to the crisis in scholarly communication, is of secondary importance to many Indonesian higher education institutional repositories; and that the use of repositories as a management tool is a likely explanation for the lack of links connecting them to institutional websites and/or library websites.

In 2006 the popularity of repositories in the Indonesian higher education sector increased significantly with the release of Ranking Web of Universities (<http://www.webometrics.info/en>). Although the ranking is for universities' websites in general, the rankings were significantly influenced by the digital contents in the respective institutions' repositories. The ranking was then adopted by DIKTI as – among others – a tool to assess Indonesian higher education institutions. Webometrics later released its Ranking Web of Repositories (<http://repositories.webometrics.info/en>) that specifically target repositories. Out of 52 repositories analyzed in this study three commenced in 2006; 41 were commenced after 2006, and the year of inception of eight repositories cannot be determined. Therefore the study could not find any repositories that commenced *before* 2006. The majority of the repositories analyzed (36) were started in or after 2010. Also, one of the “quantitative web indicators” used by Webometrics (indicators may change from time to time) is the availability of Rich Files, which is defined as “[f]iles in formats like Adobe Acrobat (.pdf), Microsoft Word (.doc, .docx), MS Powerpoint (.ppt, .pptx) and PostScript (.ps & .eps) extracted from Google” (Cybermetrics Lab - CSIC, n.d.). The Webometrics ranking therefore suggests that these repositories have – in one way or another – allowed their contents (full-text documents) to be crawled and indexed by Google (Aguillo, Ortega, Fernández, & Utrilla, 2010), creating the appearance of open access. On the other hand this study found a contradictory indicator in that only 16.05% (13 repositories) in DC2 – figure from DC1 is deemed to be less accurate – allow all or most of their content (full-text documents) to be accessed publicly using their repositories' user interface. It is also relevant to note that the mandate to “upload electronically all scholarly works by students/lecturers/researchers/staff of any higher education institution” was conceived within the broader context of fighting plagiarism. This is apparent from the title of the relevant Regulation; “The Prevention and Eradication of Plagiarism in Higher Education Institutions” (Nuh, 2010b, Chapter 7 Clause 2). Additionally, similar link to plagiarism issue has surfaced in the case of Indonesia One Search, a portal developed by the National Library of the Republic of Indonesia that aims to gather all metadata of the collections – physical or digital – owned by libraries across the country. In his presentation titled “Open Access Repositories in Indonesia,” the initiator of Indonesia One Search and a consultant to the National Library of the Republic of Indonesia, laid out the roadmap of Indonesia One Search, noting that in addition to serving as a scholarly information portal, in its

final phase (2018-2020) it will also serve as a similarity checking service to detect potential plagiarism (Fahmi, 2016, p. 49). All these indicators suggest that repositories are part of the effort to build a corpus of documents – especially students’ theses and dissertations – to be used to combat plagiarism by students. These indicators result in speculation by the authors that the push for open access in Indonesian higher education institutional repositories was *initially* driven more by prestige (ranking) and attempts to combat plagiarism, rather than the desire to make Indonesian research globally visible. The prestige (ranking) aspect might also help in explaining the prevalence of English as the language of access points for the works in Indonesian higher education institutional repositories (43, 82.6%), which was to facilitate *discoverability* of the works by an international audience; although did not necessarily mean *accessibility* of the works.

Finally, there is an apparent lack of institutional policies and quality control in most of the repositories surveyed. This has resulted in several conditions observed during the survey, such as:

- different collection development policies and access policies used by academic departments in the same institution;
- lack of standardized author naming conventions;
- lack of awareness regarding privacy, confidentiality and copyright issues; and
- sub-standard and occasionally chaotic contents.

8.1.1 How the content analysis study answers the research objectives

The results of the content analysis of Indonesian higher education institutional repository websites and the relevant discussions have contributed to addressing the objectives set for this research. The following section will link material and results from the content analysis study to the relevant research objectives.

Objective 1: Identify the rate of, and drivers for, the uptake of institutional repositories in Indonesian higher education institutions.

The content analysis study has reported that between DC1 and DC2 the number of repositories listed in Webometrics, OpenDOAR and ROAR has almost doubled.

Although the listings in those directories do not necessarily include all the repositories in Indonesia, they are nevertheless reliably representative of Indonesian repositories and a sufficient sample to indicate that there has been very significant growth in repository adoption by Indonesian higher education institutions over the intervening period. It can also be determined that the distribution of repositories has mirrored the distribution of the country's higher education institutions as well as the country's general population. EPrints has been the dominant repository software used when compared to other open source repository software and in-house developed software.

That the higher education sector in Indonesia is still 'experimenting' with their repositories, is indicated by the recommencement of repositories or changes of software, and the deletions of categories of records or digital objects in repositories. Another indication is the instability found in DC2 in terms of technical infrastructure (for example inaccessible servers) and in terms of the proliferation of broken links in some repositories. Changes in access policies in a number of repositories, identified through the comparisons of the results obtained by DC1 and DC2, also indicate the ongoing experimentation phase.

In terms of the drivers for the uptake of institutional repositories in the Indonesian higher education sector, the results from DC1 and DC2 indicate that the repositories were not conceived as a response to scholarly communication problems, which was the original intent of the Green OA strategy. Rather, the repositories were broadly conceived as part of a corporate information management platform, particularly in their early stage of development when they were largely used to manage students' theses and dissertations; and in the later development stage, as part of the faculty tenure ecosystem. Some local practices (see discussions in Objective 4 below) also support these conclusions.

Objective 4: Identify local practices of Indonesian higher education institutions in populating and managing their institutional repositories.

The following local practices were found during the content analysis study of the institutional repository websites of Indonesian higher education institutions:

1. very low degree of openness, with 26.92% in DC1 and 16.05% in DC2 (see Figure 5.7) providing open access to all or most of the repository content (see Table 5.2 for criteria of content);
2. wide-spread availability of management-related documents (e.g. institutional peer-review forms) alongside the scholarly works in repositories, sometimes in the absence of the scholarly works described in the metadata;
3. significant proportion of the digital objects uploaded into the repositories are only partially available (e.g. title page or table of content only), giving the impression that they are in the repositories more for evidential (management) reasons than informational (dissemination) reasons;
4. although the majority of the *works* in the repositories surveyed are in Bahasa Indonesia, the widespread use of English in the *access points* (subject heading entries and keywords) suggests the intention of Indonesian higher education institutions to leverage the discoverability aspect of their scholarly works, suggesting that these institutions have intended to use their repository as a dissemination platform for their intellectual output (which may sound contradictory to point 2 and 3 above);
5. non-standard practices that cause confusion, or unnecessary ‘barriers’ in discoverability and/or usage (e.g. text documents stored as multiple image files; works that are separated into different records based on file format; variations of author names);
6. lack of quality control that influence users’ perception regarding the quality of the scholarly works contained in the repositories (e.g., compressed or password-protected files/documents; student documents that still included supervisor’s comments; or broken links).

Objective 5: Assess the potential for institutional repositories and open access to support Indonesian higher education teaching and research.

With regard to institutional repositories in the Indonesian higher education sector, the issue of open access seems to have different meaning than that which was originally intended (Green OA strategy), as an alternative dissemination channel of scholarly information. The content analysis study has found indications that open access in Indonesian higher education institutions seems to be based more on the development of institutional prestige (e.g. Webometrics' rankings). This indication has been observed in practices such as allowing online indexing services to crawl repository contents – where the information can then be used for various rankings – but not allowing access to a large proportion of the repository contents through their user interface.

The issue of open access may have also been linked to the issue of plagiarism. Opening up access to digital objects (content) in these repositories – especially in the case of students' theses and dissertations – has been perceived as part of the initiative to build a corpus of works in order to facilitate similarity checking for plagiarism detection.

Both of these issues above have become intertwined with the issue of open access in the Indonesian higher education sector. Both issues may not reflect the original intention of institutional repositories as the Green OA strategy envisioned by the Open Access movement, but nevertheless both issues need to be accommodated for any meaningful developments in the use of repositories to advance the open access culture in the Indonesian higher education sector.

8.1.2 Recommendations

As a result of the discussions relating to the content analysis study, some practical recommendations as well as recommendations for future research have emerged. The following sections will provide brief discussion relating to the recommendations, with practical recommendations numbered with the “A” prefix and recommendations for further research numbered with the “B” prefix.

8.1.2.1 Practical recommendations

Recommendation A.1. DIKTI and other stakeholders (the National Library of Indonesia and academic libraries/librarians associations) should actively advocate for the adoption, population, and management of institutional repositories in higher education institutions in regions that currently have no or very low repository-related activities (the Mollucans and Papua). DIKTI is considered to have leverage in this area since its coordination and oversight functions of higher education institutions in Indonesia, particularly since it has already formed a team of academic librarians tasked to formulate strategies and initiatives to assist the development of Indonesian academic libraries. The team should be tasked to increase awareness of repositories advantages and issues in the Mollucans and Papua regions. DIKTI may need to allocate additional resources to these developmentally-disadvantaged regions of the country.

Recommendation A.2. The National Library of Indonesia must provide more technical and practical training regarding various repository software as a component of its annual Indonesian Digital Libraries Conference (Konferensi Perpustakaan Digital Indonesia). The conference, which was initiated in 2008 alongside the 11th International Conference on Asia-Pacific Digital Libraries Conference (ICADL), has offered some technical workshops, however it is not a permanent feature of the conference and the training provided has often focused on less popular repository software. A more substantial training presence featuring ‘hands on’ and technical workshops on the installation, configuration, and maintenance of Eprints and/or DSpace software would greatly assist institutions that are struggling with the relevant skills in setting up and running a repository.

Recommendation A.3. DIKTI and other stakeholders (the National Library of Indonesia and academic libraries/librarians associations) to make available guidelines relating to the adoption, establishment, and maintenance of repositories. These guidelines should include practical information, such as comparisons of different repository software; various standards relevant to repository management (metadata, author naming conventions, subject heading entries, document formats, etc.); conversions between document formats; best practices in repository content recruitment and management; advocating and promoting repositories to an institutional community; advocating and raising awareness of open access issues,

copyrights and intellectual property rights relating to repository content; and advocating for quality control and the roles of academic librarians in the repository ecosystem. In 2013 DIKTI issued the *Standar Perpustakaan Digital Perguruan Tinggi untuk Aksesibilitas Konten Lokal* (Higher Education's Digital Libraries Standard for Local Content Accessibility). However this document was more of a standards document rather than practical guidelines for setting up and managing institutional repositories.

Recommendation A.4. Library schools to provide more coverage, emphasis and skills education on issues relating to open access and institutional repositories. Topics, such as those mentioned in Recommendation A.3, will equip graduates in library and information science with the awareness of open access issues as well as basic technical skills related to repositories. Appropriately skilled graduates will in turn strengthen the advocacy of open access and repositories in their respective institutions.

8.1.2.2 Recommendations for further research

Recommendation B.1. Based on the manual methods employed in this content analysis study, the use of a more automated method in data gathering can be proposed. An automated method of data collection can potentially provide more representative results of the Indonesian higher education institutional repositories by taking more records from each repository based on the composition of their collections. Lessons learned from this study could be used as a knowledge base for the creation of a web spider that can collect specific information from targeted repositories that have not been reported by online directories such as OpenDOAR and ROAR. Such a web spider will also be very useful for surveys that aim to provide highly accurate time-specific snapshots of different aspects of repositories – something that would be difficult to achieve by relying solely on online directories since they typically provide information harvested from various repositories at different times.

8.2 Online survey

The data indicates that there were more male (57.3%) responding to the online survey than female (42.7%). In terms of the age of the participants, 76.7% of all participants were younger than 50 years old. This indicates that the majority of the participants

were early- to mid-career academics. Figure 6.4 reports that there were more males in each age group, except in the youngest (born between 1986-1995), where there were equal number of male and female.

The indication that the majority of the participants were early- to mid-career academics grows stronger with the “Length of Work” variable reporting that 60.1% of the participants (comprised of three groups: 1-5 years, 6-10 years, and 11-15 years) have worked in their institutions for 15 years or less. This indication was further confirmed by the “Academic Status” variable, of which mode was the “Asisten Ahli – Penata Muda” (53.9%), an entry level category for academic status in the Indonesian higher education sector. Other categories between the entry level and highest level of academic status indicated a decreasing incidence with the exception of the “Lektor – Penata” (13%), where it had comprised a smaller proportion than the preceding and following categories.

In terms of language proficiency there was a slightly different pattern between general proficiency in reading and writing. In general reading proficiency, adding the three groups (Intermediate, Advanced, and Fluent/Native/Bilingual) together produces 88.5%. Based on this result it could be assumed that a very high proportion of survey participants have a working proficiency in reading in English. In writing proficiency, it can be observed that participants reported that they have lower rates of English proficiency. There were significantly fewer participants with “Advanced” proficiency in writing (21%) than in reading (40%). On the other hand there were more participants with “Intermediate” proficiency in writing (53.9%) than in reading (40.6%). The percentage of participants with “Fluent/Native/Bilingual” proficiency in writing was 3.4%, less than half of the same level of proficiency in reading (7.3%). In general writing proficiency, adding the three groups (Intermediate, Advanced, and Fluent/Native/Bilingual) produces 78.3%. Based on this number it could be assumed that a high proportion of the survey participants have working proficiency in writing in English.

In terms of the types of institutions represented, the data was skewed toward state universities (73.7%); with private universities comprising of 26.3% of the sample. When broken down further by gender, an interesting pattern emerged from the data between participants with institutional affiliation with state universities and private

universities. Among the participants affiliated with state universities there were *significantly* more (21.98%) male than female. However among participants affiliated with private universities there were *slightly* more (6.1%) female than male.

Another skewing of the data appeared for the geographical location of institutions, which was skewed heavily toward Java (81.5%); and to a much lesser degree, Sumatra (13.7%). The total percentage of institutions located in other regions (4.8%) was practically negligible. This skewing of the data has an implication in that the data could be representative of the population in Java – and to some degree, Sumatra – but it might not be representative of the population in other regions.

Most of the survey participants (90.2%) reported having a “Teaching and Research” role in their institutions. They were also relatively spread between social sciences (40.4%); sciences (37%), and humanities (22.6%).

With regards to language preference in reading scholarly works, almost half of the participants (46.3%) stated that they have had no preference; implying a working proficiency in reading scholarly works in English. 18.7% reported that they prefer English. These two groups comprised 65% of survey participants. This number has led to a preliminary indication that the majority of participants reported adequate proficiency in reading scholarly works in English. Comparing this result (65%) to the 88.5% of participants who indicated that they have had working proficiency in reading in English, the data could be interpreted as indicating that among participants with working English proficiency in *general* reading (88.5%) there were less with working English proficiency in *academic* reading (65%). Cross tabulating the preference by gender revealed that the “Bahasa Indonesia” preference has the largest gap between male and female (see Figure 6.16). The percentage for the “No language preference” in reading scholarly works (46.3%) also indicates a correlation to the “Influence of Language of IR Content,” where 48.9% of the participants reported that the language of the repository content has no influence on their decision to use (or interact) with the repository. The correlation could be read as the more English proficiency one has, the less influence the language of repository content would have on their decision to use or interact with the repository. Inversely, the language of repository content has the largest influence on participants with preference to read scholarly works in Bahasa Indonesia; implying less English proficiency in reading scholarly works in this group

(see Table 8.2). The Chi-square statistics ($\chi^2=29.053$, $df=2$, $p=0.000$) confirms that this correlation exists in the *sample* (the survey participants) as well as in the *population* (see Table 8.3).

Table 8.2 Cross-tabulation of “Preferred Language in READING Scholarly Works” and “Influence of Language of IR Content” variables

			Influence of language of IR content		Total
			Yes	No	
Preferred language in READING scholarly works	Bahasa Indonesia	Count	75	30	105
		Expected Count	53.7	51.3	105.0
		% within Preferred language in READING	71.4%	28.6%	100.0%
	English	Count	39	34	73
		Expected Count	37.3	35.7	73.0
		% within Preferred language in READING	53.4%	46.6%	100.0%
	No preference	Count	71	113	184
		Expected Count	94.0	90.0	184.0
		% within Preferred language in READING	38.6%	61.4%	100.0%
Total	Count	185	177	362	
	Expected Count	185.0	177.0	362.0	
	% within Preferred language in READING	51.1%	48.9%	100.0%	

Table 8.3 Chi-square tests table for Cross-tabulation Table 8.2

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	29.053 ^a	2	.000
Likelihood Ratio	29.762	2	.000
Linear-by-Linear Association	28.915	1	.000
N of Valid Cases	362		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 35.69.

In terms of the survey participants’ knowledge about institutional repositories (n=428), the majority (67.8%) reported having *heard* the term ‘institutional repository’ *before* they participated in the survey *and* have *understood* the *concept* of institutional repository as used in the survey. 16.8% reported that they have not heard the term *but* they understood (or are familiar with) the concept/definition presented in the survey. 7.8% reported that they have heard the term *but* have not understood (or are not familiar with) the concept/definition presented in the survey. Only a small percentage

(7.5%) reported that they have neither heard the term nor understood the concept. The survey did not proceed further for this last group of participants.

The participants' encounters with repositories could include interactions with the repository in their own institutions; repository from other institutions; or content contributions to repository in their own institutions. Figure 6.18 reports that this sequence results in decreasing percentages (87.3% to 82% to 70.1%), leading to the assumption that not all survey participants who have interacted with their own institution's repository have also contributed content to that repository. The percentage response for participants who have had interaction with their own institution's repository (87.3%) overlaps very closely with the percentage of the participants who stated that they have supported their institution's decision to establish a repository (87.6%, see Table 6.18). This overlap implies a correlation between the two variables. Table 8.4 indicates that participants who have had interactions with their own repository have been more likely to support the decision of their institutions to establish a repository. However the Chi-square statistics ($\chi^2=6.457$, $df=2$, $p=0.04$, see Table 8.5) could not confirm whether this correlation – that exists in the *sample* (the survey participants) – also exists in the *population*. The Chi-square tests did not pass the “Goodness of Fit” test, which only allows a maximum of 20% of the cells with expected count less than five. In this case there were two cells (33.3%) out of six cells with expected count less than five.

Table 8.4 Cross-tabulation of “Interactions with OWN IR” and “Support of OWN IR” variables

			Support OWN IR			Total
			Yes	No	No Opinion	
Interacted with OWN IR	Yes	Count	281	10	25	316
		Expected Count	276.7	9.6	29.7	316.0
		% within Interacted with OWN IR	88.9%	3.2%	7.9%	100.0%
	No	Count	36	1	9	46
		Expected Count	40.3	1.4	4.3	46.0
		% within Interacted with OWN IR	78.3%	2.2%	19.6%	100.0%
Total	Count	317	11	34	362	
	Expected Count	317.0	11.0	34.0	362.0	
	% within Interacted with OWN IR	87.6%	3.0%	9.4%	100.0%	

Table 8.5 Chi-square tests table for Cross-tabulation Table 8.4

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.457 ^a	2	.040
Likelihood Ratio	5.311	2	.070
Linear-by-Linear Association	5.564	1	.018
N of Valid Cases	362		

a. 2 cells (33.3%) have expected count less than 5. The minimum expected count is 1.40.

Interactions with their *own* repository also appears to have a relatively strong influence on whether the participants have interacted with *other* repositories. Table 8.6 indicates that a significantly higher proportion of participants who have interacted with their *own* repository, have also had interactions with *other* repositories (84.4%) compared to those who have had no interactions with their own repository (63%). The Chi-square analysis ($\chi^2=29.053$, $df=2$, $p=0.001$) confirms that this correlation exists in the *sample* (the survey participants) as well as in the *population* (see Table 8.7). It should be noted here that the p value reported is 0.001 (Fisher’s Exact Test), instead of 0.000 (Pearson Chi-Square), since Fisher’s Exact Test “is normally used on 2 x 2 contingency tables (i.e. two variables each with two options)” (Field, 2009, p. 690).

Table 8.6 Cross-tabulation of “Interactions with OWN IR” and “Interactions with OTHER IR” variables

			Interacted with OTHER IR		Total
			Yes	No	
Interacted with OWN IR	Yes	Count	268	48	316
		Expected Count	259.3	56.7	316.0
		% within Interacted with OWN IR	84.8%	15.2%	100.0%
	No	Count	29	17	46
		Expected Count	37.7	8.3	46.0
		% within Interacted with OWN IR	63.0%	37.0%	100.0%
Total	Count	297	65	362	
	Expected Count	297.0	65.0	362.0	
	% within Interacted with OWN IR	82.0%	18.0%	100.0%	

Table 8.7 Chi-square tests table for Cross-tabulation Table 8.6

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12.914 ^a	1	.000		
Continuity Correction ^b	11.479	1	.001		
Likelihood Ratio	10.976	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	12.879	1	.000		
N of Valid Cases	362				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 8.26.

b. Computed only for a 2x2 table

As noted above, based on data in Table 8.4 and Table 8.5, although it could be shown that survey participants who have had interactions with their *own* repository have been more likely to support the decision of their institutions to establish a repository, it could not statistically be demonstrated that the same correlation also exists in the *population*. However it was not the case with interactions with *other* repositories. Table 8.8 reports that participants who have had interactions with *other* repositories are more likely to support their institution's decision to establish a repository. The Chi-square statistics ($\chi^2=9.701$, $df=2$, $p=0.08$, see Table 8.9) confirms that this correlation – that has existed in the *sample* (the survey participants) – also exists in the *population*. The Chi-square tests did pass the “Goodness of Fit” test, which only allows a maximum of 20% of the cells with expected count less than five. In this case there was only one cell (16.7%) out of six cells with expected count less than five.

Table 8.8 Cross-tabulation of “Interactions with OWN IR” and “Interactions with OTHER IR” variables

			Support OWN IR			Total
			Yes	No	No Opinion	
Interacted with OTHER IR	Yes	Count	267	6	24	297
		Expected Count	260.1	9.0	27.9	297.0
		% within Interacted with OTHER IR	89.9%	2.0%	8.1%	100.0%
	No	Count	50	5	10	65
		Expected Count	56.9	2.0	6.1	65.0
		% within Interacted with OTHER IR	76.9%	7.7%	15.4%	100.0%
Total	Count	317	11	34	362	
	Expected Count	317.0	11.0	34.0	362.0	
	% within Interacted with OTHER IR	87.6%	3.0%	9.4%	100.0%	

Table 8.9 Chi-square tests table for Cross-tabulation Table 8.8

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	9.701 ^a	2	.008
Likelihood Ratio	8.100	2	.017
Linear-by-Linear Association	6.102	1	.014
N of Valid Cases	362		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 1.98.

Further, interactions with *own* repository appear to also have a relatively strong influence on whether participants have contributed contents to their *own* repository. Table 8.10 indicates that a significantly higher proportion of participants who have had interactions with their *own* repository, have also contributed contents to their *own* repository (73.3%) compared to those who have had no interactions with their own repository (47.8%). The Chi-square analysis ($\chi^2=12.455$, $df=1$, $p=0.001$) confirms that this correlation exists in the *sample* (survey participants) as well as in the *population* (see Table 8.11). It should be noted here that the p value reported is 0.001 (Fisher’s Exact Test), instead of 0.000 (Pearson Chi-Square).

Table 8.10 Cross-tabulation of “Interactions with OWN IR” and “Contributed Contents to OWN IR” variables

			Contributed contents to OWN IR		Total
			Yes	No	
Interacted with OWN IR	Yes	Count	231	84	315
		Expected Count	220.8	94.2	315.0
		% within Interacted with OWN IR	73.3%	26.7%	100.0%
	No	Count	22	24	46
		Expected Count	32.2	13.8	46.0
		% within Interacted with OWN IR	47.8%	52.2%	100.0%
Total	Count	253	108	361	
	Expected Count	253.0	108.0	361.0	
	% within Interacted with OWN IR	70.1%	29.9%	100.0%	

Table 8.11 Chi-square tests table for Cross-tabulation Table 8.10

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	12.455 ^a	1	.000		
Continuity Correction ^b	11.269	1	.001		
Likelihood Ratio	11.505	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	12.421	1	.000		
N of Valid Cases	361				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 13.76.

b. Computed only for a 2x2 table

Therefore three ‘intertwined’ characteristics of the survey participants (*sample*) that have been shown to be statistically significant have also existed in the *population*:

1. academics who have interacted with their *own* repository have been more likely to have interacted with *other* repositories;
2. academics who have had interactions with *other* repositories have been more likely to support the decision of their institutions to establish a repository; and
3. academics who have interacted with their *own* repository have been more likely to have contributed contents to their *own* repository.

Thus, although it cannot be *statistically* proven, it can *logically* be generalized (in the population) that academics who have interacted with his/her own repository would be more likely to support his/her institution’s decision to establish a repository.

Following up on the hypothesis – that academics who have had some form of previous interactions with their institutions’ repositories will tend to support their institutions’ decision in establishing a repository – two further assumptions can be made about the survey participants:

- a. that the majority have had positive experience with repositories and that they have benefited from repositories; and
- b. that the majority were of the opinion that a repository is beneficial to their institution.

Both assumptions seem to be supported by the “Impacts of IR” variables. The variables indicate that among the survey participants who have stated that the impacts of repositories have been “Very Positive” or “Positive,” 81.8% stated that the positive impacts have been *personal*; 89.3% stated that the positive impacts have been *institutional*; and 85.9% stated that repositories have had positive impacts *nationally*

in the context of Indonesian higher education sector (see Table 6.20). It is interesting to observe that more of the participants have attributed positive impacts toward their institutions (institutional) or the nation's higher education sector, rather than to themselves (personal).

The pattern of attributing the highest importance of a repository to institutions can also be observed in the "Reasons to Contribute to IR" variables, where 17 specific statements were presented for survey participants to rate from "Strongly Agree" to "Strongly Disagree." Among the top five reasons (based on the total percentages of "Strongly Agree" and "Agree" ratings for each specific statement, see Table 6.21) three of them were related to institutional benefit, namely:

- to expose my INSTITUTION's intellectual output to INDONESIAN researchers (91.9%, ranked first);
- to boost my INSTITUTION's prestige (89.3%, ranked fourth); and
- to expose my INSTITUTION's intellectual output to INTERNATIONAL researchers (89.3%, ranked fifth).

Only one of the top five reasons was related to personal benefit and the other was an ideal relating to the reform of scholarly communication.

When asked to nominate their foremost reason for contributing to a repository from among those aforementioned 17 statements, three highest-ranked reasons were apparent in that they accounted for 53.4% share of all responses. Again, an institutionally-related top reason ("To boost INSTITUTION's prestige") was one of them, constituting 15.8% of responses.

The Factor Analysis and Reliability Analysis performed on the "Reasons to Contribute to IR" variables also identified "Corporate Information Management" as one of the two factors for the reasons for the survey participants to contribute their works to their own repository.

This seemingly persistent appearance of institutionally-related reasons in assigning importance to institutional repositories by academics in the Indonesian higher education sector provide strong support to the preliminary findings in the content analysis phase. In the content analysis phase it was observed that Indonesian higher education institutional repositories might have been initiated as "corporate information

management systems” rather than a genuine Green OA strategy, and that one of the drivers of repository adoption in Indonesian higher education sector has “very likely” been “institutional prestige” (see discussions in the section on content analysis). This pattern might have also provided some basis to speculate that institutional affiliation is a relatively strong facet in the life of academics in Indonesia higher education sector. The MIRACLE Project reported that capturing the intellectual output of the institution was the top-ranked benefit of institutional repositories among the implementing institutions (Markey et al., 2007, p. 60). Thus, it has seemed that institutionally-related issues tend to ‘dominate’ the discourse on institutional repositories in developing countries as well as developed countries.

Among the survey participants who reported that they have contributed content or works to their own repository, the highest-rated option was “Published Works,” which was selected by 81.6% of participants. Three other types of works were selected by a similar percentage of the participants: “Theses/Dissertations” (43.2%), “Unpublished Works” (40.6%), and “Teaching Materials” (39.7%). The remaining two options were selected by a much smaller percentages of participants: “University Record-type Materials” (8.1%) and “Other” (2.1%).

The Factor Analysis and Reliability Analysis performed on the “Reasons to Contribute to IR” variables also provide a reason to be optimistic. In addition to the “Corporate Information Management” factor, the “Scholarly Communication” factor was identified as another dominant factor in the reasons for participants to contribute their works to their own institution’s repository. It was also reported earlier that:

- 92.5% of survey participants have had a previous encounter with a repository; and
- “Published Works” was selected by 81.6% of participants who have contributed to repository (almost twice as any other types of work listed).

All these results – taken together – provide reasons to be optimistic that repositories in the Indonesian higher education sector have the *potential* to be developed further to help address – at least partially – problems in the scholarly communication landscape; instead of their *current state* in merely serving as corporate information management systems. However in the context of the survey participants, the utilization of repositories in alleviating the problem in the scholarly communication landscape has seemed to be viewed more as an *institutional* responsibility than an *individual* one.

This situation – to some extent – has also been indicated by the fact that the issue of reducing the time between discovery and dissemination has been seen slightly more as an institutional (Corporate Information Management) aspect, than a scholarly communication one (see Tables FA1.2a, FA1.2b, FA2.2a, and FA2.2b).

An interesting outcome has also emerged from the correlation between the survey participants' academic status and their contributions to their own repository, where an almost linear trend was observed (see Table 8.12). Academics with entry level status ("ASISTEN AHLI") have – understandably – had the lowest proportion of content contribution to their repository, since they need time to produce scholarly works (see the % in the "Yes" column). The proportion of the participant academics who contributed content to their repository demonstrates an almost linear increment according to their academic rank, stabilizing at the approximate level of 90%. The only exception occurred in the "LEKTOR KEPALA – Pembina Tingkat I" level, where a sharp decline was observed (55.9%). Following the trend line, the percentage for this level should have been in the approximate value of 80%. The Chi-square statistics ($\chi^2=16.393$, $df=8$, $p=0.037$) confirms that this correlation exists in the *sample* (survey participants) as well as in the *population* (see Table 8.13). The Chi-square tests *did* pass the "Goodness of Fit" test, which only allows a maximum of 20% of the cells with expected count less than five. In this case there were only three cells (16.7%) out of eighteen with expected count less than five.

Table 8.12 Cross-tabulation of “Academic Status” and “Contributions to OWN IR” variables

			Contributed contents to OWN IR		Total
			Yes	No	
Academic Status	ASISTEN AHLI - Penata Muda	Count	40	26	66
		Expected Count	46.3	19.7	66.0
		% within Academic Status	60.6%	39.4%	100.0%
	ASISTEN AHLI - Penata Muda Tingkat I	Count	43	23	66
		Expected Count	46.3	19.7	66.0
		% within Academic Status	65.2%	34.8%	100.0%
	LEKTOR - Penata	Count	37	13	50
		Expected Count	35.0	15.0	50.0
		% within Academic Status	74.0%	26.0%	100.0%
	LEKTOR - Penata Tingkat I	Count	50	16	66
		Expected Count	46.3	19.7	66.0
		% within Academic Status	75.8%	24.2%	100.0%
	LEKTOR KEPALA - Pembina	Count	31	12	43
		Expected Count	30.1	12.9	43.0
		% within Academic Status	72.1%	27.9%	100.0%
	LEKTOR KEPALA - Pembina Tingkat I	Count	19	15	34
		Expected Count	23.8	10.2	34.0
		% within Academic Status	55.9%	44.1%	100.0%
LEKTOR KEPALA - Pembina Utama Muda	Count	15	1	16	
	Expected Count	11.2	4.8	16.0	
	% within Academic Status	93.8%	6.3%	100.0%	
GURU BESAR - Pembina Utama Madya	Count	8	1	9	
	Expected Count	6.3	2.7	9.0	
	% within Academic Status	88.9%	11.1%	100.0%	
GURU BESAR - Pembina Utama	Count	10	1	11	
	Expected Count	7.7	3.3	11.0	
	% within Academic Status	90.9%	9.1%	100.0%	
Total	Count	253	108	361	
	Expected Count	253.0	108.0	361.0	
	% within Academic Status	70.1%	29.9%	100.0%	

Table 8.13 Chi-square tests table for Cross-tabulation Table 8.12

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	16.393 ^a	8	.037
Likelihood Ratio	18.235	8	.020
Linear-by-Linear Association	5.772	1	.016
N of Valid Cases	361		

a. 3 cells (16.7%) have expected count less than 5. The minimum expected count is 2.69.

Field of study also seems to have an influence in the level of contribution to repositories. Table 8.14 indicates that academics in the field of “Sciences” have the highest level of contribution to repositories (77.8%), while “Social sciences” and “Humanities” participants have relatively the same level of contribution, 65.3% and 65.8% respectively. The Chi-square statistics ($\chi^2=6.095$, $df=2$, $p=0.047$) confirms that this correlation exists in the *sample* (the survey participants) as well as in the *population* (see Table 8.15).

Table 8.14 Cross-tabulation of “Field of Study” and “Contributions to OWN IR” variables

			Contributed contents to OWN IR		Total
			Yes	No	
Field of Study	Sciences	Count	105	30	135
		Expected Count	94.6	40.4	135.0
		% within Field of Study	77.8%	22.2%	100.0%
	Social Sciences	Count	98	52	150
		Expected Count	105.1	44.9	150.0
		% within Field of Study	65.3%	34.7%	100.0%
	Humanities	Count	50	26	76
		Expected Count	53.3	22.7	76.0
		% within Field of Study	65.8%	34.2%	100.0%
Total	Count	253	108	361	
	Expected Count	253.0	108.0	361.0	
	% within Field of Study	70.1%	29.9%	100.0%	

Table 8.15 Chi-square tests table for Cross-tabulation Table 8.14

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	6.095 ^a	2	.047
Likelihood Ratio	6.258	2	.044
Linear-by-Linear Association	4.402	1	.036
N of Valid Cases	361		

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 22.74.

Among the survey participants who reported that they have *not* contributed any works to their own institution’s repository, among the twelve specific statements – on the reasons for *not* contributing – they were asked to rate on a scale from “Strongly Agree” to “Strongly Disagree,” almost half (44.4%) reported “No time/Administrative burden” as their highest-rated choice. When asked to nominate the *top* reason for *not*

contributing to their own repository, the “No time/Administrative burden” option was again nominated as the top reason (29.5%).

This finding has corroborates previous studies that found administrative burdens to be the foremost reason for academics in *not* contributing their works to their institution’s repository. The administrative burden was also perceived as a barrier in issues relating to data management (Diekema, Wesolek, & Walters, 2014, p. 325).

What was also interesting on the reasons for *not* contributing to a repository, however, was the survey participants’ second highest-rated choice, which was the concern that their works could be plagiarized. The same concern has also been nominated as the third highest-rated choice for *top* reason *not* to contribute to repository. The issue of plagiarism has been identified as an issue in the preliminary findings of the content analysis phase of this research. The content analysis identified that the need to combat plagiarism has influenced the growth and characteristics of open access in Indonesia more than the need to make Indonesian research visible and accessible (see discussions in the section on content analysis). In the context of the preliminary finding of the content analysis, the plagiarism issue was identified as one of the utilities of repositories that has *driven* the adoption of institutional repositories in the Indonesian higher education. In the survey, however, the plagiarism issue has been identified as one of the *barriers* preventing Indonesian academics from contributing their works to a repository. This seemingly contradictory impact of plagiarism might be better understood in the context of the survey itself. There were 234 participants who reported that they have contributed to their own institution’s repository, while 90 reported that they haven’t contributed. Out of these 90 participants, only 13 (14.8) participants nominated plagiarism as their *top* reason *not* to contribute to the repository. This number was small compared to 81.6% of the 234 survey participants who have contributed to repository *and* who have selected “Published Works” as the type of works for their contributions; which has provided an indication that they have no noticeable concern with regard to plagiarism. Thus it can be concluded that while plagiarism might have some influence in the level of support for institutional repositories among Indonesian academics, it is a minority issue. This situation might have seemed to be the case in the context of Indonesian academics at the *individual* level.

At *institutional* level, on the other hand, plagiarism might not be a minority issue in the adoption and management of institutional repositories in Indonesian higher education sector. Some indications – as discussed earlier in the section on content analysis – have shown that this seems to be the case. Firstly, the open access mandate issued by DIKTI was framed in a broader context of combating plagiarism; which was, in fact, the title of the regulation containing the open access mandate (Nuh, 2010b). Secondly, in addition to addressing scholarly communication issues, Indonesia One Search – the scholarly information portal developed by the National Library of Indonesia – is also intended to address plagiarism (Fahmi, 2016, p. 49).

Consideration of the data discussed above may lead to speculation that the Indonesian higher education sector has been leveraging institutional repositories to build a corpus of works, on which similarity checking could be based. And the fact that the dominant type of work in Indonesian higher education institutional repositories remains “Theses and Dissertations,” instead of published works by academics (see discussion in the section on content analysis), leads to further speculation that this issue of combating plagiarism has been driven by the incidence of plagiarism in the production of students’ theses; in particular undergraduate theses. It is relevant, as noted in the Background chapter, that most undergraduate students in Indonesia are required to produce theses in various forms (including final projects). Some higher education institutions have started to make some modifications to this requirement, however the requirement is still in place for the majority of Indonesian higher education institutions.

Whatever the case it has seemed that there have been two separate issues of plagiarism identified in this study relating to repositories in the Indonesian higher education sector. The first issue relates to plagiarism that has occurred during the production of students’ theses (‘internal’ plagiarism), which Indonesian higher education institutions have seemed to want to tackle by utilizing – among other measures – repositories. The second issue relates to some academics’ concern that their scholarly works could be plagiarized when they are shared on openly accessible institutional repositories (‘external’ plagiarism). Further development and relevant policy formulations relating to institutional repositories in the Indonesian higher education sector need to take these issues into considerations.

8.2.1 How the survey answers the research objectives

The results of the survey of the academics' opinions and attitudes toward institutional repositories in Indonesian higher education institutions and the relevant discussions have contributed to addressing the research objectives. The following section links topics raised in the discussion on the survey results to the relevant research objectives.

Objective 1: Identify the rate of, and drivers for, the uptake of institutional repositories in Indonesian higher education institutions.

In terms of Objective 1, the survey could only address the drivers for the uptake of repositories, but not the rate of uptake. The Factor Analysis and Reliability Analysis of the "Reasons to Contribute to IR" variables have shown that there are two primary factors relating to these variables. The first factor is "Scholarly Communication" and the second factor is "Corporate Information Management." These two factors are the main drivers for the uptake of institutional repositories in the Indonesian higher education sector. The "Corporate Information Management" factor was also indicated earlier in the content analysis study.

Objective 3: Identify the motivations, contributions, and attitudes of Indonesian academics towards current and future development of institutional repositories and open access.

The foremost reason selected by academics in Indonesian higher education institutions for contributing to repositories – and by extension their use of repositories – is to boost their scholarly prestige. This reason, however, was only ranked seventh in more compositely-presented questions using Likert scale where participants were asked to rate each of 17 different reasons. The top five top-ranked reasons were: 1) to expose an institution's intellectual output to Indonesian researchers; 2) to contribute to the reform of scholarly communication; 3) to expose one's works to Indonesian researchers; 4) to boost institution's prestige; and 5) to expose institution's intellectual output to international researchers.

The foremost reason *not* to contribute to repositories is because contributing to repositories is perceived as an administrative burden. There are also substantial

concerns among academics in the Indonesian higher education sector that their research outputs will be plagiarized more easily when they are archived in repositories.

Objective 5: Assess the potential for institutional repositories and open access to support Indonesian higher education teaching and research.

The majority of survey participants (87.6%) expressed their support for the establishment of repositories in their respective institutions, and only 3% expressed disapproval. The majority of survey participants also reported *positive* or *very positive* impacts of institutional repositories for themselves (81.7%), their institutions (89.3%), and for the Indonesian higher education sector (85.9%). It is worth noting that the perceived positive impacts are the highest toward their institutions; even higher than perceived positive impacts toward themselves personally. Additionally, although it cannot be *statistically* proven, it can *logically* be generalized (with the characteristic existing in the sample also existing in the population) that academics who have interacted with their own repositories would be more likely to support their institutions' decision to establish a repository. Thus, despite the evidence that contributing content to repositories through self-archiving is perceived as an administrative burden, the very strong support for repositories expressed by academics in Indonesian higher education institutions provides optimism for the future of institutional repositories in the higher education sector and their potential for supporting teaching, learning, and research.

Institutional repositories in the Indonesian higher education sector, in their current state, are viewed more in terms of (corporate) information management systems. However the majority of the survey participants (81.6%) selected "Published Works" as the most-frequently contributed works to institutional repositories with the increasing tendency to contribute as academics advance in their academic status or tenure track (with the unexplained exception of the "LEKTOR KEPALA – Pembina Tingkat I" level). This gives rise to optimism that institutional repositories in the Indonesian higher education sector have the potential to play a major role in supporting open access to published works (see Table 5.3 for definition of published works in this study). Additionally the survey participants selected "To contribute to the reform of scholarly communication" as the second top-rated reason to contribute to repositories (see Table 6.21). Open access to published works can potentially create an alternative

channel for scholarly communication and help alleviate the affordability and accessibility (paywall and language) issues that have plagued the Indonesian higher education sector.

In realizing the full potential of repositories in the context of open access, the plagiarism issues need to be acknowledged and accommodated in repository development initiatives, particularly in the roles of repositories in combating ‘internal’ plagiarism by providing a corpus of works for similarity checking to detect plagiarism. ‘External’ plagiarism (the academics’ concern that self-archiving their works in repositories will make the works more easily plagiarized) is another issue that needs to be accommodated, while remaining a secondary concern.

8.2.2 Recommendations

As a result of the discussions relating to the survey, some practical recommendations as well as recommendations for future research have emerged. The following sections will provide brief discussion for those recommendations.

8.2.2.1 Practical recommendations

Recommendation A.5. DIKTI should develop and make publicly available guidelines and a code of conduct relating to academic integrity and best practice in preventing plagiarism, for the benefit of higher education students and academics. The guidelines can serve as a ‘template’ that can be adapted to fit the local needs of higher education institutions across the country. The best practices can provide real world examples of cases relating to academic integrity and/or plagiarism.

Examples describing institutional regulation and enforcement of academic integrity will benefit the many institutions that are currently struggling with the issue. A code of conduct for students can be enforced by each higher education institution, while a code of conduct for academics can be enforced by DIKTI through the academic tenure mechanism.

8.2.2.2 Recommendations for further research

Recommendation B.2. A further study focusing on the plagiarism aspect on Indonesia higher education sector should provide useful insights and contribute to the further development of open access and an accountability culture in the sector.

8.3 In-depth interviews

In this section discussions on the outcome of the analysis of the interview data will be prioritized to the issues that directly relate to the research objectives, plus issues that are linked to the preliminary findings of the previous content analysis and survey. There are, however, no clear boundaries among topics (codes), and a discussion relating to a particular code will often involve interconnected issues that might be coded separately. In order to provide readability, discussions will commence with brief discussion on the general opinions of the interview participants on institutional repositories, and then proceed to address more complex issues (parent codes with more than two child codes). Less complex issues (represented by parent codes with two or fewer child codes) will be interspersed among the discussion of more complex issues, with the exception of the “Local Practices” code since it directly addresses one of the research objectives. Information quoted or paraphrased from interview participants’ statement(s), whenever applicable, will be referred to by the respective participant’s codename and the page number of the interview transcript where the quoted or paraphrased text is located, unless stated otherwise.

Overall, it can be seen from Figure 7.3 and Figure 7.4 that the top five codes (topics) for academics and university administrators were: “Uptake Drivers,” “Uptake Barriers,” “Management Issues,” “Potential of IRs & OA,” and “Local Practices;” only in different order. The most extensively-covered code for academics was “Uptake Barriers,” while for university administrators it was “Management Issues.” A substantially different pattern was observed in the interview with DIKTI officials (see Figure 7.5). Although the most extensively-covered code was “Uptake Drivers” (similar to academics), there was relatively no coverage for several codes (topics) that were covered in the interviews with academics and university administrators, namely: “Language Issues,” “Local Practices,” “Publish vs. Accessible,” and “Technology Issues.”

8.3.1 General opinions

The general opinions of academics, as well as administrators, regarding institutional repositories were positive. The majority of opinions, as can be seen in the hierarchy chart in Figure 7.2, were about personal impacts; followed by institutional impacts, and national impacts. Most academic participants regarded institutional repositories as being very useful in collecting their scholarly works, and that these collected works have made it easier for academics to respond to their information needs relating to tenure and institutional accreditation. In other words, institutional repositories have helped reducing their workloads in these areas. This might appear contradictory to the finding in the survey results, where administrative burden has been nominated as the top-ranked reason for not contributing to repositories. However upon further examination this sentiment regarding the administrative burden can be understood in the context that contributing to their institutions' repository can take time but once the work is completed there are benefits in terms of reduced future workload. The following are some of the quotes from the interview participants regarding their general opinions on IR in their respective institutions:

Yes, very positive. Especially in the case of the accreditation process. The information needs [for the accreditation] can easily be fulfilled [by the information contained in the IR] (A6LC, p. 82).

Yes, I am in support of [IR] since it is beneficial. Isn't it also DIKTI's requirement that all scholarly work that we produce, be they research-based or other types of scholarly works, should be published [in IR]? (A7LC, p. 990).

Repository to me is important as a form [or channel] of dissemination. Higher education institutions produce intellectual outputs. These outputs should not be kept to ourselves. Thus, ... [the repository] needs to be open and structured systematically so everyone can access the knowledge [produced] (B2RD, p. 110).

The availability of the digital files [of my works in the IR] has helped me a lot. Frankly I would prefer to use the hardcopy version of my works. However it becomes cumbersome when I have to visit the library to get access to them since I am very busy. I need to be able to access my works while at the same time being mobile (B6LC, p. 179).

A number of academics, however, mentioned that their colleagues have in some cases been indifferent to the issue of repositories in their institutions. Mostly, senior academics have been perceived as having no need for an institutional repository as they have progressed beyond the stage of worrying about tenure. One participant (A6LC) mentioned, "... now if someone is already a full professor, he/she will no longer care about [putting his/her works in IR]" (p. 81). This topic will be explored further in the discussions on the uptake drivers.

An interesting pattern was observed when comparison charts were created in NVivo (see Figure 8.1). Each chart compares the patterns of links (to sources) from two different codes. The center row lists all the sources that have touched on *both* codes (topics). The chart on the left (a) provides links between the code "Tenure" (Uptake Drivers > Information Management > Personal) and code "Personal" (General Opinions). The chart on the right (b) provides links between the same code "Tenure" and code "Institutional" (also in General Opinions). Both comparisons present almost identical patterns, with only participant C6LC missing in the center row of the chart on the right (b) but appearing on the right side only (linked only to code "Tenure"). These patterns of links suggest that tenure has been viewed as both a personal and institutional issue, since almost all participants who touched on the subject discussed it in the context of both personal and institutional impacts. This suggestion, however, needs to be treated cautiously. As with any interview, multiple layers of co-creation and interpretations have been involved from the formulation of questions, the follow up questions based on participants' answers, the transcription process, and the coding process. It is to be expected that responses to semi-structured interviews will touch on relatively similar topics since the same set of questions has been asked to each group of interview participants. On the other hand this indication (tenure as a personal and institutional issue) was corroborated by the discussions on the information management aspect of the uptake drivers (see section 8.3.2.2). Near identical patterns of links such as this, however, were not observed in any other pairs of codes in this interview project.

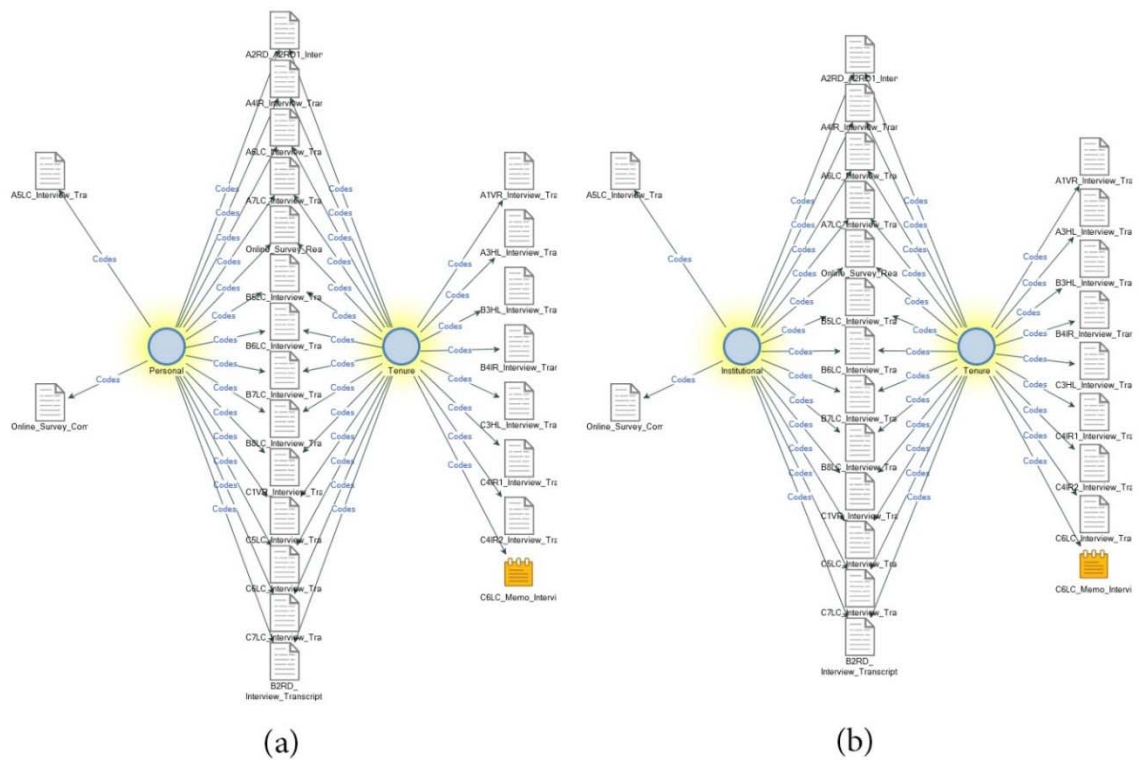


Figure 8.1 Comparison of patterns of links to sources for TENURE (Uptake Drivers > Information Management > Personal) between PERSONAL (a) vs. INSTITUTIONAL (b) Impacts (General Opinions)

An interesting view of institutional repositories was given by participant B3HL when he mentioned the trust aspect of the repository by likening it to the banking system;

The concept in the banking sector is called lender of the last resort ... So when all other banks have failed ... then Bank of Indonesia takes over the responsibilities [to pay the account holders] ... The same here ... if they have lost [a document] and cannot find it back, their [last] hope is that they have deposited it to the [institutional repository in the] library (p. 124).

This response indicates how the aspect of trust is essential to institutional repositories, and libraries in general, as authoritative sources of information.

8.3.2 Uptake drivers

The most complex issue is the drivers resulting in the uptake of institutional repositories. Based on the results of the prior survey, two a priori codes were prepared at the beginning of the coding process to represent major aspects of the uptake drivers for institutional repositories: “scholarly communication” and “information

management.” During the transcribing and preliminary coding stages, it was noticed that “scholarly communication” consisted of three different and more specific aspects.

8.3.2.1 Scholarly communication

Firstly, the use of institutional repositories as information sources, where academics have viewed repositories as alternative sources of information. The majority of academics interviewed indicated using the contents in repositories to: 1) do environmental scanning of what their peers have worked on to get ideas for their next research projects; 2) search for information that they need for their current research projects; and 3) validate the students’ research projects that they supervise to avoid any unnecessary duplication as well as avoiding plagiarism. The plagiarism aspect will be elaborated in the discussion of the “Information management” aspect, of which one of the child codes is “Combating Plagiarism.” The following quotes indicate the use of repositories as information sources:

Repositories can be accessed publicly and can be searched using keywords. Besides, repositories are part of the library’s information systems, where people can search for sholarly works such as journal articles, conference papers, and and other internal documents (A2RD1, p. 25).

What I know about repositories is that they are databases, especially for the lecturers’ publications and students’ theses. Everything has been compiled systematically in repositories, and they are publicly accessible (A5LC, p. 56).

Institutional repositories have also been widely used as a platform to disseminate information. This aspect needs further discussion since it involves several different issues: copyright; misunderstanding or confusion over the concept of publishing, and making works publicly accessible; local practices in the Indonesian higher education sector; and considerations of the place of grey literature. Some academics have been using an institutional repository to upload and make accessible their (peer-reviewed) scholarly publications. Although most (if not all) open access publishers allow this practice, many non-open access journals do not allow the practice since authors have transferred copyright of their works to the publishers. Some Indonesian academics are still not well informed on this matter. One participant (C6LC) has assumed that since the publisher had sent her author copies (hardcopy or softcopy) of her published works,

she could then upload them to her institution's repository. She has also pointed to similar practices that she has often seen in ResearchGate;

So authors will receive copies, won't they? Each author will get some copies. So in essence the author has the right [to redistribute the copies that he/she has received from the publisher]. Have you seen the ResearchGate? In ResearchGate all authors have even uploaded [their author copies to the system] (p. 298).

One of the repository managers in her institution (C4IR1) reports that even though academics were encouraged to upload the full-text version of their works, they were expected to adhere to the copyright relating to uploaded works (p. 254). From the interview data it appears that the combination of these two situations (academics' unfamiliarity with copyright, and the awareness of it by repository managers), has led to a conservative approach to populating institutional repositories. The usual recommended option was to upload only abstracts, and therefore a lot of repository records might consist of metadata and abstracts only. Further investigations and/or negotiations with respective non-open access publishers might have resulted in permission to upload the pre-print version of the works in repositories. This is an issue that Indonesian higher education institutions might want to pursue further by empowering their librarians to assist academics in issues relating to copyright of their published works.

The final discussion relating to the information dissemination aspect of institutional repositories regards grey literature. However since this topic is relating more appropriately to the "Potential of IR & OA" issue, discussions will be deferred at this point.

The use of institutional repositories to increase the scholarly prestige of academics was also observed among the interview participants. An academic (C6LC) mentioned that the open access nature of repositories has helped in accruing citations for works in repositories (p. 304). A Vice Rector for Academic Affairs (C1VR) mentioned the use of institutional repository, as well as Google Scholar, in his institution to determine financial rewards for academics based on the number of citations accrued (p. 229). Scholarly prestige is not limited to citations to one's scholarly works. The same academic (C6LC) stated that in addition to citations, usage (number of views and downloads) is also used as an indicator of quality; and that open access institutional repositories should be able to better facilitate usage of academics' scholarly works (p.

304). One *survey* participant noted that his/her Ph.D. thesis has been uploaded to a repository and is now accessible worldwide; and that he/she views this as a matter of prestige since worldwide accessibility translates into measureable impacts (Online Survey, Comments entry #4). Another participant commented that a repository “is able to increase the prestige of authors and institutions other than as a good storage” (Online Survey, Comments entry #5). An academic (A7LC) stated that had it not been for the repository in her institution, her works would have had much narrower reach (p. 97). This situation might be particularly relevant in Indonesia, where access to English-based scholarly information remains very limited due to paywalls as well as lack of English language fluency. Thus, scholarly works in Bahasa Indonesia that are publicly accessible online are seen as alternatives and can exponentially increase their usage due to the high demand for scholarly works in Indonesian.

8.3.2.2 Information management

After discussing the scholarly communication aspect of the uptake drivers, consideration of the information management aspect will involve even more complex issues. One of the preliminary findings from the content analysis and survey was the strong indication of “Corporate Information Management” (CIM) as the main driver of uptake of repositories in the Indonesian higher education sector. This issue was observed by almost all of the interview participants. The initial code had been modified by eliminating the word “corporate” since information management has been identified to have two different facets, personal and institutional.

The personal facet involves academic tenure and personal information management practices. An academic (A5LC) mentioned that, “this might be specific for me ... I use [the repository] to keep track of my publications” (p. 66). Other participants (A6LC, A7LC, B6LC, C4IR2) also mentioned that an institutional repository serves the function of providing information related to their scholarly works for various purposes, such as internal reporting, academic tenure, and institutional accreditation (pp. 80, 99, 178, 269). Participant A6LC, for example, said that, “Basically, because of the requirements of academic tenure everything needs to be in order ... Available whenever needed and be made available fast. If my works are already in the repository, I can access them from any place” (p. 74). Some academics spoke of their institutional repository as serving the function of an online resume.

Academic tenure is another element of personal information management impacting on the uptake of institutional repositories. Closely related to academic tenure in Indonesia is the concept of “cumulative credit points,” which is widely abbreviated as “KUM” by stakeholders in the Indonesian higher education sector. This term has been specifically mentioned in the discussions with A1VR, A2RD1, A5LC, A6LC, A7LC, B4IR, B7LC, B8LC, C1VR, C4IR2, C5LC, C6LC, and C7LC. A caveat needs to be noted that some of these discussions might have been the result of the researcher introducing the term when responding to participants’ answers or asking a question that has included the use of the term. “Academic tenure” is one of the dominant codes in the interview data, with twenty participants discussing the topic, whether mentioning the term “KUM” or not (see Figure 7.1). DIKTI has required that all scholarly works submitted by academics to promote their tenure be made accessible online for verification purposes. Following from this requirement, each higher education institution has also – to a certain extent – mandated the submission of scholarly works into a repository managed by the institution. This situation is reflected in most interviews, although implementation of repositories has varied between institutions. The important point is the observation that all academics viewed their institution’s repository as an integral part of their academic tenure (or promotion). This view has also been expressed by academics who have not yet contributed any works into their institutions’ repositories. Academic tenure appears to be the connecting point between the use of institutional repositories for personal information management by academics (personal facet), and the use of the same information by their institutions for compliance to DIKTI’s mandate and institutional development (institutional facet). This connection first surfaced in the comparison of patterns of links that was generated by NVivo (see section 8.3.1 about General opinions). The personal and institutional facets have also surfaced when participant A3HL was talking about academic tenure of lecturers in his institution;

When a lecturer is preparing his academic tenure application, the process can be made easier administratively [by the existence of IR]. He/she can trace his/her works through IR. And the cumulated scholarly works in the IR can be a treasure trove for the library. IR is also very beneficial to the Office of Research and Development since IR can assist the management of research reports, especially for projects that are supported by external funders (p. 32).

“Institutional Development” and “DIKTI Mandate” are two of the four child codes in the institutional facet of “Information Management” in the context of “Uptake Drivers.” The DIKTI mandate has driven the pragmatic use of institutional repositories with regard to academic tenure. However from the interviews it was observed that some participants reported that they could leverage more advantages from repositories, rather than just using them as a platform for tenure. Institutional repositories, in their view, can play an important role in institutional development. The previous quote from participant A3HL has also indicated this aspect. This view also brings the other two child codes, “Institutional Prestige” and “Combating Plagiarism,” into the discussion. Repositories in Indonesian higher education sector have started to gain significant traction due to two factors that have involved DIKTI. The first was the mandate to require all scholarly works used for academic tenure to be accessible online for verification. The second was DIKTI’s use of Webometrics’ Ranking Web of Repositories as one of the indicators for institutional assessment. In fact, this second factor has had greater influence on the proliferation of institutional repositories in the Indonesian higher education sector than the first factor. Thus, it appears from an institutional perspective, that repositories have their pragmatic use and immediate ‘impact’ in terms of compliance with DIKTI’s mandate and institutional prestige (Webometrics’ rankings). Amidst these pragmatic and narrow institutional perspectives, some participants have observed the ‘bigger picture.’ For example, one participant (B5LC) criticized his institution’s pragmatism in utilizing its repository mostly as a public relations tool (institutional prestige), instead of viewing it as a platform for knowledge dissemination;

[my] university has strangely seemed to be only chasing the Webometrics [rankings] ... Thus, not seeing [the repository] as an asset but limiting [its use] only for public relation purposes ... This pattern should be changed, that [the repository] is for the advancement of knowledge [and science], and to make it easier for us to find [scholarly] information (p. 165).

Participant B7LC stated that her institution’s repository should have been leveraged to facilitate inter-departmental (inter-disciplinary) collaboration for the institution (p. 183). Another participant (A5LC) suggested that the institutional repository could be utilized to increase collaboration at a national level (p. 71). In terms of external collaboration, B7LC added that institutional repositories should also be leveraged as

an institutional asset that can showcase the institution's intellectual outputs, and therefore useful in attracting further grants from external funders (p. 194).

The last child code of the institutional facet of "Information Management" in the context of uptake drivers is "Combating Plagiarism." The preliminary findings of the content analysis study identified this aspect as having had some influence on the uptake of institutional repositories in Indonesia. This has been confirmed by the interviews, where plagiarism was mentioned many times by a number of participants. These participants suggest that the corpus of scholarly works in repositories has played a role in their effort in combating plagiarism. A1VR stated explicitly that, "perhaps the most substantial effect is in terms of preventing plagiarism. So nowadays it is much easier for lecturers to know what have been published; the available titles of students' theses. Thus it can help avoiding duplications" (p. 7). It needs to be noted, however, that this participant mentioned the word "plagiarism" in the context of avoiding duplication in research topic and "re-inventing the wheel." Another participant (A5LC) made a similar comment (p. 66), although she also acknowledged that the availability of easily accessible scholarly works in repositories could be abused by students that could result in plagiarism by copying other students' works (p. 58). This duality of opinions on (preventing versus enabling) plagiarism appears to be a common perception since it was observed in a number of participants, such as:

What I want to add here is that it all come back to the students. We [(the lecturers)] have tried to explain about the code of ethics [on academic integrity], what is appropriate and inappropriate. But still, there are some students who [plagiarized other students' works]. And ... because the repository ... to be honest I don't know whether the repository can accessed by [(integrated into)] iThenticate? ... Despite the existence of these anti-plagiarism software, they are useless if [the repository] is not publicly accessible since [the content of the repository] will not be able to be utilized for [similarity] check (B6LC, p. 169).

The tendency of our students, not only in this university but all over Indonesia is to copy paste from other people's works. Sometimes they only change some details [from the original works] ... That's why we only put the abstracts of the students' theses into our repository, while the full-text is stored digitally by the library. Students who need the full-text can visit the library and read them there without the ability to copy the full-text files (C1VR, p. 231).

It was observed that the use of repositories as part of the effort to combat plagiarism has been confined to the context of students' theses, or in a more general term students' works. A participant (B4IR) asserted that a plagiarism checking mechanism should be built into the online submission system for students' theses (pp. 152–53). Plagiarism was also mentioned in relation to self-plagiarism, as indicated by the remarks of participants B7LC (p. 191) and C7LC (p. 318). However this comment appears to reflect a misunderstanding of the propriety of transforming one scholarly work (e.g. thesis) into another (e.g. journal article).

8.3.3 Uptake barriers

In addition to the drivers for the uptake of repositories, there are also barriers. The interviews have provided important insight into the nature and extent of these barriers, most of which have been expressed, not unexpectedly, by academics since they are the main stakeholders of the repository ecosystem. One *survey* participant has stated bluntly that contributing to an institutional repository is “not [in] my job description” (Online Survey, Other Reasons not to Contribute entry #5). Others gave more nuanced responses that pointed to combinations of several different aspects of the repository ecosystem, with the administrative burden correlating strongly with the tools aspects as the two dominant barriers. One participant (B7LC) named academics' workloads as the biggest constraint on contributing to institutional repository (p. 195). This participant recommended that dedicated staff should be assigned to “chase after” scholarly works and to assist academics in uploading their works to the institution's repository (p. 184). This need for mediated submission or upload was echoed by participant C5LC, who noted that her faculty has dedicated staff to help academics with their submission to the institutional repository, which she has found to be very helpful. This participant said that, “in this university every faculty has its own person-in-charge that coordinates [the uploading of the scholarly works]. This person is an administrative staff” (p. 287). This type of assistance, according to participant C4IR2, is particularly needed by senior academics who might suffer from a technology gap, as well as certain academic departments that appear to need it more than others (p. 272). This mediated approach has reportedly been effective in reducing the barriers to academics' contributions to repositories. The study by Lagzian, Abrizah, and Wee (2015) found that although “self-archiving practices are perceived as important, but

most repository managers have not yet implemented archiving policies successfully;” indicating that repository managers need to provide mediated-submission or mediated-archiving (p. 153). Mediated submission or archiving has, in fact, already been recommended by Harnad (1999) at least in the early stages of a repository’s deployment in an institution (para. 27 & 28). Despite their scepticism on the sustainability of mediated submission in the long term, Awre and Baldwin (2005) nevertheless agreed that it “has proved useful in getting academics accustomed to something new” (p. 147).

Due to their high workloads, academics, according to participant C4IR1, want to complete tasks in the fastest and most straightforward ways possible, and this has had negative impacts on the metadata quality in the case of self-submission to repositories (p. 257). Also, academics can become frustrated when they have to undertake multiple entries of the same data or information into several different systems. As mentioned by participant B5LC, this is usually the case with repositories, where most or at least a significant portion of the information required for the repository may need to be re-entered into other systems managed by human resources for internal assessments and academic tenure, and the research and development office for research funding and reporting purposes. Participant B5LC expressed his frustration on this matter;

My department has not yet contributed works to our institution’s repository. I have not yet contributed either. It is because of the same problem. Too complicated. In this university there are too many information systems, such that this condition has made it complicated for us to enter our data [or information]. The currently sought after information, these information about us can actually be obtained from the human resource department, if these information systems [in this university] have been integrated (p. 158).

Another participant (B7LC) expressed a wish for inter-linked systems rather than multiple systems that, in reality, have similar functions and outputs; as well as suggesting that institutions revitalize existing systems rather than continuing to build new ones (p. 199). Participant C7LC also expressed a strong preference for an integrated system in his institution (p. 321). In addition to being a current problem, this need for system integration has also been identified as one of the key issues in the future of institutional repositories and open access.

Further to the major issue of the need for integrated systems, interview participants also described the barriers to repository development that arise from the various ‘tools’ and related technical aspects of repositories. In this context, the following repository features were mentioned by the participants as preferable:

- user-friendly interfaces (A5LC, p. 68);
- role-based user interfaces (students vs. academics, specific fields, etc.) (C7LC, p. 313);
- fast and easy online registration and uploading of files (C6LC, p. 293);
- systems that avoid duplication of author records (A6LC, pp. 84-85);
- systems that can detect similar or identical works uploaded by multiple users (in multi authors scenarios) (A5LC, p. 68);
- access statistics (views and downloads) (A7LC, p. 101);
- adequate security measures, including security against access abuses, document watermarking, etc. (B5LC, p. 156; B6LC, p. 181);
- systems that enable connections to subscribed online journal database(s) (C6LC, p. 300) and/or indexing services (p. 303);
- systems that have some connections and/or can consolidate author information with ORCID (A6LC, p. 85);
- the use of Boolean AND as the default search, instead of OR (B5LC, p. 165);
- user interfaces for mobile devices (D1, p. 332); and
- systems that mimic social media (community building) (A7LC, p. 102; B6LC, p. 174; C7LC, p. 318) or that can link to social media sites (C6LC, p. 306).

The community building feature that enables academics to follow certain authors, provide exposures to peers, etc. was the most requested feature. Some participants also mentioned online social networking platforms such as ResearchGate and Academia. Although this request might seem to be for services more likely to be associated with subject repositories, it might be worth exploring in order to drive institutional repository use by academics. Due to their ‘popularity’ these community building features were identified as another key issue in the future of institutional repositories and open access, and therefore coded as “Collaborative Platform.”

Other aspects of the uptake barriers are related to the quality of the scholarly outputs. Participant A5LC expressed concern over the quality of scholarly works in the

Indonesian higher education sector in comparison to their international peers, particularly in more developed countries;

The situation overseas [(in developed countries)] is far more developed than here. They are much more focused and comprehensive [at the same time] ... While in Indonesia [the development of science] tends to be general, just grazing the surface. In contrast, the development in [developed countries] is very deep. So often it is very difficult to catch up with them (p. 64).

Another participant (B6LC), specifically expressed her insecurity about the quality of student theses at all levels of tertiary education (undergraduate, master and doctorate degrees) and suggested an approach of selectively opening access to these works (p. 181). A *survey* participant has even honestly stated, “I’m not confident with my work” (Online Survey, Other Reasons not to Contribute entry #1). Participant C6LC, however, is of the opinion that quality is measured by usage (views, downloads, and citations) of outputs once they have been made publicly accessible online (p. 305).

The second aspect relates to issues that are external to the scholarly outputs but which still have some influence on the decision as to whether individual academics contribute to a repository. Those issues have included the following aspects:

- intellectual property issues relating to patents (A3HL, p. 33; B4IR, p. 145; C4IR1, p. 251; C5LC, p. 283);
- intellectual property issues relating to research funding by commercial entities (B8LC, p. 209);
- confidentiality issues relating to outside (commercial) entities as research subjects (A3HL, p. 33);
- privacy issues relating to research participants (A4IR, p. 47; B3HL, pp. 129-130; B4IR, p. 146) or the potential for becoming defamation cases (B3HL, p. 126); and
- copyright issues of the works relating to scholarly publishing (A4IR, p. 46; B2RD, p. 111; B3HL, p. 126; C4IR1, p. 254).

The lack of understanding about scholarly publishing, according to participant C1VR, has manifested, among others, in academics treating their scholarly works as ‘treasures’ that need to be kept secret (p. 229). This lack of understanding regarding copyright issues and scholarly publishing has been linked to the previous discussion on the use of repositories as information dissemination platforms for scholarly

communication, and therefore an uptake driver for repositories in the Indonesian higher education sector. The same lack of understanding has also been linked to the “Publish vs. Accessible” code.

Other aspects of the uptake barriers consist of numerous issues with no recognizable patterns, including staffing issues, access speeds, local knowledge, the Indonesian Electronic Information and Transaction Act, and the ‘green’ aspect or institutional repositories (achieved by reducing the use of paper).

8.3.4 Management issues

Another major issue arising from the interviews is coded as “Management Issues,” which consists of five child codes: 1) “Advocacy,” 2) “Institutional Policies,” 3) “Jurisdictional Issues,” 4) “Management of Information,” and 5) “Use of Information.” Among these five child codes, the “Jurisdictional Issues,” “Institutional Policies,” and “Advocacy” have been identified as the dominant issues.

8.3.4.1 Jurisdictional issues and institutional policies

This issue involves several stakeholders in the institutions who have functional overlap when it comes to the management and use of information contained in an institutional repository. The main stakeholders are:

1. the library, of which a main function is to facilitate the dissemination of the intellectual or scholarly outputs of the institution;
2. the Office of Research and Development (ORD), of which a main function is to manage the institution’s research process (proposals, funding, reports, etc.), outputs, and metrics; and
3. the human resource department (HRD), of which one of the main functions is to manage the tenure process of the academic staff in the institution.

As an example, participant A1VR specifically mentioned the three entities listed above as the major stakeholders in the information ecosystem related to the repository in his institution;

Actually we are in the process of building a database for academic tenure, [and] a separate database for the Office of Research and Development. So ... the [first] database will be in the Human Resource Department. [Then] in Office of Research and Development, [and] the Library. These are the three entities that need to be linked (p. 6).

Other stakeholders were also observed to have overlapping interest in institutional repositories, including academic departments and/or faculties, and the computing center. Participant A7LC touched on this issue when she explained;

In the early process of research and community outreach we go through the office of research and development. The proposal. Then we send the results, in the form of reports, to the repository [digitally] and to the office of research and development in the form of hardcopy reports (p. 106).

These overlapping jurisdictional issues were mentioned or discussed in considerable length (A1VR, pp. 6–12; A2RD1, pp. 15–21; A3HL, pp. 30–32; B2RD, pp. 108–117; B3HL, p. 131; B4IR, pp. 141–49; B7LC, pp. 196–98; B8LC, pp. 202–12; C1VR, pp. 225–32; C4IR1, pp. 252–59; C5LC, p. 288; C6LC, pp. 300–302; and A1VR, p. 6). It should also be noted that there are institutions that have limited the use of repositories only for students' works (mainly theses and/or dissertations), while others have used their repositories for both students' and academics' scholarly works. This overlapping in terms of the *management and use of information relating to institutional repositories* observed in these other stakeholders is, however, not as dominant as in the three main stakeholders listed above.

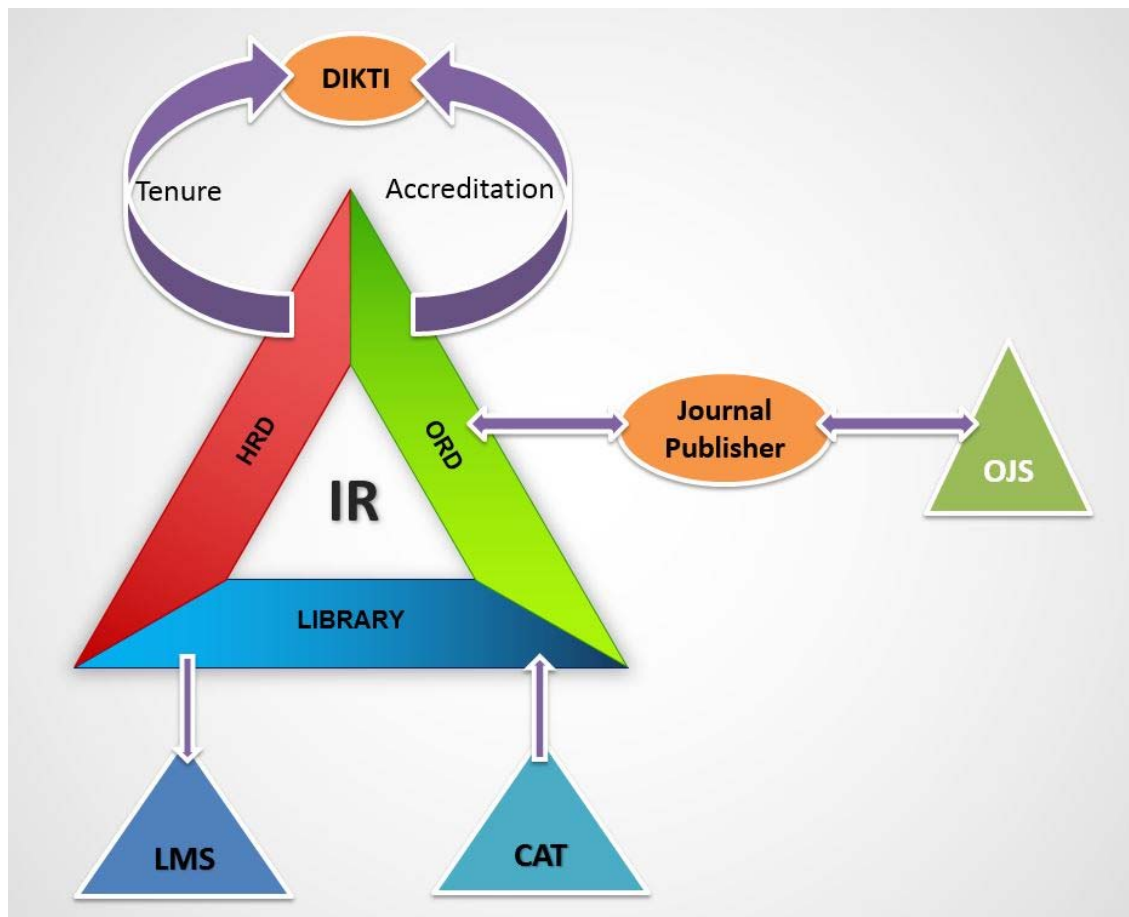


Figure 8.2 The institutional repository ecosystem triangle with three major stakeholders and other minor stakeholders

Note: ORD = Office of Research and Development, HRD = Human Resource Department, OJS = Open Journal System, LMS = Learning Management System, CAT = Library Catalog

Jurisdictional issues are related strongly to institutional policies, which usually were developed in response to the DIKTI's mandate to upload scholarly works online. Each institution has issued a relevant bylaw that requires all scholarly outputs by its academics and/or students to be submitted to the institution's repository. These bylaws have usually linked this specific requirement to academic tenure and/or as one of the requirements for students to graduate. Each institution, however, has also implemented the mandate based on local needs and conditions. University A has mandated its library to manage and populate its repository, while University B has taken a similar approach but with limited scope only for students' theses and dissertations, with academics' works being managed by the institution's Office of Research and Development. University C, on the other hand, has mandated its computing center to establish and manage its repository. From the interview with one of the repository managers in University C, it was apparent that he was the initiator of the repository in the institution

(C4IR2, pp. 266-267), where the role of the library did not seem to be substantially visible. The jurisdictional issues that have arisen during the implementation of the relevant bylaws have seemed to cause the tendency in each of these institutions to treat its repository as a separate entity among the many (online) information systems in the institution. Most of the administrators interviewed are aware of these jurisdictional issues and have expressed their desire to have more integrated systems; a matter that has been identified as one of the key issues for the future of institutional repositories and open access. A more integrated system that treats a repository as part of the institution's information ecosystem will alleviate administrative burden on academics, who are currently required to enter the same information on multiple different systems.

An interesting aspect of institutional policies is one that relates to language issues. Policies relating to language are mainly concerned with broadening the audience for scholarly works by providing at least abstracts in English, as mentioned by the following participants:

The point is to make the contents in the repository publicly accessible. The language [used in the scholarly works] is a barrier. The university has made it mandatory to provide the abstract in Bahasa Indonesia and English. However this is still limited to the abstracts (A1VR, p. 8).

Our current policy is to push lecturers to publish to journals that are published in English or to international journals. We are pushing hard on this issue since it is now a demand from DIKTI. So the university has translated this DIKTI's requirement into some relevant university-level regulations (A2RD1, p. 24).

Workshops for academics in the use of English for scholarly writing have been one of the incentives provided by institutions, as reflected by the comments made by participant B2RD (p. 118). For articles submitted to international journals, some institutions provide English proofreading services to their academic authors, or even English translation services (A1VR, p. 8). University C mentioned its plan to establish a center for writing and scholarly publication (C1VR, pp. 228-229). This concern over language and the use of English is understandable since English is the *de facto* language of science, and lack of English fluency has become a barrier preventing Indonesian scholars from contributing to the global science community. Although many Indonesian academics have contributed works in English, the number is very

small compared to the total number of academics in Indonesia. One of the reasons for this situation is that English is not a national language used alongside Bahasa Indonesia; unlike the situation in other south Asian countries such as Singapore and Malaysia, where English is one of the national languages of the country. Thus the concern regarding the choice of language for scholarly communication in Indonesia is understandable and has formed a significant component in the debate over Indonesian national scientific discourses. Some of the approaches to assist academics with their language issues, as mentioned above, have then formed an important part of the advocacy efforts relating to institutional repositories in the Indonesian higher education sector.

8.3.4.2 Advocacy

Advocacy efforts have seemed to be relatively lacking in the Indonesian institutional repository landscape. This is apparent from the opinions expressed by a number of the interview participants. Some institutions have clearly performed better than others in terms of their advocacy for supporting the establishment, population, and management of their repositories. The universal approach has seemed to be the provision of guidelines for academics on how to contribute their works, which has included guidelines or standards for metadata entries and the uploading of digital files. University A, for example, has conducted ‘roadshows’ to all faculties in the institution at the beginning of its repository implementation, as well as establishing a help desk to provide assistance for academics who need assistance in contributing to the repository (A1VR, p. 8). This form of assistance provided by the library has proven to be useful for academics, especially in the initial stage of repository adoption, as mentioned by an academic from University A:

At first I didn’t quite get [how to use the repository to upload my works] since there are many requirements and steps involved. But the library has helped me by personally guide me on how to use the repository. After the first training I manage to do it on my own (A7LC, p. 91).

University C engaged its academics through socialization events (C4IR1, p. 256), and University B attempted communicating with academics through official announcements, which have been considered to be insufficiently capable of engaging the academics’ attention (B5LC, pp. 156-157; B7LC, p. 195). Participant B6LC

suggested that the bigger the institution the more difficult it is to conduct advocacy efforts that can reach individual academics (pp. 171-172). Another form of advocacy effort in University B is an award program for the best contributor(s), for individual academics as well as academic departments or faculties (B2RD, p. 116). University B has tried providing a dedicated student assistant (for a limited time period) for each academic who requires assistance in contributing works to the repository (B8LC, p. 213). Awre and Baldwin (2005) identified advocacy as one of the main issues in institutional repository deployment, which they said always “involves cultural change” (pp. 148-149).

The provision of dedicated staff for mediated submission or upload has also been seen as one of the most effective forms of encouraging academics to contribute to their repositories. This mediated submission has been particularly crucial in the submission of old works that would need digitization (scanning) since not many Indonesian academics have access to scanners. Participant A7LC said,

If I have extra I have no problem with self-upload. However when the need to use scanners arises then I have a problem since I do not have that tool. I have to go downstairs to use the scanner. And sometimes the need arises when I was at home [with no access to a scanner] (pp. 103-104).

It needs to be mentioned that most higher education institutions in Indonesia do not have sophisticated scanners that enable the scanning of multiple pages in one run. Most scanners used are usually flatbed scanners, which makes scanning multiple pages a cumbersome process.

All three institutions involved in the interviews mentioned some form of (limited) mediated submission services, even in the case of University C, which does not have an official policy of mediating submissions. The library’s efforts in advocating open access through repository in University B have been crucial and involved the librarian’s participation in meetings with university administrators, professorial council, and academic departments or faculties’ meetings (B8LC, pp. 208-209). Even the integration of a repository into the institution’s overall information systems and policies, as suggested by C1VR (pp. 224-25), can be seen as a form of advocacy since it ensures the sustainability, and even adds value, to the repositories in the institution.

Advocacy can also come in the form of institutional bylaws, such as those previously discussed in the institutional policies section, and even the DIKTI's mandate can be seen as part of the advocacy for institutional repositories. However the biggest boost in the advocacy efforts for repositories in the Indonesian higher education sector might arguably be the Webometrics' Ranking Web of Universities and Ranking Web of Repositories, which have been used by DIKTI as parts of indicators for assessment of Indonesian higher education institutions. Participant B5LC stated the following;

University B sometimes, strangely, only wants to chase after the Webometrics [rankings]. So instead of treating [our repository] as an [institutional] asset, the university only wants [to use the repository] as a public relations tool. Only for prestige (p. 165).

This Webometrics factor was also mentioned by various interview participants (A2RD1, pp. 17-18; A3HL, p. 31; B2RD, p. 120; C3HL, p. 236; C4IR2, pp. 266-68; C7LC, p. 320). University C's repository manager noted that he had 'piggybacked' the emphasis on Webometrics' ranking in order to encourage his institution's adoption of repository-related policies (C4IR2, pp. 267-68). Finally, efforts in addressing the requests from academics for particular repository features – as listed in the discussion on the "Tools Aspects" – will also serve as effective advocacy for the further proliferation of institutional repositories in Indonesia's higher education sector.

8.3.4.3 Use of information and management of information

"Use of Information" was found to be a minor child code in the "Management Issues" parent code, and tends to be a subset of another child code, "Management of Information." It was however decided not to subsume "Use of Information" into the "Management of Information" since the concept of use of information – to a certain extent – mirrors the jurisdictional issues that have been discussed earlier. The use of information is seemingly the connection between the two child codes ("Management of Information" and "Jurisdictional Issues"). For example, University A has been using the information from its repository for the purpose of awarding tenure to its academics and for institutional accreditation:

Yes. Now we can sufficiently depend on the data stored in the repository [of our institution] for the purposes of accreditation and academic tenure [of our

lecturers]. Both for the personal interests of the lecturers as well as the institutional interests. The benefits are more apparent in the accreditation [of our institution], where [the data in the repository] has sped up the data gathering phase considerably (A1VR, p. 5).

The office of research and development in two universities has also developed their own systems that mirror the system used by DIKTI for reporting and accreditation purposes (A2RD1, pp. 16–18; B2RD, p. 114). “Management of Information” covers broader issues, such as the use of repositories to manage works that are categorized as grey literature (including students’ theses and dissertations), and even digitized local collections (A3HL, p. 30). Also covered in the “Use of Information” child code is whether to consolidate scholarly works (students’ and academics’ works, published and unpublished works) or to separate them; the information flow between the repository and the library management system (A4IR, p. 41); whether to link the repository to the institution’s online learning systems in terms of teaching materials (A5LC, p. 67); and teaching evaluation (C1VR, p. 226).

8.3.5 Local practices

There are also local practices in populating and managing institutional repositories, which might or might not be unique to the Indonesian higher education sector. The list below provides a glimpse of some of the local practices that are related to repositories and were raised by the interview participants:

- academics’ scholarly works fall under the same mandate or directive as students’ works (A1VR, p. 3), or both are covered by different directives, or the current directive in the institution covers only one of them (B4IR, p. 137);
- submission policies consist of a combination of the following practices: all parts of the works need to be submitted as full-text in their entirety with access policies defined separately for each part (A1VR, p. 4) or only the parts of the works that can be made open access need to be submitted;
- repository managers have the roles of checking and approving the online submission to a repository (A4IR, p. 41; B4IR, p. 138; C4IR1, p. 246) although there have been occasions where they assume more proactive roles in recruiting content for their repository (A4IR, p. 42);

- access policies generally consist of a combination of the following practices: open access to the works in their entirety; open access only to certain parts of the works; abstract only, or metadata only (A1VR, p. 3; A4IR, p. 40; B8LC, p. 209; C4IR1, p. 255). From the user perspective, works can be accessed publicly; limited to the respective campus community, (B4IR, pp. 138 & 142); or restricted only to repository managers or authorized staff (C4IR1, p. 255);
- access policies of scholarly works produced by academics are generally defined by the respective authors (A1VR, p. 3), or in the case of students' works, it is defined by institutional policy where exceptions can be made based on inputs from the relevant academic departments or faculties;
- submission or uploading of academics' scholarly works has been linked to the academic tenure process (A1VR, p. 4; C1VR, p. 226), internal reporting (A5LC, p. 60; A6LC, p. 77; A7LC, p. 91), and internal assessments (reward and punishment) relating to the institution's human resources department (A1VR, p. 4; C1VR, pp. 224 & 229);
- to facilitate access and use from a broader audience abstracts or extended abstracts have been provided, which may be provided in Indonesian, English, or both (A1VR, p. 8; A2RD1, p. 24; B2RD, p. 108);
- submission or uploading of scholarly works to repositories are usually done through a combination of self-upload by the academics themselves, limited mediated-upload services, or full mediated-upload services (A2RD1, p. 21; C4IR1, p. 249; C5LC, p. 287);
- students' scholarly works (mainly theses and dissertations) submitted to institutional repositories are usually filtered based on the markings given by examiners (A3HL, p. 34);
- other types of works that can be uploaded to repositories include newspaper (popular) articles (A3HL, p. 35); documents related to scientific competitions (A4IR, p. 42) and audio visual materials (A4IR, pp. 44 & 47);

- in terms of students' theses and dissertations there are usually connections between institutional repositories and the library management system (at least for metadata transfer) since these type of resources were traditionally considered to be part of library collections when they were in hardcopy format, which would then be digitized retrospectively before being uploaded to repositories (A4IR, p. 41, A6LC, p. 75);
- institutional repositories have various policies regarding usage statistics: these include, available to all users (accessible on the repository websites); available only to contributors (need login and password) or available only to repository managers (A4IR, pp. 50–51).

Some of the local practices that have linked repositories into the academic tenure, internal reporting, and internal assessments of the institution are indications that, at least some Indonesian higher education institutions have viewed repositories from the perspective of corporate information management; confirming similar previous findings in the content analysis study and survey.

Other local practices that are not directly related to institutional repositories but are still inter-connected in the repository ecosystem include the following practices:

- to increase the number of international publications (in English), institutions usually provide the following treatments to their academics: workshops on English for academics, proofreading, full translation services, or a combination of these (A1VR, p. 9), and higher incentives for works published in English (B2RD, pp. 118-19);
- the Office of Research and Development creates reporting systems that mirror DIKTI's reporting requirements (A2RD1, p. 16);
- providing separate online journal systems to publish scholarly works by academics and students, although the interviews did not investigate further the peer-review process for these online journals (A3HL, pp. 29 & 37); and
- providing a specialized online journal system to accommodate the 'publication' of the journal article-style summaries of students' theses or final projects (A3HL, p. 36; A4IR, pp. 51 & 53; C3HL, p. 239);

The local practices mentioned in both lists above naturally overlap with previous discussions on various aspects of institutional repositories as represented by other parent and child codes.

8.3.6 Publish vs. publicly accessible

A complicating factor in the repository landscape in the Indonesian higher education sector is the misunderstanding or confusion over the term “publish.” This situation was highlighted by the use of “publish” to refer to making works publicly accessible online. This meaning was repeatedly used by some interview participants; both academics and administrators. The same term has also been used correctly to refer to the formal (peer-reviewed) publication of scholarly works.

An official at an Office of Research and Development (A2RD1) used “publish” in referring to the decision on whether to make a work in an institutional repository openly accessible to the public;

It is very possible since we have discussed this issue with the management information systems team that is developing this system. It is possible in the context that ... this data ... technically speaking, just needed to be checked [in the box] on whether to *publish* it or not ... in our database we have research reports and proposals. The [proposals] do not need to be *published* ... (p. 20, emphases added).

A library director (A3HL) described the uploading of a work to a repository with the term “publish” (pp. 33–34). A repository manager (C4IR2) has seemed to be aware of this confusing use of the term “publish” to refer to both formal peer-reviewed publications and making works in an institutional repository publicly accessible. When asked whether his remarks (“One of the requirements to progress in academic tenure track, these are [the scholarly works] that you need to publish”) referred to making those works available in his institution’s repository, he answered positively and remarked that the meaning of “publish” in this instance might not be the ‘proper’ meaning as peer-review publications (p. 268). A lecturer (A7LC) has similarly used the word “publish” to refer to uploading of works to a digital repository to comply with DIKTI’s requirement for academic tenure (pp. 90–91). It is understandable that making a work publicly accessible online has, in and of itself, represented some level of ‘publication.’ Nevertheless it can be a confusing use of the term and can potentially obscure, or even alter, the ‘proper’ meaning referring to formal peer-reviewed publications (scholarly publishing).

Local practices in the Indonesian higher education sector might have also contributed to the confusion over the term “publish,” as was observed in a number of interviews. It might be worth revisiting an earlier discussion on this topic in Chapter 2. In 2011 DIKTI (now under KemenristekDIKTI) circulated a letter regarding its policies on the uploading of scholarly works and journal articles (Santoso, 2011). Another letter was circulated by DIKTI in 2012 to provide guidelines on the management of online journals (Santoso, 2012a). This second letter was intended as a follow up to the 2011 letter. However in between the issuing of those two letters, there was another letter circulated by DIKTI regarding the requirement for all students studying at tertiary level, including undergraduates, to publish work(s) in scientific journal(s) (Santoso, 2012b). This situation has led to a peculiar interpretation by many administrators in Indonesian higher education institutions in terms of undergraduate theses. The latest letter on the management of online journals (Santoso, 2012a) has been interpreted as ‘permission’ to upload the summaries of the students’ theses (in journal article format) to the respective institution’s repository and treat them as the required ‘publications.’ This interpretation was frequently observed in the researcher’s interactions with various librarians and repository managers. It was also observed in participant A4IR’s comments:

The start was the DIKTI’s circular on the requirement of publishing [journal] articles. That was the beginning. Now then the Vice Rector 1 said that it is impossible [to fulfil] ... to publish hardcopy journals [to accommodate all those articles by undergraduate students]. Don’t you agree? ... After that [there was another circular about] online journals. Then the Vice Rector 1 talked to the head of library to come up with a solution and by chance we have already had, what is it called? The OJS [(Online Journal Systems)]. That was then proposed and followed up” (p. 53).

Despite the use of the term “publish” or “publication” for the undergraduate theses, this practice has involved virtually no peer-review process. Thus questions remain as to whether these summaries of undergraduate theses should be categorized as published works or grey literature. In the content analysis phase, the researcher categorized this type of works as Theses and Dissertations. Either way, this situation has been seen as a ‘compromise’ since it was unrealistic to expect all undergraduate students to formally publish in peer-reviewed journals. Despite the significant challenges such a requirement would pose for undergraduate students, there would

have not been a sufficient number of journals to accommodate the number of students who would have had to publish at almost the same time (final semester or year). As confusing as this situation might be, these practices have influenced the population of repositories in many Indonesian higher education institutions.

8.3.7 Potential of institutional repositories and open access

The final parent code that will be discussed is the “Potential of IRs & OA,” which will elaborate what interview participants reported regarding the prospect of institutional repositories and open access to support Indonesian higher education teaching and learning. The first two issues are the expectations of most participants that repositories should be able to serve as collaborative platforms and be better integrated into an institution’s other information systems. The value of building collaborative platforms has been touched upon in the discussions on the “Tools Aspects.” The majority of academic interviewees expressed their aspirations that repositories should be able – to some extent – to facilitate collaboration between academics, either with colleagues from the same institution or with their external peers. Collaboration can be facilitated, according to participant C6LC, by as simple a means as providing features that facilitate content sharing between institutional repositories and social media (C6LC, p. 306). Collaboration can also be facilitated through the community building features – as seen in ResearchGate (<https://www.researchgate.net/>) and Academia (<https://www.academia.edu/>) – that could be built into repositories, according to a number of participants (A2RD1, p. 23; A7LC, pp. 101-102; B6LC, pp. 173-74; C6LC, p. 298; C7LC, p. 318). An interviewee requested that the full-text of her works in a repository be made restricted and users interested in her works should email her to obtain the full-text document(s). When asked whether there was a specific reason for her request, the participant A7LC answered, “No specific reason, just to know [who reads my works]” (p. 98). This phenomenon can be interpreted as a manifestation of scholarly prestige; an issue that has been discussed previously as a “Scholarly Communication” aspect of the uptake of institutional repositories. This behavior needs to be taken into account to ensure the sustainability of repositories, at least by providing updates to content contributors on the usage (or performance) of their contributed works. In this regard, lessons can be learned from ResearchGate and Academia, although to a much lesser degree since institutional repositories – as the

name implies – are mostly limited to a single institution. Some *survey* participants expressed similar aspirations to have a platform for collaboration and networking. Among others, these *survey* participants used the following words or terms in describing their reasons for supporting a repository in their respective institutions: share/sharing (entries #4, #9, #12, #14), network/networking (entries #5, #6, #8, #15), joint research or research collaboration (entries #5, #12, #13, #16, #17), relationships (entry #7), and communicate/communication (entries #10, #13).

The scope of any repository that only covers a single institution might need to be considered as a serious limitation in light of the academics' needs to collaborate with peers from outside their own institution. In the context of Indonesia, one recent development might be able to provide a 'limited' solution for this need for a collaborative platform. In March 2016 the National Library of Indonesia launched Indonesia One Search, an online portal that harvests metadata from various institutions (see Chapter 2). Although institutional repositories are not the sole sources of metadata that One Search harvests, they have been the dominant source. A recommendation might be put to the National Library of Indonesia to leverage on this collective metadata by creating a collaborative platform. This platform might then be used by Indonesian higher education institutions to collaborate among one another based on various fields of research that are relevant to each institution. The platform would provide a subject-based value-added service using the aggregated metadata from various higher education institutions, which returns benefits to the contributing institutions and at the same time ensures the sustainability of institutional repositories in the Indonesian higher education sector.

As briefly discussed earlier in the context of the uptake barriers of repositories in Indonesian higher education sector, the "Administrative Burden" has been one of the main barriers. According to the *survey* results, the administrative burden has been the foremost reason for academics not contributing to repositories. Enhanced system integration might provide part of the solution to the administratively over-burdened academics by minimizing the administrative tasks they need to undertake in contributing to repositories. Offices of Research and Development have been observed to have specific interests in the management and/or administration side of research and development, such as proposals, reporting, metrics, expertise directory, journal

accreditation, etc. that are commonly used for institutional accreditation or institutional reporting obligations to DIKTI – rather than prioritizing the dissemination of the research outputs (B2RD, p. 113). Libraries, on the other hand, have been observed to focus on the dissemination of research outputs, and the human resources departments have been seen to have special concern for academic tenure in terms of measuring the performance of their academics, provisions of incentives, and reporting obligation to DIKTI in terms of academic staffing. Although the interviews did not include human resources departments, their role in the information ecosystem including repositories can be observed in the previous discussion relating to the jurisdictional issues. Thus, in order to be sustainable institutional repositories in the Indonesian higher education sector need to be developed further as integrated components of the institutional online information systems, rather than as stand-alone or separate systems.

Fear of plagiarism is the next major issue that needs to be accommodated in the future development of repositories in the Indonesian higher education sector. The plagiarism issue is interestingly – and paradoxically – related closely to the open access issue. Most interview participants supported their institution’s policies in opening access to the majority of content in their repository. Participant A2RD1 argued that opening access to content in repositories enables academics – or anyone for that matter – to learn something and to be familiar with previous research, thus avoid unnecessary duplications of research (p. 25). Participant A5LC believes that opening up access to her works will make them more widely known (p. 57), which relates to the scholarly prestige aspect of the uptake drivers. Participant B2RD has placed opening up access to his institution’s scholarly output through repositories in the context of institutional accountability, community engagement, as well as institutional prestige;

Firstly, dissemination. Secondly, we are engaged ... in the science and technology developments, and community services. Research and community services. Thirdly, these repositories create open access to information. Accountability of [our institution’s] research and community service activities that have been funded by the country (p. 110).

However, as discussed previously in the “Combating Plagiarism” code as part of the corporate or institutional information management, there has been dual responses in how academics and Indonesian higher education institutions view the plagiarism issue.

On one hand they view open access as something positive, and at the same time they also fear that open access would encourage plagiarism since it is now much easier for students to copy and paste text from others' works. They also see opening up access to students' theses and dissertations will enable their use for similarity checking and at the same time they have concern that their works will be plagiarized more easily. Some comments in the interviews have reflected this concern. Participant B5LC proposed the use of watermarking and digital rights management technology to 'protect' the works in institutional repositories (p. 159), while participant B6LC proposed the use of watermarking and Viewer technology (p. 169). Viewer is an online application that enables users to read any documents online without any ability to save or print the document; it is a read-on-screen-only technology. The researcher believes that this contradictory notion of open access and fear of plagiarism are part of repositories adoption in Indonesian higher education sector. It is also notable that one of the findings in the content analysis stage is that repository adoption by the Indonesian higher education sector has seemingly been related to combating plagiarism.

The last two issues in the discussions of the potential of repositories and open access are the general ideas mentioned by some participants – which have been interspersed in the previous discussions of other issues – and the aspect of grey literature. Some participants mentioned that repositories can play a significant role as alternative scholarly information sources in terms of providing access to unpublished scholarly works, which largely cannot be found elsewhere. Some type of works that were mentioned in the interview have included unpublished research reports and even research proposals (A2RD1, p. 20; C6LC, p. 296), newspaper articles (A3HL, p. 35), unpublished scientific papers (B6LC, p. 169; C6LC, p. 296), patent documents (C5LC, p. 283), and grey literature in general (B7LC, p. 186). One *survey* participant also mentioned explicitly that, “institutional repository is a good resource for accessing grey literatures” (Online Survey, Reasons for Supporting Own IR entry #2). The content analysis stage has also found that repositories in the Indonesian higher education sector were initiated more as corporate information management systems, first populated mainly by students' theses and dissertations, which also fall into the broad category of grey literature. Thus it has seemed that the initiation and the future

of institutional repositories in the Indonesian higher education sector might always involve grey literature.

The DIKTI officials interviewed also hinted at some future possibilities opening up with the proliferation of institutional repositories in Indonesian higher education institutions. Participant D1 mentioned that, “when we talk about citation index we usually, always refer to Scopus, isn’t that so? ... we also want to create an Indonesian version of citation index” (p. 333). To which participant D2 added that, “it is clear [that the citation index] is specifically about Indonesia ... authored by Indonesian authors, even when the works are published by overseas journal publishers” (p. 333). Participant D1 also added that this Indonesian citation index will help KemenristekDikti to conduct research mapping in Indonesia as well as providing future insights that will help the Ministry in its future planning in the area of research and “technology foresight” (p. 334).

8.3.8 How the interviews answers the research objectives

The interviews with various stakeholders of institutional repositories in three Indonesian higher education institutions and officials at the Ministry of Research, Technology, and Higher Education provided data related to addressing the research objectives. The following section will link some topics in the discussion on the interviews to the relevant research objectives. Some answers in this section will be similar to those in the survey section, but this is as expected as the interviews were designed – to a certain extent – as follow ups of the survey. Some questions from the survey were asked for the purpose of confirmation and/or elaboration, while some for the purpose of expanding the investigation.

Objective 1: Identify the rate of, and drivers for, the uptake of institutional repositories in Indonesian higher education institutions.

In terms of Objective 1, the interviews could only provide answers relating to the drivers for the uptake of repositories, but not the rate of uptake. The drivers mentioned here are taken from the interviews with university administrators (Vice Rector for Academic Affairs, head of the Office of Research and Development, head of library, or repository managers). *Institutional* drivers for the uptake of repositories in Indonesian higher education institutions consist of four aspects: 1) to comply with the

DIKTI mandate that all scholarly works by academics submitted for tenure should be discoverable online for verification purposes; 2) for institutional prestige relating to the Webometrics' rankings; 3) for institutional developments relating to the overall institutional information system, of which the repository is a part; and 4) for combating plagiarism, particularly in the production of students' theses and dissertations, by using the repositories' content as a corpus of scholarly works for similarity checking. Institutional prestige relating to Webometrics' ranking has also been identified earlier in the content analysis study. *Personal* drivers are mentioned in Objective 3.

Objective 2: Assess the management and policy structure supporting institutional repositories in Indonesian higher education institutions and their libraries.

The evidence indicates that policies relating to repositories in Indonesian higher education institutions have been adopted through a top-down approach, as a way for institutions to comply with the DIKTI mandate to make accessible online scholarly works from the respective institutions. Institutional prestige (Webometrics' rankings) appear to also play a major role in driving the institutional adoption of repositories. However institutional policies vary in terms of what type of works can be included in the repositories. Academics' scholarly works may fall under the same directive as students' works, or both are covered by different directives, or the current directive in the institution covers only one of them. Different stakeholders are involved at varying levels in the adoption, management, and population of repositories. Stakeholders with interests in the information contained in repositories are the library, the Office of Research and Development, and the human resources department; each with its own view on the use of the information. The issue of academic tenure is present in the repository landscape in the Indonesian higher education sector, either in relation to DIKTI or as an institutional level issue relating to the management and development of academic staff. Mediated submission of scholarly works is also an important issue that – at least in the short term – helps increase the adoption rate of repositories by individual academics.

Objective 3: Identify the motivations, contributions, and attitudes of Indonesian academics towards current and future development of institutional repositories and open access.

In general Indonesian academics have regarded their institutions' repositories as useful tools for their information-related needs. More specifically, to these academics repositories have been the tools for scholarly communication and for managing their *personal* information. In the scholarly communication area, repositories have helped them: 1) as information sources that they can utilize to fulfil their information needs; 2) as information dissemination tools by which they can disseminate their scholarly works, either formally (peer-review) published, informally published (grey literature), or unpublished; and 3) as a platform whereby they can gain scholarly prestige and/or sense of fulfilment that comes from the dissemination of their works to a wider audience. As an information management tools, repositories have been regarded as useful personal information management tools (e.g. inclusion of online resumes) and an integral part of the academic tenure process. *Institutional* drivers are mentioned in Objective 1.

Objective 4: Identify local practices of Indonesian higher education institutions in populating and managing their institutional repositories.

Among the local practices observed in the population and management of repositories in the Indonesian higher education sector, matters relating to access policies and the relevant document submission practices have been some of the major issues. Scholarly works submitted to repositories can be submitted in their entirety as single digital objects (files), or as multiple digital objects. However there are also quite a number of works that have been uploaded only in part, such as an abstract only (for journal articles), and cover page and/or table of content only (for books). This creates a strong impression that the uploaded digital objects are included in the repositories more for their evidential value than their informational value. Also in quite a number of repositories, access policies differ between the respective institutional community members and non-affiliated users, who have considerably reduced access privileges. These policies suggest that repositories are being utilized by institutions more as a corporate information management system than a scholarly dissemination platform.

Submission to repositories involves a combination of self-upload (self-archiving) and mediated upload, where (usually) libraries assume the supporting role in the mediated upload on behalf of academics. Various types of unpublished works (grey literature) populate repositories in Indonesian higher education institutions. Some institutions have established separate online journal management systems (e.g., Online Journal Systems/OJS) to ‘publish’ scholarly works of their own academics as well as to make available (‘publish’) summaries of students’ theses.

Objective 5: Assess the potential for institutional repositories and open access to support Indonesian higher education teaching and research.

The interviews indicate that the participants (academics and administrators) generally agreed that institutional repositories and open access have provided benefits. However to ensure sustainable developments in the Indonesian higher education sector, repositories and open access need to be put into relevant local contexts and accommodate local needs. Firstly, they need to be understood in the context of Indonesian higher education institutions’ efforts in complying with the DIKTI mandate to make scholarly works available for tenure purposes; the institutional prestige in terms of institutional rankings (e.g., Webometrics’ rankings); and the mindset of combating plagiarism in students’ theses and dissertations by creating a corpus of works against which similarity checking can be undertaken to detect potential plagiarism. Secondly, they need continuous advocacy efforts that provide a value justification to various stakeholders in the institution; raising awareness among academics in the institution by creating promotional materials and activities to widen repository uptake; providing necessary services/assistance (e.g., mediated submission) for new adopters; and by advocating for the adoption of supportive institutional policies and/or by-laws. Thirdly, a concerted efforts is required in each institution to raise the institutional community’s awareness of repository-related issues, such as intellectual property rights and copyright; privacy; confidentiality; academic integrity; and the difference between formal (peer-reviewed) publications and making works publicly available online. Repository managers and related staff in particular need to be knowledgeable in these areas. Fourthly, to ensure sustainability repositories need to be further developed to accommodate the academics’ needs as well as their preferred workflow in producing scholarly works. The following issues were also discussed by

academics in the interviews: 1) the desirability of enhanced integration of repositories and other information systems in the institution, which will reduce multiple entries of the same information into different systems; 2) services to contributors that provide feedback on the ‘impact’ of their works, such as viewing or downloading usage statistics, or integration with sources of Altmetrics; 3) more user-friendly interfaces; and 4) features that can facilitate collaboration, at least at the level of internal collaboration. Fifthly, higher education institutions in Indonesia needs to formulate relevant strategies in addressing the language issues, either in terms of English proficiency (academic writing), as well as in terms of English access points in repository records that facilitate discoverability. Both will potentially broaden the reach of scholarly works produced by Indonesian academics as well as increase Indonesia’s contribution in global knowledge production. Lastly, the issues of grey literature might be influential in the future development and use of institutional repositories and open access in the Indonesian higher education sector. Closing this discussion, a work by Chowdhury (2014) might be useful in providing sustainability (economic, social, and environmental) perspectives regarding the further developments of institutional repositories (pp. 124-128).

8.3.9 Recommendations

As a result of the discussions relating to the interviews, some practical recommendations as well as recommendations for future research emerged. The following sections will provide brief discussion related to these recommendations.

8.3.9.1 Practical recommendations

Recommendation A.6. The National Library of Indonesia should further develop Indonesia One Search to include features that facilitate collaboration between academics with related research interests. Collaborative features in Indonesia One Search can be instigated by categorizing the aggregated metadata from various institutions based on the same or similar fields of study/research. For this purpose there is the need to categorize fields of study/research. Best practices from more developed educational and research systems can be adopted as starting points, such as the field of research (FoR) codes used by Excellence in Research for Australia (ERA). The value-added services that can emerge from the aggregated metadata from various higher

education institutions will in turn provide leverage for the National Library of Indonesia to solicit participation from more institutions. The experience of the Hydra Project (Awre & Green, 2017) might also serve as valuable input in further developing Indonesia One Search in order to facilitate collaboration.

Recommendation A.7. Academic libraries should assume the leadership role in the advocacy for institutional repositories in their respective institutions. Academic libraries are well situated in higher education institutions to take the lead in various advocacy efforts, assistance, and training, relating to the population and management of their institution's repository. Raising the institutional community's awareness of repository-related issues, such as intellectual property rights and copyrights; privacy; confidentiality; academic integrity; and the difference between formal (peer-review) publication and making works publicly accessible online, will enhance the library's institutional profile. The well-established traditional roles of academic libraries will ensure the continuity of such efforts, which will contribute significantly to the sustainability of repositories.

Recommendation A.8. Individual higher education institutions should enhance integration between a repository and other information systems. Firstly, improved integration will reduce unnecessary multiple entries of the same information into different systems, which has been a major contributor to the foremost barrier for repository uptake (the "Administrative Burden"). Secondly, integration should facilitate the resolution of jurisdictional issues relating to the management and use of information relating to an institution's repository. Thirdly, integration will open up new services for contributors that would have otherwise been impossible in isolated or 'siloes' systems, allowing the repository to provide leverage for further institutional development.

Recommendation A.9. Academic libraries, the National Library of Indonesia, and relevant libraries/librarians' professional associations should start the conversation on grey literature in Indonesia and its standardization in terms of resource identification in order to support discoverability. Grey literature is especially important in the context of developing countries, such as Indonesia, as it is a category of scholarly communication that frequently contains local or indigenous knowledge that would otherwise not be available.

8.3.9.2 Recommendations for further research

Recommendation B.3. A study focusing on the possibility of providing collaborative features in institutional repositories software and a survey of best practices in how these software could be integrated into the overall institutional information ecosystem would provide useful contributions to the further development of open access and repositories worldwide.

Recommendation B.4. A study on grey literature in the Indonesian context would provide valuable insights into its potential contribution into the open access culture, local knowledge, good governance, and accountability, and its potential to contribute to the future development of democracy in Indonesia. This study might also include a technical aspect working towards a more standardized identification system for grey literature, which will optimise its discoverability, use, and impact.

Recommendation B.5. A study on the proliferation of electronic journals in Indonesian higher education and/or research sectors would complete the ‘big picture’ relating to the future of open access in Indonesia. This topic is particularly relevant since in Indonesian One Search the numerous electronic journals managed by using Open Journal System (OJS) have been ‘lumped’ together as a ‘repository,’ suggesting the National Library of Indonesia has perceived and treated OJS as part of the repository ecosystem.

Chapter 9. Conclusions

This chapter addresses the research question and summarizes the findings of this study based on how the research objectives have been answered, as discussed in more detail in the Discussions chapter.

9.1 How the study answers the research question

This study has been conducted to answer the following research question:

What is the current state and future prospect for institutional repositories in supporting open access for the benefit of Indonesian higher education teaching and research?

This study has provided considerable insight into the institutional repository landscape in the Indonesian higher education sector. There has been significant growth of repositories observed during the period of this study as well as the increasing profile of repositories among the stakeholders of the higher education sector in country. Initial drivers for the uptake of repositories in the country's higher education sector have seemed to be pragmatic ones. Higher education institutions have established repositories largely as corporate information management system to comply with the DIKTI mandate, institutional prestige in terms of Webometrics' rankings, and as part of the effort to combat student plagiarism. The degree of openness among these repositories is low. Addressing issues in scholarly communication has not seemed to be a driver – at least not the initial driver – for the uptake of repositories in the Indonesian higher education sector. Individual academics, on the other hand, have tended to view repositories as a platform for gaining scholarly prestige through the wider dissemination of their scholarly works. They have also indicated their strong support for a reform in scholarly/academic communication and publishing by contributing their works to their institution's repository, especially their published works. Thus, although in their current stage repositories in the Indonesian higher education sector might be utilized mainly for pragmatic institutional purposes, they also hold great potential in responding to some of the issues in the scholarly communication landscape.

While the conversion of the full potential of repositories into real impacts in the Indonesian scholarly communication landscape remains to be seen in the near future, the study has also identified the considerable potential for repositories in Indonesia in the context of the management and dissemination of grey literature. Due to the country's very diverse cultures and languages, this type of resource plays a very important role in the preservation – and to a certain extent dissemination – of local or indigenous knowledge, such as local or oral history, traditional arts and customs, etc. This type of local content has been long 'neglected' due to the low awareness or appreciation in the wider society and scholarly communities. This unfortunate situation might be the result – at least in part – of an inferiority syndrome, where the society in general tends to associate resources generated from the 'west' with high quality (and even prestige) while indigenous resources tend to be looked down upon. Indonesian higher education institutions, while not immune to this inferiority syndrome, are better equipped than the rest of the society to break free from it. Various research conducted by academics in the higher education institutions should have provided Indonesian academics with certain advantages in having enhanced awareness and appreciation toward these indigenous knowledge resources. Indonesian higher education institutions also have the resources and 'stability' to provide custodianship over these indigenous knowledge resources; sometimes even better than government-managed cultural institutions. Therefore, in addition to the 'usual' scholarly (e.g., unpublished research reports) and semi-scholarly (e.g., institutional reports, newspaper opinions pieces, etc.) type of unpublished works or grey literature, the future developments of repositories in the Indonesian higher education sector needs to emphasize on the preservation of grey literature that contains local or indigenous knowledge.

As well as encouraging a more culturally self-assured society, the wide-sharing of local or indigenous knowledge will also contribute in facilitating an information sharing and open access culture in the Indonesian higher education sector, and the society in general. This spirit of sharing will be beneficial in ushering the higher education sector into a more scholarly context of (Gold) open access, which might still face challenges in terms of low awareness and understanding of the open access-related issues, such as copyright, privacy, and confidentiality.

The recent alignment of the Indonesian higher education sector with the country's research sector is also an encouraging new development. Despite the challenges that might arise, the alignment presents opportunities for substantial progress to the country's efforts in advancing science and technology. Additionally the emergence of institutional repositories as a prominent topic of discussions nowadays in the Indonesian higher education sector will only serve as an incentive for all stakeholders of the higher education sector to step up efforts to consolidate their role as an important component in the teaching and research landscape of the country, especially in the effort to build institutional, regional, or national research information systems and infrastructure. Repositories with better integration into the overall research information system and infrastructure will be able to provide the services needed by academics (dissemination, peer collaborations, etc.) as well as institutional needs (tenure, accreditation, research metrics and reporting, etc.). Integrated systems that can also perform as collaborative platforms, coupled with the open access culture, will ensure the sustainability of repositories in the higher education sector and will perform crucial roles in the advancement of science and technology in Indonesia.

9.2 Reflections on the methods

This research has adopted the mixed-methods research design and employed the following individual methods: content analysis, survey, and in-depth interviews. One of the advantages of this mixed-methods strategy is the ability to obtain a more complete observation of the issue(s) being investigated, as has been stated by Halcomb and Andrew (2005, p. 74). Other advantages are the ability of previous methods to inform the design and implementation of the next method, as well as the ability to use the results from the next method to confirm – or otherwise contest – the results from the previous method. Greene et al. (1989, pp. 266-67) has discussed these advantages. However, as Creswell (2009, p. 205) has warned, mixed-methods research strategies require much more effort and time in the data collection and data analysis stages, as well as familiarity with both quantitative and qualitative methods. The personal experience of the researcher in this project has confirmed each of these assertions about mixed-methods research strategies. The following paragraphs will reflect on the individual methods used in this research.

Content analysis is the first method employed. As has been discussed at length in the previous relevant chapters, there are a number of limitations in the application of content analysis to dynamic online content, such as institutional repository websites. The dynamic nature of the online environment means that at this time valid comparisons cannot be reliably made for a longitudinal study. It also means that if a researcher made errors or neglected to record certain information in the data collection phase it is not possible for the researcher to go back and repeat what he/she has done previously since the online environment as well as the content might have changed (new content added, some deletions or changes in the content, software or setting changes, etc.). Reflecting back it is also imperative to specify criteria as specific or precise as possible for each coding unit, preferably in a quantifiable manner.

The second method utilized in this research was a survey. One of the advantages of surveying is the ability to reach a wide audience, although in this instance getting the targeted participants to respond to the survey has proven difficult. Fortunately the researcher has been able to make use of personal contacts to drive responses from potential participants. The availability of online platform for survey has been a great help for the researchers. The use of an online platform has enabled a survey delivery method that does not require any physical encounter with the participants, thus eliminating the need for travel to meet with the participants. In addition to saving the time and effort of the researchers, the online platform has greatly reduced the cost needed to conduct the survey. On reflection, perseverance was also essential in utilizing contact persons by maintaining constant contact with them. Another challenge in the use of survey is the need for the researchers to understand statistics to a degree that might require considerable time for the researcher to acquire.

The final method utilized in this research was the in-depth interview. This method has enabled the researcher to corroborate some issues or findings from the previous stages of research. In-depth interviews have also enabled the researcher to expand on certain topics by obtaining more in-depth and nuanced responses from the participants. Some of the challenges with in-depth interviews are the time it takes to transcribe the interview recordings, translating the transcriptions (for interviews conducted in languages other than English), and the coding of the interview transcripts. Although transcription services can be used, the researcher believes that undertaking the transcribing themselves has certain important advantages. The researcher has the

memory of the interview settings, which might be crucial in transcribing interview recordings in certain situations. Transcribing the interview recording themselves will also immerse the researcher in the interview data, significantly increasing his/her familiarity with the data. This immersion in and familiarity with the interview data has proven to be very useful for the researcher in constructing the a priori as well as empirical codes in the coding stage of the interview transcription. Translation has also proven to be time consuming and challenging, especially when the participants speaking a language other than English and often in a colloquial way, and the researcher needing to translate it into accurate English. However the most important reflection on the in-depth interview method is that a researcher needs to always be conscious of the inherent bias in any interview since interviews are always constructivist in nature. The interview transcripts are the co-creation of the interview participants and the researcher(s).

9.3 Final reflections

Institutional repositories as a concept emerged in the Indonesian higher education sector in the late 1990s. In addition to the global approach to institutional repositories as one of several key strategies to support open access (Green OA), they also initially served as a major initiative used by Indonesian higher education institutions to manage student theses and local knowledge collections. Due to this background, repositories in Indonesian higher education institutions have been approached as more of a technical (information management system) issue rather than a social (scholarly communication) issue. Later developments have only strengthened this perception. The DIKTI mandate for making academics' works available online is linked to its oversight of the national tenure system and efforts to combat plagiarism. This mandate and the popularity of Webometrics' rankings have provided the main drivers that have significantly increased the uptake of repositories in the sector. However these drivers have also 'confined' repositories more to the technical aspect of their implementation (information management) and – to some extent – have impeded higher education institutions from seeing the big picture in terms of the roles repositories can potentially play as an effective channel of scholarly communication and in promoting open access scholarship more broadly.

The proliferation of literature on repositories has helped institutions to start understanding the ‘big picture’ and context of repositories with regard to scholarly communication and open access issues. Unfortunately research on repositories within the Indonesian context has been relatively rare. Thus this research will hopefully provide a significant contribution to the understanding of repositories and open access in the Indonesian higher education sector, as well as inspiring similar research. This research will also hopefully be able to encourage Indonesian higher education institutions to increase their efforts in aligning their repositories to the scholarly communication and open access futures of Indonesia.

Situating repositories in the bigger picture of scholarly communication and open access will necessitate Indonesian academic libraries and librarians to expand to ‘new’ territories, which might not be familiar to most. However this situation will also provide them with opportunities to assert their crucial roles in the advancement of science and technology in Indonesia’s higher education sector and support the wider adoption of open access culture in the sector, as well as society at large. These developments will be crucial as part of Indonesia’s future development into a more mature democracy and the world’s fourth largest economy. It is crucial that Indonesian academic libraries and librarians seize these moments.

9.4 General recommendation for further research

A general recommendation for further research would be to provide some comparisons between the findings from this research to the previous surveys in the international context, as well as comparisons to the currently available literature and emerging literature in the future. This general recommendation can also be coupled with more specific recommendations on grey literature (Recommendation B.4) and e-journal (Recommendation B.5), which can be read in Chapter 8.3.9.

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Every reasonable effort has been made to acknowledge the owners of copyright material. I would be pleased to hear from any copyright owner who has been omitted or incorrectly acknowledged.

APPENDICES

Appendix A Printed version of the online survey

The following pages in this appendix show the printed version of the online survey conducted on the Qualtrics online platform. This printed version cannot show the ‘skip’ and/or branching capability as in the online version. See Figure 6.1 that illustrates the ‘flow’ of the survey as it was experienced by the participants.

This appendix consists of eight pages (including this page).

Information Page

CLOSING DATE of this Online Survey has been EXTENDED
New CLOSING DATE is **17 Aug 2015**

Dear participant,

Thank you for participating in this survey. This online survey is being conducted as part of a Ph.D. Thesis at the Department of Information Studies, School of Media, Culture and Creative Arts, Faculty of Humanities, Curtin University, Perth, Western Australia. The title of the Thesis is "Institutional Repositories and Open Access in Indonesian Higher Education Sector: Case Studies of Three Indonesian Universities".

The research aims to investigate the current state and future prospects for institutional repositories in supporting open access for the benefit of Indonesian higher education teaching and research.

Your participation in this online survey will involve responding to questions relating to demographic information about yourself, your employment history and/or title, and your personal views/opinions regarding the institutional repository owned or managed by your CURRENT institution. As a participant you have the right to withdraw your participation in this research at any time without any consequences. The online survey will only take approximately 10 to 15 minutes to complete and will be accessible on 18 May - 17 Aug 2015.

Information obtained from this online survey will be used as part of the research project and results may be published in journals and conference presentations, as well as the Doctoral Thesis. Please be assured that all responses will remain confidential. All participants will be anonymous (no personally-identifiable information will be recorded without your consent). Data relating to this research will be kept securely and access is limited to the principal investigator and the Supervisors.

Your participation in this research is invaluable and greatly appreciated.

Sincerely,
Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au)
Ph.D. Student – Curtin University
Student ID#: 16763823
Research Ethic Approval#: RDHU-08-15

You can begin the on-line survey by clicking the "Next page" button at the bottom of this page. Please be advised that by clicking it you indicate that you have read all the information on this Information Page and agree to participate in this research.



You may address any questions or concerns about this research, including the results obtained, to the researcher: Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au) at Curtin University. If you have any questions about your rights as a research participant, or are dissatisfied at any time with any aspect of this research, you may contact — anonymously, if you wish — Associate Prof. Paul Genoni, Department of Information Studies, School of Media, Culture and Creative Arts, Faculty of Humanity, Curtin University by phone at +61 (8) 9266-7256 or e-mail at P.Genoni@curtin.edu.au.

This research has been approved by the Curtin University Human Research Ethics Committee (Approval Number RDHU-08-15). The Committee is comprised of members of the public, academics, lawyers, doctors, and pastoral carers. Its main role is to protect research participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845 or by calling +61 (8) 9266-2784 or by emailing hrec@curtin.edu.au.

Demographic Page

On this page, some demographic information about you will be recorded. No personally-identifiable information will be recorded here. Please give or select answer that closely matches about yourself or your situation.

What is your gender?

Male

Female

In what year were you born?

[Select the range closest to your birth year]

- 1986-1995
- 1976-1985
- 1966-1975
- 1956-1965
- 1946-1955
- 1936-1945

How do you rate your English proficiency in READING in English?

- No proficiency
- Beginner
- Intermediate
- Advanced
- Fluent/Native/Bilingual

How do you rate your English proficiency in WRITING in English?

- No proficiency
- Beginner
- Intermediate
- Advanced
- Fluent/Native/Bilingual

What is the name of your CURRENT institution? (Please be assured that no personally-identifiable information is asked. The researcher will NOT be able to associate responses to individual participants. NO institutionally-identifiable information will be reported in the research results.)

What is the status of your CURRENT institution?

- State University
- Private University

What is the geographical location of your CURRENT institution?

- Java
- Sumatra
- Bali or Nusa Tenggara
- Kalimantan
- Sulawesi
- Other

How long have you been working for your CURRENT institution? [Select the range closest to your situation]

- 1 - 5 years
- 6 - 10 years
- 11 - 15 years
- 16 - 20 years
- 21 - 25 years
- More than 25 years

What is your academic role in your CURRENT institution?

- Teaching Only
- Research Only
- Teaching and Research

What is your CURRENT status in the academic tenure track in your CURRENT institution? [If you are a new lecturer and have no formal status yet, select "ASISTEN AHLI - Penata Muda". If you are in between ranks, choose the higher rank.]

- ASISTEN AHLI - Penata Muda
- ASISTEN AHLI - Penata Muda Tingkat I
- LEKTOR - Penata
- LEKTOR - Penata Tingkat I
- LEKTOR KEPALA - Pembina
- LEKTOR KEPALA - Pembina Tingkat I
- LEKTOR KEPALA - Pembina Utama Muda
- GURU BESAR - Pembina Utama Madya
- GURU BESAR - Pembina Utama

Which category below most closely matches your field of study/teaching/research?

- Sciences (Natural & Physical Sciences, including Mathematics, Chemistry, Engineering, Computer Science, and Medical)
- Social Sciences (e.g. Politics, History, Economics, Management, Business, Information Studies, etc.)
- Humanities (e.g. Arts, Music, Language, Literature, Philosophy, Theology, etc.)

What is your language preference in READING scholarly/academic works?

- Bahasa Indonesia
- English
- No preference, I am okay with both languages

Familiarity with IR

In this part we ask about your familiarity with institutional repository.

Institutional Repository is a digital library application/software that is used by institutions to consolidate, manage, and showcase their intellectual outputs. The intellectual outputs include, but not limited to, student's final projects/theses /dissertations, journal articles, conference papers, research reports, teaching materials, etc. Through Institutional Repository, institutions provide the public free access to all (or at least most) of these resources.

BEFORE starting this survey, have you ever heard the TERM "Institutional Repository"?

- Yes, I have EVER heard the TERM
- No, I have NEVER heard the TERM

AFTER reading the description inside the box ABOVE, are you familiar with the CONCEPT of an "Institutional Repository" as described?

- Yes, I am familiar with the CONCEPT
- No, I am NOT familiar with the CONCEPT

General Knowledge and Opinion Towards IR

In this part we will ask some general questions about your general knowledge and opinion about institutional repository.

Have you ever interacted with the institutional repository owned or managed by your CURRENT institution? Interactions can be in the form of browsing, searching, reading, or downloading the contents of the institutional repository.

- Yes
- No

Have you ever interacted with ANY OTHER institutional repository (NOT owned or managed by your CURRENT institution)? Interactions can be in the form of browsing, searching, reading, or downloading the contents of the institutional repository.

- Yes
- No

Do you PERSONALLY support your CURRENT institution's decision in establishing an institutional repository?

- Yes
- No
- No Opinion

Please give your main reason(s) for supporting or not supporting your CURRENT institution's decision in establishing institutional repository.

Does the language of the contents/resources available in ANY institutional repositories (Bahasa Indonesia vs. foreign language) have any influence in your decision to use them or not?

- Yes
- No

Contribution to IR

In this part we will ask some DETAILED questions about your opinions and attitudes towards the institutional repository owned or managed by your CURRENT institution.

Have you contributed contents created/authored BY YOU to the institutional repository owned or managed by your CURRENT institution?

- Yes
- No

Reasons for Contributing to IR

What are the reasons for contributing your works or contents to the institutional repository owned or managed by your CURRENT institution? [Please indicate your level of agreement or disagreement for each reason below using the Likert scale.]

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
To boost my scholarly/academic prestige	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To boost my INSTITUTION's prestige	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To contribute to the reform of scholarly/academic communication and publishing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To reduce the time between discovery and dissemination of research findings	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To increase citation counts to my scholarly/academic works	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To increase citation counts to my INSTITUTION's intellectual output	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To encourage other scholars to provide open access to their works	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To expose my works to INDONESIAN researchers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To expose my works to INTERNATIONAL researchers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To expose my INSTITUTION's intellectual output to INDONESIAN researchers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To expose my INSTITUTION's intellectual output to INTERNATIONAL researchers	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To comply with the DIKT's requirement for academic tenure	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To shift the burden of preservation of my works to the IR	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To solve the problem of preserving my INSTITUTION's intellectual output	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To increase the accessibility to knowledge assets such as numeric, video, audio, and multimedia datasets	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To increase the library's role as a partner in the research area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
To reduce user dependence on my library's print collection	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Among the reasons for contributing as mentioned above, what is your top reason for contributing? Please select only ONE.

What kind of works have you contributed to the institutional repository owned or managed by your CURRENT institution? [You must be the AUTHOR of the contributed works. You can select more than one option.]

- Published Works (journal articles, book chapters, conference papers/proceedings, or books)
- Unpublished Works (research reports, unpublished articles, working papers, etc.)
- Theses/Dissertations
- Teaching Materials (class handouts, presentation slides, etc.)
- University Record-type Materials (photographs, newspaper clippings, class evaluation sheets/forms, patent documents, meeting minutes, etc.)
- Other, please specify: _____

Reasons for NOT Contributing to IR

What are the reasons for NOT contributing your contents to the institutional repository owned or managed by your CURRENT institution? [Please indicate your level of agreement or disagreement for each reason below using the Likert scale.]

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
I have concerns that my work(s) might be plagiarized by others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not confident about the quality of my work(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I am not confident about the copyright status of some materials I use in my work(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My topic is not interesting for others	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My topic is sensitive or controversial	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My work(s) contain(s) data/information with confidentiality and/or privacy issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
My work(s) contain(s) data/information with security issues	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I plan to patent my work(s)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
I don't have time / It's an administrative burden for me	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The user interface of the IR is not user-friendly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
The IR cannot provide reports (# of views & downloads) to me as an author	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other, please specify:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Among the reasons for NOT contributing as mentioned above, what is your top reason for NOT contributing? Please select only ONE.

Opinion and Attitude Towards IR - 2

In this part we ask you to summarize your opinions and attitudes towards the institutional repository owned or managed by your CURRENT institution.

Regarding the institutional repository being owned or managed by your CURRENT institution, please indicate what kind of impacts it has had.

	Very Negative	Negative	Neutral	Positive	Very Positive
On me PERSONALLY (academic career)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On my CURRENT INSTITUTION	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
On INDONESIAN higher education sector	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

If you have anything else to add about your experience with ANY institutional repositories, please type it below:

Contact Information

This part asks if you will be willing to be contacted for a possible follow up interview. Although your willingness will be

much appreciated, this is not an obligation. This is the last part of the survey.

Will you be willing to be contacted by the researcher for possible follow up questions or interview?

- Yes
- No

Please provide your contact information below:

Full Name

Email 1

Email 2

Work Phone

HP/Cell Phone

Notes

Appendix B Documents related to online survey

The documents listed in this appendix are the formal letter sent to institutions (universities) to solicit participation in the survey and the Information Sheet. Both documents are provided in English and Bahasa Indonesia. Signatures of the researcher and Supervisor have been masked for privacy reason.

The survey was conducted on 18 May to 30 June 2015, which was then extended to 17 August 2015 by inviting more institutions to participate. The documents listed in this appendix are for the first batch only. Documents for the second batch have essentially the same content with different date range of the survey.

This appendix consists of five pages (including this page).

1. Formal letter for soliciting participation

Faculty of Humanities

Dear Rector/Director/Administrator,



School of Media, Culture
and Creative Arts

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7211
Facsimile +61 8 9266 3152
Web curtin.edu.au

CRICOS Provider Code 00301J

Through this letter we are inviting Universitas Andalas's participation in an **online survey** about **Institutional Repositories in Indonesian Higher Education Sector**. This survey is part of Doctoral research titled "Institutional Repositories and Open Access in Indonesian Higher Education Sector: Case Studies of 3 Indonesian Universities" at the Department of Information Studies, Faculty of Humanities, Curtin University, Australia. The Information Page for this research is attached with this letter.

You can indicate your institutional participation by:

1. **Responding to the researcher's email** (t.liauw@postgrad.curtin.edu.au) and indicating that your institution is willing to participate in the online survey; and
2. **Forwarding the last part of the email** (of which this letter is part of) to lecturers or academic staff in your institution, as well as encouraging them to participate in the online survey at https://curtin.asia.qualtrics.com/SE/?SID=SV_3eXUedatDBh81IF (18 May – 30 June 2015).

Published results gained from this research will not contain any institutionally- or personally-identifiable information and will benefit Indonesian higher education institutions in informing best practices in the management of institutional repositories based on local conditions. The results will also be invaluable for DIKTI in formulating policies relating to the development of institutional repositories in the effort to enhance the academic communications and scientific publications in Indonesian higher education sector. The participation from your institution's academic staff will ensure that this research will be able to present carefully targeted and high-impact recommendations for the improvement of the Indonesian higher education.

Thanking you for your time and kind attention.

Perth, 15 May 2015

Toong Tjiek Liauw
Researcher

A/Prof. Paul Genoni
Supervisor

Yth. Rektor/Ketua/Pimpinan Perguruan Tinggi,

School of Media, Culture
and Creative Arts

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7211
Facsimile +61 8 9266 3152
Web curtin.edu.au

CRICOS Provider Code 00301J

Melalui surat ini perkenalkan kami memohon kesediaan Universitas Andalas untuk berpartisipasi dalam **survey daring (online)** tentang **Repositori Institusi Perguruan Tinggi di Indonesia**. Survey ini merupakan bagian dari penelitian Doktorat dengan judul “Repositori Institusi dan Akses Terbuka di Sektor Pendidikan Tinggi Indonesia: Studi Kasus 3 Universitas di Indonesia” di Departemen Studi Informasi di Fakultas Humaniora, Universitas Curtin, Australia. Halaman Informasi terkait penelitian ini terlampir bersama surat ini.

Partisipasi yang kami harapkan dari institusi yang Bapak/Ibu pimpin adalah:

1. **Mengirimkan email balasan ke peneliti** (t.liauw@postgrad.curtin.edu.au) sebagai bentuk persetujuan resmi dari institusi yang Bapak/Ibu pimpin; dan
2. **Meneruskan bagian terakhir dari email** (yang menyertai surat ini) ke seluruh dosen atau staf akademik di institusi yang Bapak/Ibu pimpin serta menghimbau para dosen atau staf akademik untuk bersedia berpartisipasi di survey daring di alamat **https://curtin.asia.qualtrics.com/SE/?SID=SV_3eXUedatDBh81IF** (18 Mei – 30 Juni 2015)

Hasil penelitian yang dipublikasikan tidak akan mengandung informasi terkait institusi maupun individu, dan akan memberikan manfaat bagi perguruan tinggi di Indonesia dalam hal pengelolaan repositori institusi. Hasil penelitian juga akan menjadi masukan yang berharga bagi DIKTI untuk memformulasikan kebijakan terkait pengembangan repositori institusi dalam upaya peningkatan kualitas komunikasi akademik dan publikasi ilmiah di sektor pendidikan tinggi di Indonesia. Partisipasi para dosen di institusi yang Bapak/Ibu pimpin akan memberikan sumbangsih yang sangat berharga dalam upaya menyajikan hasil penelitian yang mampu memberikan dampak positif bagi pendidikan tinggi di Indonesia.

Terima kasih untuk perhatian Bapak/Ibu.

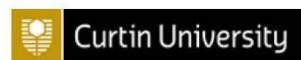
Perth, 15 Mei 2015

Toong Tijek Liauw
Peneliti

A/Prof. Paul Genoni
Supervisor

2. Information sheet

Faculty of Humanities



School of Media, Culture
and Creative Arts

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7211
Facsimile +61 8 9266 3152
Web curtin.edu.au

CRICOS Provider Code 00301J

INFORMATION SHEET

Research Title:

Institutional Repositories and Open Access in Indonesian Higher Education Sector: Case Studies of Three Indonesian Universities

Dear participant,

Thank you for your participation in this online survey, which is being conducted as part of a Ph.D. Research at the Department of Information Studies, School of Media, Culture and Creative Arts, Faculty of Humanities, Curtin University, Perth, Western Australia. The research aims to investigate the current state and future prospects for institutional repositories in supporting open access for the benefit of Indonesian higher education teaching and research.

Your participation in this online survey will involve responding to questions relating to demographic information about yourself, your employment history and/or title, and your personal and/or professional views/opinions regarding the institutional repository in your institution. As a participant you have the right to withdraw your participation in this research at any time without any consequences. The online survey will take approximately **10 to 15 minutes** to complete and will be accessible on **18 May – 30 June 2015**.

Information obtained from this survey will be used as part of this research project and results may be published in journals and/or conference presentations, as well as the associated Ph.D. Thesis; containing no institutionally- or personally-identifiable information. Please be assured that all responses will remain confidential. All participants will be anonymous (no personally-identifiable information will be recorded without your consent). Data relating to this research will be kept securely and access is limited to the principal investigator and the Supervisors.

Your participation in this research is invaluable and greatly appreciated.

Sincerely,

Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au)

Ph.D. Student – Curtin University

Student ID#: 16763823

You may address any questions or concerns about this research, including the results obtained, to the researcher: Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au) at Curtin University. If you have any questions about your rights as a study participant, or are dissatisfied at any time with any aspect of this research, you may contact — anonymously, if you wish — Associate Prof. Paul Genoni, Department of Information Studies, School of Media, Culture and Creative Arts, Faculty of Humanities, Curtin University by phone at +61 (8) 9266-7256 or e-mail at P.Genoni@curtin.edu.au.

This research has been approved by the Curtin University Human Research Ethics Committee (Approval Number RDHU-08-15). The Committee is comprised of members of the public, academics, lawyers, doctors, and pastoral carers. Its main role is to protect research participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845 or by calling +61 (8) 9266-2784 or by emailing hrec@curtin.edu.au.

HALAMAN INFORMASI

Judul Penelitian:

Repositori Institusi dan Akses Terbuka di Sektor Pendidikan Tinggi Indonesia: Studi Kasus 3 Universitas di Indonesia

Bapak/Ibu/Saudara responden,

Terima kasih untuk kesediaan berpartisipasi di survey daring (*online*), yang merupakan bagian dari penelitian Doktoral di Departemen Studi Informasi, Fakultas Humaniora, Universitas Curtin, Perth, Australia. Penelitian ini bertujuan untuk menyelidiki kondisi saat ini dan prospek di masa depan terkait repositori institusi serta perannya dalam menunjang akses terbuka bagi kemajuan penelitian dan pendidikan tinggi di Indonesia.

Partisipasi Bapak/Ibu/Saudara dalam survey ini adalah menjawab sejumlah pertanyaan terkait data demografi, riwayat pekerjaan dan/atau jabatan, dan pendapat pribadi dan/atau profesi dari Bapak/Ibu/Saudara terkait repositori institusi di lembaga tempat Bapak/Ibu/Saudara bekerja dan mengabdikan saat ini. Sebagai responden, Bapak/Ibu/Saudara berhak untuk menarik partisipasi setiap saat tanpa ada konsekuensi apa pun. Survey daring ini secara keseluruhan hanya akan membutuhkan waktu **10 hingga 15 menit** dan dapat diakses antara **18 Mei – 30 Juni 2015**.

Informasi yang diperoleh dari survey ini akan digunakan dalam penelitian secara keseluruhan dan hasil-hasilnya kemungkinan akan dipublikasikan di jurnal dan/atau konferensi, termasuk menjadi bagian dari Tesis Doktoral; tanpa mengandung informasi terkait institusi maupun pribadi. Bapak/Ibu/Saudara dapat merasa yakin bahwa semua respon yang diberikan di survey ini akan bersifat rahasia. Semua responden akan bersifat *anonymous* (tidak akan ada informasi terkait data pribadi yang akan ditanyakan atau direkam tanpa persetujuan Bapak/Ibu/saudara). Data terkait penelitian ini akan disimpan secara aman dan akses akan dibatasi hanya untuk peneliti dan Supervisor.

Partisipasi Bapak/Ibu/Saudara sangat berharga dan sangat kami hargai.

Salam hormat,

Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au)

Ph.D. Student – Curtin University (Student ID#: 16763823)

Pertanyaan terkait penelitian ini, termasuk hasil penelitian, dapat ditunjukkan ke peneliti: Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au) di Universitas Curtin. Pertanyaan terkait hak sebagai responden atau pernyataan ketidakpuasan terhadap aspek mana pun dari penelitian ini dapat ditunjukkan – secara *anonymous* bila dibutuhkan – ke – Associate Prof. Paul Genoni, Departemen Studi Informasi, Fakultas Humaniora, Universitas Curtin melalui telepon di +61 (8) 9266-7256 atau e-mail di P.Genoni@curtin.edu.au.

Penelitian ini telah mendapatkan persetujuan dari Komite Etik Penelitian (No. RDHU-08-15). Komite ini terdiri dari anggota masyarakat, akademisi, ahli hukum, dokter, dan *pastoral carers*. Peran utama dari komite ini adalah untuk melindungi responden. Bila dibutuhkan, verifikasi terhadap persetujuan untuk penelitian ini dapat diperoleh secara tertulis ke Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845 atau melalui telepon di +61 (8) 9266-2784 atau melalui email di hrec@curtin.edu.au.

Appendix C Factor Analysis and Reliability Analysis for “Reasons to Contribute to IR” variables

The documents listed in this appendix are the tables and figure related to the Factor Analysis and Reliability Analysis for the “**Reasons to Contribute to IR**” variables. The SPSS syntax used to generate the tables and figure in this appendix can be found at the end of each section. Some tables are too large and have necessitated the use of small size fonts to accommodate them.

This appendix consists of 16 pages (including this page).

1. Tables and figure related to Factor Analysis for “Reasons to Contribute to IR” variables

Factor Analysis for “Reasons to Contribute to IR” Variables (17 Variables)

Table FA.1 Descriptive Statistics

	Mean	Std. Deviation	Analysis N
1. To boost my scholarly prestige	4.20	.901	234
2. To boost INSTITUTION's prestige	4.32	.862	234
3. To contribute to the reform of scholarly communication	4.32	.793	234
4. To reduce the time between discovery and dissemination	4.15	.877	234
5. To increase citation to my scholarly works	4.22	.859	234
6. To increase citation to INSTITUTION's intellectual output	4.29	.855	234
7. To encourage other scholars to provide OA to their works	4.13	.841	234
8. To expose my works to IND researchers	4.28	.837	234
9. To expose my works to INTL researchers	4.24	.856	234
10. To expose INSTITUTION's intellectual output to IND researchers	4.32	.820	234
11. To shift the burden of preservation of my works to the IR	3.79	.920	234
12. To expose INSTITUTION's intellectual output to INTL researchers	4.31	.818	234
13. To comply with the DIKTI's requirement for academic tenure	4.03	.841	234
14. To increase the accessibility to knowledge assets	4.20	.843	234
15. To solve the problem of preserving INSTITUTION's intellectual output	4.00	.810	234
16. To increase the library's role as a partner in the research area	4.26	.807	234
17. To reduce user dependence on library's print collection	4.05	.934	234

NOTE:

- Due to space limitation, the numbering in the Descriptive Statistics from the table above (1-17) will be used in some of the tables produced in Factor Analysis and Reliability Analysis; replacing the individual statement for the “Reasons to Contribute” variables.
- Tables that do not adhere to this numbering order will not be provided with any numbering for the variables, and will provide relevant note(s) as to how the variables are sorted in the table(s).

Table FA.2 Correlation Matrix^a

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
Correlation	1	1.000	.741	.664	.556	.705	.650	.572	.660	.668	.677	.419	.652	.491	.496	.511	.602	.432
	2	.741	1.000	.721	.562	.599	.704	.532	.615	.563	.661	.423	.630	.566	.559	.520	.598	.427
	3	.664	.721	1.000	.643	.623	.636	.644	.602	.596	.664	.428	.617	.462	.579	.565	.633	.534
	4	.556	.562	.643	1.000	.596	.585	.544	.529	.531	.545	.384	.524	.396	.576	.543	.625	.494
	5	.705	.599	.623	.596	1.000	.837	.619	.648	.670	.718	.358	.674	.490	.579	.510	.616	.473
	6	.650	.704	.636	.585	.837	1.000	.603	.623	.609	.750	.379	.713	.597	.627	.581	.622	.497
	7	.572	.532	.644	.544	.619	.603	1.000	.733	.713	.717	.447	.677	.510	.592	.528	.619	.505
	8	.660	.615	.602	.529	.648	.623	.733	1.000	.840	.826	.429	.763	.555	.540	.504	.601	.470
	9	.668	.563	.596	.531	.670	.609	.713	.840	1.000	.785	.425	.827	.503	.552	.500	.579	.457
	10	.677	.661	.664	.545	.718	.750	.717	.826	.785	1.000	.437	.878	.615	.597	.605	.645	.511
	11	.419	.423	.428	.384	.358	.379	.447	.429	.425	.437	1.000	.430	.591	.437	.646	.476	.427
	12	.652	.630	.617	.524	.674	.713	.677	.763	.827	.878	.430	1.000	.573	.557	.581	.598	.434
	13	.491	.566	.462	.396	.490	.597	.510	.555	.503	.615	.591	.573	1.000	.446	.535	.463	.386
	14	.496	.559	.579	.576	.579	.627	.592	.540	.552	.597	.437	.557	.446	1.000	.571	.641	.597
	15	.511	.520	.565	.543	.510	.581	.528	.504	.500	.605	.646	.581	.535	.571	1.000	.589	.493
	16	.602	.598	.633	.625	.616	.622	.619	.601	.579	.645	.476	.598	.463	.641	.589	1.000	.569
	17	.432	.427	.534	.494	.473	.497	.505	.470	.457	.511	.427	.434	.386	.597	.493	.569	1.000
Sig. (1-tailed)	1		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	2	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	3	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	4	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	5	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	6	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	7	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000	.000
	8	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000	.000
	9	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000	.000
	10	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000	.000
	11	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000	.000
	12	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000	.000
	13	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000	.000
	14	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000	.000
	15	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000	.000
	16	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000		.000
	17	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	.000	

a. Determinant = 1.985E-7

Table FA.3 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.936
Bartlett's Test of Sphericity	Approx. Chi-Square	3495.431
	df	136
	Sig.	0.000

Table FA.4 Anti-image Matrices

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17		
Anti-image Covariance	1	.301	.120	.021	.005	.080	.028	.011	.008	.035	.003	.016	.002	.010	.043	.013	.025	.002	
	2	.120	.271	.105	.014	.056	.067	.040	.031	.024	.004	.008	.011	.051	.042	.024	.018	.039	.000
	3	.021	.105	.321	.080	.014	.012	.074	.022	.005	.020	.002	.005	.035	.007	.028	.013	.057	.000
	4	.005	.014	.080	.453	.035	.005	.007	.013	.010	.026	.018	.001	.011	.044	.058	.072	.027	.000
	5	.080	.056	.014	.035	.214	.122	.009	.000	.031	.012	.006	.018	.024	.005	.024	.016	.012	.000
	6	.028	.067	.012	.005	.122	.182	.003	.013	.026	.015	.047	.027	.061	.033	.033	.001	.021	.000
	7	.011	.040	.074	.007	.009	.003	.344	.056	.029	.012	.019	.003	.023	.046	.003	.035	.009	.000
	8	.008	.031	.022	.013	.000	.013	.056	.197	.088	.064	.004	.027	.019	.015	.016	.010	.004	.000
	9	.035	.024	.005	.010	.031	.026	.029	.088	.183	.017	.015	.082	.010	.025	.018	.011	.011	.000
	10	.003	.004	.020	.026	.012	.015	.012	.064	.017	.138	.030	.079	.032	.003	.026	.012	.025	.000
	11	.016	.008	.002	.018	.006	.047	.019	.004	.015	.030	.449	.002	.176	.013	.179	.036	.052	.000
	12	.002	.011	.005	.001	.018	.027	.003	.027	.082	.079	.002	.162	.002	.008	.022	.003	.037	.000
	13	.010	.051	.035	.011	.024	.061	.023	.019	.010	.032	.176	.002	.435	.019	.000	.025	.003	.000
	14	.043	.042	.007	.044	.005	.033	.046	.015	.025	.003	.013	.008	.019	.413	.044	.065	.118	.000
	15	.013	.024	.028	.058	.024	.033	.003	.016	.018	.026	.179	.022	.000	.044	.387	.030	.011	.000
	16	.025	.018	.013	.072	.016	.001	.035	.010	.011	.012	.036	.003	.025	.065	.030	.382	.064	.000
	17	.002	.039	.057	.027	.012	.021	.009	.004	.011	.025	.052	.037	.003	.118	.011	.064	.533	.000
Anti-image Correlation	1	.944 ^a	.419	.069	.015	.314	.119	.034	.033	.149	.017	.044	.009	.028	.121	.039	.074	.006	
	2	.419	.911 ^a	.356	.039	.234	.300	.132	.135	.107	.020	.023	.054	.150	.125	.075	.056	.102	.000
	3	.069	.356	.954 ^a	.209	.054	.049	.222	.087	.019	.095	.004	.020	.092	.020	.079	.037	.138	.000
	4	.015	.039	.209	.972 ^a	.113	.018	.017	.043	.035	.104	.040	.002	.024	.103	.138	.174	.055	.000
	5	.314	.234	.054	.113	.909 ^a	.619	.033	.001	.156	.072	.019	.095	.078	.018	.083	.055	.034	.000
	6	.119	.300	.049	.018	.619	.907 ^a	.011	.067	.143	.095	.165	.159	.217	.120	.126	.003	.066	.000
	7	.034	.132	.222	.017	.033	.011	.973 ^a	.216	.115	.053	.047	.011	.061	.122	.009	.096	.022	.000
	8	.033	.135	.087	.043	.001	.067	.216	.930 ^a	.465	.387	.013	.153	.064	.053	.059	.037	.012	.000
	9	.149	.107	.019	.035	.156	.143	.115	.465	.917 ^a	.109	.052	.474	.036	.092	.069	.043	.034	.000
	10	.017	.020	.095	.104	.072	.095	.053	.387	.109	.932 ^a	.118	.528	.129	.013	.111	.052	.091	.000
	11	.044	.023	.004	.040	.019	.165	.047	.013	.052	.118	.888 ^a	.007	.397	.029	.430	.087	.107	.000
	12	.009	.054	.020	.002	.095	.159	.011	.153	.474	.528	.007	.918 ^a	.009	.030	.086	.011	.125	.000
	13	.028	.150	.092	.024	.078	.217	.061	.064	.036	.129	.397	.009	.939 ^a	.045	.001	.061	.006	.000
	14	.121	.125	.020	.103	.018	.120	.122	.053	.092	.013	.029	.030	.045	.964 ^a	.109	.164	.251	.000
	15	.039	.075	.079	.138	.083	.126	.009	.059	.069	.111	.430	.086	.001	.109	.944 ^a	.079	.025	.000
	16	.074	.056	.037	.174	.055	.003	.098	.037	.043	.052	.087	.011	.061	.164	.079	.979 ^a	.143	.000
	17	.006	.102	.138	.055	.034	.066	.022	.012	.034	.091	.107	.125	.006	.251	.025	.143	.959 ^a	.000

a. Measures of Sampling Adequacy(MSA)

Table FA.5 Communalities

	Initial	Extraction
1. To boost my scholarly prestige	1.000	.669
2. To boost INSTITUTION's prestige	1.000	.629
3. To contribute to the reform of scholarly communication	1.000	.649
4. To reduce the time between discovery and dissemination	1.000	.545
5. To increase citation to my scholarly works	1.000	.711
6. To increase citation to INSTITUTION's intellectual output	1.000	.715
7. To encourage other scholars to provide OA to their works	1.000	.651
8. To expose my works to IND researchers	1.000	.772
9. To expose my works to INTL researchers	1.000	.774
10. To expose INSTITUTION's intellectual output to IND researchers	1.000	.838
11. To shift the burden of preservation of my works to the IR	1.000	.672
12. To expose INSTITUTION's intellectual output to INTL researchers	1.000	.793
13. To comply with the DIKTI's requirement for academic tenure	1.000	.504
14. To increase the accessibility to knowledge assets	1.000	.611
15. To solve the problem of preserving INSTITUTION's intellectual output	1.000	.703
16. To increase the library's role as a partner in the research area	1.000	.653
17. To reduce user dependence on library's print collection	1.000	.542

Extraction Method: Principal Component Analysis.

Table FA.6 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.330	60.766	60.766	10.330	60.766	60.766	6.948	40.870	40.870
2	1.099	6.465	67.231	1.099	6.465	67.231	4.481	26.362	67.231
3	.921	5.415	72.647						
4	.741	4.359	77.006						
5	.562	3.308	80.314						
6	.488	2.873	83.187						
7	.412	2.424	85.611						
8	.398	2.341	87.952						
9	.371	2.181	90.133						
10	.347	2.039	92.172						
11	.335	1.969	94.141						
12	.250	1.471	95.612						
13	.210	1.232	96.844						
14	.196	1.150	97.995						
15	.159	.933	98.927						
16	.104	.613	99.541						
17	.078	.459	100.000						

Extraction Method: Principal Component Analysis.

Figure FA.1 Scree Plot

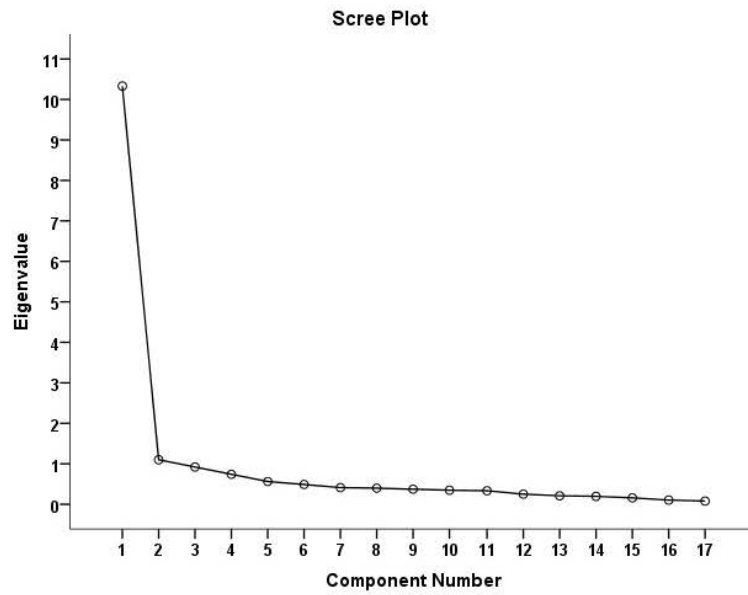


Table FA.7 Component Matrix^a

	Component	
	1	2
To expose INSTITUTION's intellectual output to IND researchers	.889	
To expose INSTITUTION's intellectual output to INTL researchers	.851	
To increase citation to INSTITUTION's intellectual output	.839	
To expose my works to IND researchers	.835	
To expose my works to INTL researchers	.827	
To increase citation to my scholarly works	.818	
To contribute to the reform of scholarly communication	.805	
To encourage other scholars to provide OA to their works	.802	
To boost my scholarly prestige	.799	
To increase the library's role as a partner in the research area	.792	
To boost INSTITUTION's prestige	.792	
To increase the accessibility to knowledge assets	.749	
To solve the problem of preserving INSTITUTION's intellectual output	.732	.408
To reduce the time between discovery and dissemination	.727	
To comply with the DIKTI's requirement for academic tenure	.688	
To reduce user dependence on library's print collection	.649	
To shift the burden of preservation of my works to the IR	.599	.560

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

NOTE for Table FA.7:

The variables (individual specific reasons) are no longer numbered since they are sorted based on each variable's loading to component (factor) 1 and 2.

Table FA.8 Rotated Component Matrix^a

	Component	
	1	2
To expose INSTITUTION's intellectual output to IND researchers	.840	
To expose my works to INTL researchers	.840	
To expose INSTITUTION's intellectual output to INTL researchers	.836	
To expose my works to IND researchers	.830	
To increase citation to my scholarly works	.774	
To boost my scholarly prestige	.741	
To increase citation to INSTITUTION's intellectual output	.731	.425
To encourage other scholars to provide OA to their works	.692	.416
To boost INSTITUTION's prestige	.659	.441
To contribute to the reform of scholarly communication	.622	.511
To shift the burden of preservation of my works to the IR		.808
To solve the problem of preserving INSTITUTION's intellectual output		.768
To reduce user dependence on library's print collection		.670
To increase the accessibility to knowledge assets	.462	.631
To increase the library's role as a partner in the research area	.532	.608
To comply with the DIKT's requirement for academic tenure	.442	.555
To reduce the time between discovery and dissemination	.499	.544

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

NOTE for Table FA.8:

- Variable 1-10 (Component/Factor 1) will be named "Scholarly Communication" based on the common theme in all of the variables involved.
- Component 11-17 (Component/Factor 2) will be named "Corporate Information Management" based on the common theme in all of the variables involved.
- The variables (individual specific reasons) are no longer numbered since they are sorted based on each variable's loading to component (factor) 1 and 2. The order is also different than Table FA.7.

Table FA.9 Component Transformation Matrix

Component	1	2
1	.796	.605
2	-.605	.796

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

SPSS Syntax for Generating the Figure and Tables Above

```
FACTOR
/VARIABLES IRcontrib_PrestigePerson IRcontrib_PrestigeInst IRcontrib_Reform
IRcontrib_TimeReduc
IRcontrib_CitePersonal IRcontrib_CiteInst IRcontrib_OA IRcontrib_PromoPerson_Indo
IRcontrib_PromoPerson_Intl
IRcontrib_PromoInst_Indo IRcontrib_PreservPerson IRcontrib_PromoInst_Intl
IRcontrib_DIKTI
IRcontrib_Dataset IRcontrib_PreservInst IRcontrib_LibRole IRcontrib_PrintColl
/MISSING LISTWISE
/ANALYSIS IRcontrib_PrestigePerson IRcontrib_PrestigeInst IRcontrib_Reform
IRcontrib_TimeReduc
IRcontrib_CitePersonal IRcontrib_CiteInst IRcontrib_OA IRcontrib_PromoPerson_Indo
IRcontrib_PromoPerson_Intl
IRcontrib_PromoInst_Indo IRcontrib_PreservPerson IRcontrib_PromoInst_Intl
IRcontrib_DIKTI IRcontrib_Dataset
IRcontrib_PreservInst IRcontrib_LibRole IRcontrib_PrintColl
/PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO AIC EXTRACTION ROTATION
/FORMAT SORT BLANK(.4)
/PLOT EIGEN
/CRITERIA MINEIGEN(1) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.
```

2. Tables related to Reliability Analysis for Factor 1 (Scholarly Communication)

Reliability Analysis for Component/Factor 1: Scholarly Communication (Default – EXCLUDE)

“To reduce the time between discovery and dissemination” is **EXCLUDED** from the “Scholarly Communication” Factor

Table FA1.1a Case Processing Summary

		N	%
Cases	Valid	234	53.4
	Excluded ^a	204	46.6
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FA1.2a Reliability Statistics

Cronbach's Alpha	N of Items
.955	10

Table FA1.3a Item Statistics

	Mean	Std. Dev.	N
1. To expose INSTITUTION's intellectual output to IND researchers	4.32	.820	234
2. To expose my works to INTL researchers	4.24	.856	234
3. To expose INSTITUTION's intellectual output to INTL researchers	4.31	.818	234
4. To expose my works to IND researchers	4.28	.837	234
5. To increase citation to my scholarly works	4.22	.859	234
6. To boost my scholarly prestige	4.20	.901	234
7. To increase citation to INSTITUTION's intellectual output	4.29	.855	234
8. To encourage other scholars to provide OA to their works	4.13	.841	234
9. To boost INSTITUTION's prestige	4.32	.862	234
10. To contribute to the reform of scholarly communication	4.32	.793	234

Table FA1.4a Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. To expose INSTITUTION's intellectual output to IND researchers	38.31	40.806	.884	.947
2. To expose my works to INTL researchers	38.38	40.976	.825	.949
3. To expose INSTITUTION's intellectual output to INTL researchers	38.32	41.170	.848	.948
4. To expose my works to IND researchers	38.34	41.119	.831	.949
5. To increase citation to my scholarly works	38.41	41.178	.801	.950
6. To boost my scholarly prestige	38.43	40.890	.785	.951
7. To increase citation to INSTITUTION's intellectual output	38.33	41.185	.805	.950
8. To encourage other scholars to provide OA to their works	38.49	41.796	.757	.952
9. To boost INSTITUTION's prestige	38.30	41.618	.753	.952
10. To contribute to the reform of scholarly communication	38.31	42.334	.754	.952

Table FA1.5a Scale Statistics

Mean	Variance	Std. Deviation	N of Items
42.62	50.742	7.123	10

SPSS Syntax for Generating the Tables Above

```
RELIABILITY
/VARIABLES=IRcontrib_PromoInst_Indo IRcontrib_PromoPerson_Intl
IRcontrib_PromoInst_Intl
IRcontrib_PromoPerson_Indo IRcontrib_CitePersonal IRcontrib_PrestigePerson
IRcontrib_CiteInst
IRcontrib_OA IRcontrib_PrestigeInst IRcontrib_Reform
/SCALE('Scholarly Communication EXCLUDE') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL.
```

3. Tables related to Reliability Analysis for Factor 1 (Scholarly Communication) with the INCLUSION of another variable

Reliability Analysis for Component/Factor 1: Scholarly Communication (INCLUDE)

“To reduce the time between discovery and dissemination” is **INCLUDED** in the “Scholarly Communication” Factor

Table FA1.1b Case Processing Summary

		N	%
Cases	Valid	234	53.4
	Excluded ^a	204	46.6
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FA1.2b Reliability Statistics

Cronbach's Alpha	N of Items
.955	11

Table FA1.3b Item Statistics

	Mean	Std. Dev.	N
1. To boost my scholarly prestige	4.20	.901	234
2. To boost INSTITUTION's prestige	4.32	.862	234
3. To contribute to the reform of scholarly communication	4.32	.793	234
4. To increase citation to my scholarly works	4.22	.859	234
5. To increase citation to INSTITUTION's intellectual output	4.29	.855	234
6. To encourage other scholars to provide OA to their works	4.13	.841	234
7. To expose my works to IND researchers	4.28	.837	234
8. To expose my works to INTL researchers	4.24	.856	234
9. To expose INSTITUTION's intellectual output to IND researchers	4.32	.820	234
10. To expose INSTITUTION's intellectual output to INTL researchers	4.31	.818	234
11. To reduce the time between discovery and dissemination	4.15	.877	234

Table FA1.4b Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. To boost my scholarly prestige	42.57	49.087	.786	.951
2. To boost INSTITUTION's prestige	42.44	49.845	.758	.952
3. To contribute to the reform of scholarly communication	42.45	50.515	.769	.951
4. To increase citation to my scholarly works	42.55	49.356	.806	.950
5. To increase citation to INSTITUTION's intellectual output	42.48	49.384	.808	.950
6. To encourage other scholars to provide OA to their works	42.64	50.069	.759	.951
7. To expose my works to IND researchers	42.49	49.418	.824	.949
8. To expose my works to INTL researchers	42.53	49.254	.819	.949
9. To expose INSTITUTION's intellectual output to IND researchers	42.45	49.099	.874	.947
10. To expose INSTITUTION's intellectual output to INTL researchers	42.46	49.494	.839	.949
11. To reduce the time between discovery and dissemination	42.62	50.742	.665	.955

Table FA 1.5b Scale Statistics

Mean	Variance	Std. Deviation	N of Items
42.62	50.742	7.123	10

SPSS Syntax for Generating the Tables Above

```
RELIABILITY
/VARIABLES=IRcontrib_PrestigePerson IRcontrib_PrestigeInst IRcontrib_Reform
  IRcontrib_CitePersonal IRcontrib_CiteInst IRcontrib_OA IRcontrib_PromoPerson_Indo
  IRcontrib_PromoPerson_Intl IRcontrib_PromoInst_Indo IRcontrib_PromoInst_Intl
  IRcontrib_TimeReduc
/SCALE('Scholarly Communication INCLUDE') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL.
```


4. Tables related to Reliability Analysis for Factor 2 (Corporate Information Management)

Reliability Analysis for Component/Factor 2: Corporate Information Management (Default – INCLUDE)

“To reduce the time between discovery and dissemination” is **INCLUDED** in the “Corporate Information Management” Factor

Table FA2.1a Case Processing Summary

		N	%
Cases	Valid	234	53.4
	Excluded ^a	204	46.6
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FA2.2a Reliability Statistics

Cronbach's Alpha	N of Items
.881	7

Table FA2.3a Item Statistics

	Mean	Std. Dev.	N
1. To reduce the time between discovery and dissemination	4.15	.877	234
2. To shift the burden of preservation of my works to the IR	3.79	.920	234
3. To solve the problem of preserving INSTITUTION's intellectual output	4.00	.810	234
4. To reduce user dependence on library's print collection	4.05	.934	234
5. To increase the accessibility to knowledge assets	4.20	.843	234
6. To increase the library's role as a partner in the research area	4.26	.807	234
7. To comply with the DIKTI's requirement for academic tenure	4.03	.841	234

Table FA2.4a Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. To reduce the time between discovery and dissemination	24.34	16.001	.644	.867
2. To shift the burden of preservation of my works to the IR	24.70	15.826	.631	.869
3. To solve the problem of preserving INSTITUTION's intellectual output	24.48	15.873	.737	.856
4. To reduce user dependence on library's print collection	24.43	15.723	.633	.869
5. To increase the accessibility to knowledge assets	24.28	15.826	.709	.859
6. To increase the library's role as a partner in the research area	24.22	15.922	.733	.856
7. To comply with the DIKTI's requirement for academic tenure	24.45	16.489	.599	.872

Table FA2.5a Scale Statistics

Mean	Variance	Std. Deviation	N of Items
28.48	21.289	4.614	7

SPSS Syntax for Generating the Tables Above

```
RELIABILITY
/VARIABLES=IRcontrib_TimeReduc IRcontrib_PreservPerson IRcontrib_PreservInst
IRcontrib_PrintColl
IRcontrib_Dataset IRcontrib_LibRole IRcontrib_DIKTI
/SCALE('Corporate Information Management INCLUDE') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL.
```

5. Tables related to Reliability Analysis for Factor 2 (Corporate Information Management) with the EXCLUSION of one variable

Reliability Analysis for Component/Factor 2: Corporate Information Management (EXCLUDE)

“To reduce the time between discovery and dissemination” is **EXCLUDED** from the “Corporate Information Management” Factor

Table FA2.1b Case Processing Summary

		N	%
Cases	Valid	234	53.4
	Excluded ^a	204	46.6
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FA2.2b Reliability Statistics

Cronbach's Alpha	N of Items
.867	6

Table FA2.3b Item Statistics

	Mean	Std. Dev.	N
1. To shift the burden of preservation of my works to the IR	3.79	.920	234
2. To solve the problem of preserving INSTITUTION's intellectual output	4.00	.810	234
3. To reduce user dependence on library's print collection	4.05	.934	234
4. To increase the accessibility to knowledge assets	4.20	.843	234
5. To increase the library's role as a partner in the research area	4.26	.807	234
6. To comply with the DIKTI's requirement for academic tenure	4.03	.841	234

Table FA2.4b Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. To shift the burden of preservation of my works to the IR	20.55	11.158	.650	.847
2. To solve the problem of preserving INSTITUTION's intellectual output	20.33	11.356	.730	.833
3. To reduce user dependence on library's print collection	20.29	11.244	.620	.853
4. To increase the accessibility to knowledge assets	20.14	11.389	.686	.840
5. To increase the library's role as a partner in the research area	20.07	11.518	.700	.838
6. To comply with the DIKTI's requirement for academic tenure	20.31	11.785	.608	.854

Table FA2.5b Scale Statistics

Mean	Variance	Std. Deviation	N of Items
24.34	16.001	4.000	6

SPSS Syntax for Generating the Tables Above

```
RELIABILITY  
  /VARIABLES=IRnocontrib_Confidential IRnocontrib_Security IRnocontrib_Patent  
IRnocontrib_Plagiar  
  /SCALE('External Aspects EXCLUDE Topic Sensitive') ALL  
  /MODEL=ALPHA  
  /STATISTICS=DESCRIPTIVE SCALE  
  /SUMMARY=TOTAL.
```

Appendix D Factor Analysis and Reliability Analysis for “Reasons NOT to Contribute to IR” variables

The documents listed in this appendix are the tables and figure related to the Factor Analysis and Reliability Analysis for the “**Reasons NOT to Contribute to IR**” variables. The SPSS syntax used to generate the tables and figure in this appendix can be found at the end of each section. Some tables are too large and have necessitated the use of small size fonts to accommodate them.

This appendix consists of 14 pages (including this page).

1. Tables and figure related to Factor Analysis for “Reasons NOT to Contribute to IR” variables

Factor Analysis for “Reasons NOT to Contribute to IR” Variables (12 Variables)

Table FB1. Descriptive Statistics

	Mean	Std. Dev.	Analysis N
1. Concerns my works will be plagiarized	2.91	1.269	90
2. Concerns in quality of my works	2.23	.972	90
3. No time/Administrative burden	3.22	1.149	90
4. IR user interface is not user-friendly	2.99	1.044	90
5. IR gives no feedback to me as an author	2.88	.958	90
6. Concerns of copyright issues in my works	2.50	1.008	90
7. Other	3.30	.893	90
8. Topic is not interesting	2.06	.709	90
9. Topic is sensitive/controversial	2.19	.847	90
10. Concerns of confidentiality/privacy issues in my works	2.69	1.013	90
11. Concerns of security issues in my works	2.50	.951	90
12. Plan to patent my works	2.98	.994	90

NOTE:

- Due to space limitation, the numbering in the Descriptive Statistics from the table above (1-12) will be used in some of the tables produced in Factor Analysis and Reliability Analysis; replacing the individual statement for the “Reasons NOT to Contribute” variables.
- Tables that do not adhere to this numbering order will not be provided with any numbering for the variables, and will provide relevant note(s) as to how the variables are sorted in the table(s).

Table FB.2 Correlation Matrix^a

	1	2	3	4	5	6	7	8	9	10	11	12	
Correlation	1	1.000	.099	-.148	-.035	.065	.299	-.046	.180	.173	.520	.391	.542
	2	.099	1.000	.044	.135	.079	.441	-.082	.389	.246	.097	.115	-.041
	3	-.148	.044	1.000	.433	.352	.233	.219	.109	-.136	-.133	-.082	-.084
	4	-.035	.135	.433	1.000	.718	.358	.112	.305	.053	-.003	-.006	.086
	5	.065	.079	.352	.718	1.000	.366	.149	.176	.029	.146	.068	.115
	6	.299	.441	.233	.358	.366	1.000	.031	.448	.072	.231	.228	.045
	7	-.046	-.082	.219	.112	.149	.031	1.000	-.009	-.106	-.144	-.165	-.106
	8	.180	.389	.109	.305	.176	.448	-.009	1.000	.263	.165	.158	.145
	9	.173	.246	-.136	.053	.029	.072	-.106	.263	1.000	.345	.412	.312
	10	.520	.097	-.133	-.003	.146	.231	-.144	.165	.345	1.000	.828	.573
	11	.391	.115	-.082	-.006	.068	.228	-.165	.158	.412	.828	1.000	.559
	12	.542	-.041	-.084	.086	.115	.045	-.106	.145	.312	.573	.559	1.000
Sig. (1-tailed)	1		.177	.082	.373	.272	.002	.335	.044	.052	.000	.000	.000
	2	.177		.342	.102	.229	.000	.222	.000	.010	.181	.139	.350
	3	.082	.342		.000	.000	.014	.019	.154	.101	.106	.220	.215
	4	.373	.102	.000		.000	.000	.146	.002	.309	.488	.479	.209
	5	.272	.229	.000	.000		.000	.081	.049	.394	.085	.263	.140
	6	.002	.000	.014	.000	.000		.385	.000	.249	.014	.015	.337
	7	.335	.222	.019	.146	.081	.385		.467	.161	.088	.060	.159
	8	.044	.000	.154	.002	.049	.000	.467		.006	.060	.068	.086
	9	.052	.010	.101	.309	.394	.249	.161	.006		.000	.000	.001
	10	.000	.181	.106	.488	.085	.014	.088	.060	.000		.000	.000
	11	.000	.139	.220	.479	.263	.015	.060	.068	.000	.000		.000
	12	.000	.350	.215	.209	.140	.337	.159	.086	.001	.000	.000	

a. Determinant = .010

Table FB.3 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.687
Bartlett's Test of Sphericity	Approx. Chi-Square	383.569
	df	66
	Sig.	.000

Table FB.4 Anti-image Matrices

	1	2	3	4	5	6	7	8	9	10	11	12	
Anti-image Covariance	1	.534	.001	.072	.054	.009	-.166	-.041	-.006	.020	-.102	.071	-.223
	2	.001	.700	.009	-.002	.030	-.194	.068	-.135	-.152	.000	.004	.070
	3	.072	.009	.725	-.121	-.034	-.077	-.135	-.001	.094	.042	-.037	-.010
	4	.054	-.002	-.121	.393	-.263	-.041	.024	-.105	-.028	.038	.002	-.065
	5	.009	.030	-.034	-.263	.426	-.080	-.062	.072	-.002	-.073	.045	-.005
	6	-.166	-.194	-.077	-.041	-.080	.515	-.004	-.163	.089	.008	-.067	.122
	7	-.041	.068	-.135	.024	-.062	-.004	.909	-.012	-.004	.014	.028	.030
	8	-.006	-.135	-.001	-.105	.072	-.163	-.012	.675	-.125	-.017	.029	-.047
	9	.020	-.152	.094	-.028	-.002	.089	-.004	-.125	.721	.009	-.096	-.059
	10	-.102	.000	.042	.038	-.073	.008	.014	-.017	.009	.251	-.187	-.028
	11	.071	.004	-.037	.002	.045	-.067	.028	.029	-.096	-.187	.265	-.084
	12	-.223	.070	-.010	-.065	-.005	.122	.030	-.047	-.059	-.028	-.084	.484
Anti-image Correlation	1	.674 ^a	.002	.116	.119	.018	-.317	-.059	-.010	.032	-.278	.188	-.439
	2	.002	.690 ^a	.012	-.004	.055	-.323	.085	-.196	-.214	.001	.010	.120
	3	.116	.012	.774 ^a	-.226	-.062	-.126	-.166	-.002	.130	.099	-.085	-.017
	4	.119	-.004	-.226	.628 ^a	-.644	-.092	.040	-.204	-.053	.120	.007	-.149
	5	.018	.055	-.062	-.644	.616 ^a	-.171	-.100	.135	-.004	-.223	.133	-.011
	6	-.317	-.323	-.126	-.092	-.171	.671 ^a	-.006	-.277	.146	.021	-.180	.245
	7	-.059	.085	-.166	.040	-.100	-.006	.743 ^a	-.015	-.006	.029	.058	.045
	8	-.010	-.196	-.002	-.204	.135	-.277	-.015	.750 ^a	-.179	-.042	.068	-.083
	9	.032	-.214	.130	-.053	-.004	.146	-.006	-.179	.766 ^a	.021	-.220	-.101
	10	-.278	.001	.099	.120	-.223	.021	.029	-.042	.021	.693 ^a	-.726	-.081
	11	.188	.010	-.085	.007	.133	-.180	.058	.068	-.220	-.726	.665 ^a	-.236
	12	-.439	.120	-.017	-.149	-.011	.245	.045	-.083	-.101	-.081	-.236	.747 ^a

a. Measures of Sampling Adequacy(MSA)

Table FB.5 Communalities

	Initial	Extraction
1. Concerns my works will be plagiarized	1.000	.486
2. Concerns in quality of my works	1.000	.708
3. No time/Administrative burden	1.000	.509
4. IR user interface is not user-friendly	1.000	.734
5. IR gives no feedback to me as an author	1.000	.719
6. Concerns of copyright issues in my works	1.000	.616
7. Other	1.000	.225
8. Topic is not interesting	1.000	.569
9. Topic is sensitive/controversial	1.000	.365
10. Concerns of confidentiality/privacy issues in my works	1.000	.794
11. Concerns of security issues in my works	1.000	.734
12. Plan to patent my works	1.000	.690

Extraction Method: Principal Component Analysis.

Table FB.6 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.313	27.610	27.610	3.313	27.610	27.610	2.965	24.711	24.711
2	2.446	20.381	47.991	2.446	20.381	47.991	2.188	18.232	42.943
3	1.390	11.587	59.578	1.390	11.587	59.578	1.996	16.635	59.578
4	.953	7.939	67.517						
5	.873	7.278	74.796						
6	.724	6.031	80.827						
7	.638	5.313	86.140						
8	.538	4.483	90.623						
9	.437	3.644	94.268						
10	.309	2.579	96.847						
11	.239	1.993	98.839						
12	.139	1.161	100.000						

Extraction Method: Principal Component Analysis.

Figure FB.1 Scree Plot

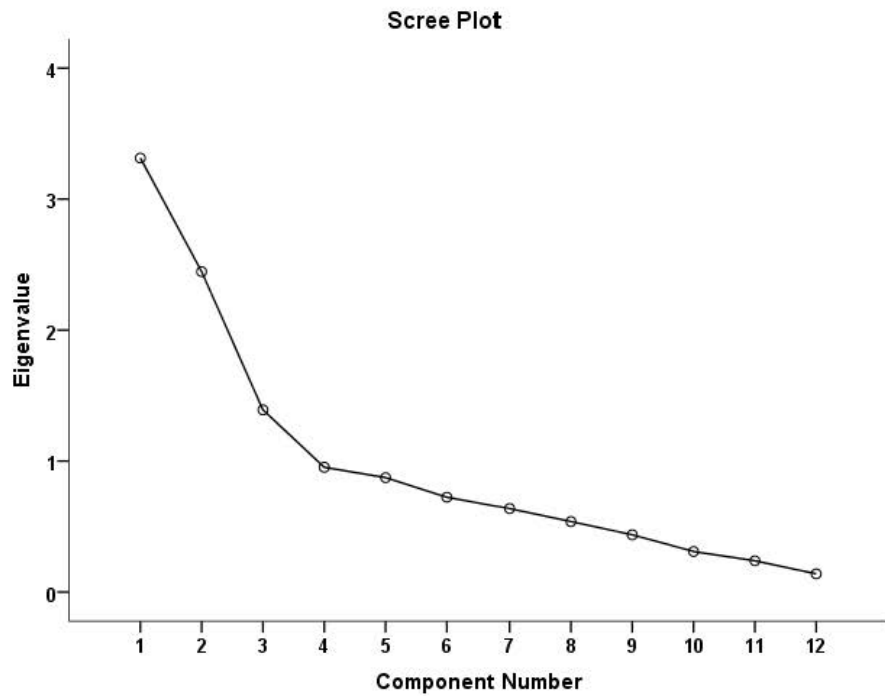


Table FB.7 Component Matrix^a

	Component		
	1	2	3
Concerns of confidentiality/privacy issues in my works	.806		
Concerns of security issues in my works	.780		
Plan to patent my works	.680		
Concerns my works will be plagiarized	.643		
Concerns of copyright issues in my works	.537	.498	
Topic is sensitive/controversial	.528		
Topic is not interesting	.496		-.444
IR user interface is not user-friendly		.768	
IR gives no feedback to me as an author		.676	
No time/Administrative burden		.668	
Other			
Concerns in quality of my works			-.708

Extraction Method: Principal Component Analysis.

a. 2 components extracted.

NOTE for Table FB.7:

The variables (individual specific reasons) are no longer numbered since they are sorted based on each variable's loading to component (factor) 1, 2, and 3.

Table FB.8 Rotated Component Matrix^a

	Component		
	1	2	3
Concerns of confidentiality/privacy issues in my works	.884		
Concerns of security issues in my works	.843		
Plan to patent my works	.825		
Concerns my works will be plagiarized	.685		
Topic is sensitive/controversial	.440		
IR gives no feedback to me as an author		.819	
IR user interface is not user-friendly		.816	
No time/Administrative burden		.692	
Other		.413	
Concerns in quality of my works			.837
Topic is not interesting			.725
Concerns of copyright issues in my works			.674

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

NOTE for Table FB.8:

- Variable 1-5 (Component/Factor 1) will be named “External Aspects” based on the common theme in all of the variables involved.
- Component 6-9 (Component/Factor 2) will be named “Administrative and Tool Aspects” based on the common theme in all of the variables involved.
- Component 10-12 (Component/Factor 2) will be named “Internal Aspects” based on the common theme in all of the variables involved.
- The variables (individual specific reasons) are no longer numbered since they are sorted based on each variable’s loading to component (factor) 1, 2, and 3. The order is also different than Table FB.7.

Table FB.9 Component Transformation Matrix

Component	1	2	3
1	.859	.171	.482
2	-.384	.838	.387
3	.338	.518	-.786

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

SPSS Syntax for Generating the Figure and Tables Above

```
FACTOR
/VARIABLES IRnocontrib_Plagiar IRnocontrib_Quality IRnocontrib_NoTime
IRnocontrib_UserInter
  IRnocontrib_NoReport IRnocontrib_Copyright IRnocontrib_Other IRnocontrib_NotInterest
  IRnocontrib_Sensitive IRnocontrib_Confidential IRnocontrib_Security IRnocontrib_Patent
/MISSING LISTWISE
/ANALYSIS IRnocontrib_Plagiar IRnocontrib_Quality IRnocontrib_NoTime
IRnocontrib_UserInter
  IRnocontrib_NoReport IRnocontrib_Copyright IRnocontrib_Other IRnocontrib_NotInterest
  IRnocontrib_Sensitive IRnocontrib_Confidential IRnocontrib_Security IRnocontrib_Patent
/PRINT UNIVARIATE INITIAL CORRELATION SIG DET KMO AIC EXTRACTION
ROTATION
/FORMAT SORT BLANK(.4)
/PLOT EIGEN
/CRITERIA MINEIGEN(1) ITERATE(25)
/EXTRACTION PC
/CRITERIA ITERATE(25)
/ROTATION VARIMAX
/METHOD=CORRELATION.
```

2. Tables related to Reliability Analysis for Factor 1 (External Aspects)

Reliability Analysis for Component/Factor 1: External Aspects (Default – INCLUDE)

“Topic is sensitive/controversial” is **INCLUDED** in the “External Aspects” Factor

Table FB1.1a Case Processing Summary

		N	%
Cases	Valid	90	20.5
	Excluded ^a	348	79.5
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FB1.2a Reliability Statistics

Cronbach's Alpha	N of Items
.808	5

Table FB1.3a Item Statistics

	Mean	Std. Deviation	N
1. Concerns of confidentiality/privacy issues in my works	2.69	1.013	90
2. Concerns of security issues in my works	2.50	.951	90
3. Plan to patent works	2.98	.994	90
4. Concerns my works will be plagiarized	2.91	1.269	90
5. Topic is sensitive/controversial	2.19	.847	90

Table FB1.4a Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. Concerns of confidentiality/privacy issues in my works	10.58	9.146	.764	.718
2. Concerns of security issues in my works	10.77	9.687	.719	.736
3. Plan to patent works	10.29	9.758	.661	.752
4. Concerns my works will be plagiarized	10.36	9.220	.522	.808
5. Topic is sensitive/controversial	11.08	11.983	.367	.829

Table FB1.5a Scale Statistics

Mean	Variance	Std. Deviation	N of Items
13.27	14.849	3.853	5

SPSS Syntax for Generating the Tables Above

```
RELIABILITY
/VARIABLES=IRnocontrib_Confidential IRnocontrib_Security IRnocontrib_Patent
IRnocontrib_Plagiar
IRnocontrib_Sensitive
/SCALE('External Aspects') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL.
```

3. Tables related to Reliability Analysis for Factor 1 (External Aspects) with the EXCLUSION of one variable

Reliability Analysis for Component/Factor 1: External Aspects (EXCLUDE)

"Topic is sensitive/controversial" is **EXCLUDED** from the "External Aspects" Factor

Table FB1.1b Case Processing Summary

		N	%
Cases	Valid	90	20.5
	Excluded ^a	348	79.5
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FB1.2b Reliability Statistics

Cronbach's Alpha	N of Items
.829	4

Table FB1.3b Item Statistics

	Mean	Std. Deviation	N
1. Concerns of confidentiality/privacy issues in my works	2.69	1.013	90
2. Concerns of security issues in my works	2.50	.951	90
3. Plan to patent my works	2.98	.994	90
4. Concerns my works will be plagiarized	2.91	1.269	90

Table FB1.4b Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. Concerns of confidentiality/privacy issues in my works	8.39	6.870	.770	.735
2. Concerns of security issues in my works	8.58	7.483	.691	.774
3. Plan to patent my works	8.10	7.417	.661	.784
4. Concerns my works will be plagiarized	8.17	6.725	.554	.849

Table FB1.5b Scale Statistics

Mean	Variance	Std. Deviation	N of Items
13.27	14.849	3.853	5

SPSS Syntax for Generating the Tables Above

```
RELIABILITY
/VARIABLES=IRnocontrib_Confidential IRnocontrib_Security IRnocontrib_Patent
IRnocontrib_Plagiar
/SCALE('External Aspects EXCLUDE Topic Sensitive') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL.
```

4. Tables related to Reliability Analysis for Factor 2 (Administrative and Tool Aspects)

Reliability Analysis for Component/Factor 2: Administrative and Tool Aspects (Default – INCLUDE)

“Other” is **INCLUDED** in the “Administrative and Tool Aspects” Factor

Table FB2.1a Case Processing Summary

		N	%
Cases	Valid	90	20.5
	Excluded ^a	348	79.5
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FB2.2a Reliability Statistics

Cronbach's Alpha	N of Items
.670	4

Table FB2.3a Item Statistics

	Mean	Std. Deviation	N
1. IR gives no feedback to me as an author	2.88	.958	90
2. IR user interface is not user-friendly	2.99	1.044	90
3. No time/Administrative burden	3.22	1.149	90
4. Other	3.30	.893	90

Table FB2.4a Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. IR gives no feedback to me as an author	9.51	4.904	.581	.519
2. IR user interface is not user-friendly	9.40	4.512	.605	.491
3. No time/Administrative burden	9.17	4.702	.454	.606
4. Other	9.09	6.576	.199	.741

Table FB2.5a Scale Statistics

Mean	Variance	Std. Deviation	N of Items
12.39	8.285	2.878	4

SPSS Syntax for Generating the Tables Above

```
RELIABILITY
/VARIABLES=IRnocontrib_NoReport IRnocontrib_UserInter IRnocontrib_NoTime
IRnocontrib_Other
/SCALE('Administrative and Tool Aspects') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL.
```

5. Tables related to Reliability Analysis for Factor 2 (Administrative and Tool Aspects) with the EXCLUSION of one variable

Reliability Analysis for Component/Factor 2: Administrative and Tool Aspects (EXCLUDE)

"Other" is **EXCLUDED** from the "Administrative and Tool Aspects" Factor

Table FB2.1b Case Processing Summary

		N	%
Cases	Valid	90	20.5
	Excluded ^a	348	79.5
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FB2.2b Reliability Statistics

Cronbach's Alpha	N of Items
.741	3

Table FB2.3b Item Statistics

	Mean	Std. Deviation	N
1. IR gives no feedback to me as an author	2.88	.958	90
2. IR user interface is not user-friendly	2.99	1.044	90
3. No time/Administrative burden	3.22	1.149	90

Table FB2.4b Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. IR gives no feedback to me as an author	6.21	3.449	.621	.602
2. IR user interface is not user-friendly	6.10	3.012	.683	.514
3. No time/Administrative burden	5.87	3.443	.425	.834

Table FB2.5b Scale Statistics

Mean	Variance	Std. Deviation	N of Items
9.09	6.576	2.564	3

SPSS Syntax for Generating the Tables Above

```
RELIABILITY
/VARIABLES=IRnocontrib_NoReport IRnocontrib_UserInter IRnocontrib_NoTime
/SCALE('Administrative and Tool Aspects EXCLUDE Other') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL.
```


6. Tables related to Reliability Analysis for Factor 3 (Internal Aspects)

Reliability Analysis for Component/Factor 3: Internal Aspects (Default – EXCLUDE)

“Topic is sensitive/controversial” is **EXCLUDED** from the “Internal Aspects” Factor

Table FB3.1a Case Processing Summary

		N	%
Cases	Valid	90	20.5
	Excluded ^a	348	79.5
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FB3.2a Reliability Statistics

Cronbach's Alpha	N of Items
.680	3

Table FB3.3a Item Statistics

	Mean	Std. Deviation	N
1. Concerns in quality of my works	2.23	.972	90
2. Topic is not interesting	2.06	.709	90
3. Concerns of copyright issues in my works	2.50	1.008	90

Table FB3.4a Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. Concerns in quality of my works	4.56	2.160	.490	.593
2. Topic is not interesting	4.73	2.827	.493	.612
3. Concerns of copyright issues in my works	4.29	1.983	.530	.540

Table FB3.5a Scale Statistics

Mean	Variance	Std. Deviation	N of Items
6.79	4.505	2.123	3

SPSS Syntax for Generating the Tables Above

```
RELIABILITY
/VARIABLES=IRnocontrib_Quality IRnocontrib_NotInterest IRnocontrib_Copyright
/SCALE('Internal Aspects') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL.
```

7. Tables related to Reliability Analysis for Factor 3 (Administrative and Tool Aspects) with the INCLUSION of another variable

Reliability Analysis for Component/Factor 3: Internal Aspects (INCLUDE)

"Topic is sensitive/controversial" is **INCLUDED** in the "Internal Aspects" Factor

Table FB3.1b Case Processing Summary

		N	%
Cases	Valid	90	20.5
	Excluded ^a	348	79.5
	Total	438	100.0

a. Listwise deletion based on all variables in the procedure.

Table FB3.2b Reliability Statistics

Cronbach's Alpha	N of Items
.634	4

Table FB3.3b Item Statistics

	Mean	Std. Deviation	N
1. Concerns in quality of my works	2.23	.972	90
2. Topic is not interesting	2.06	.709	90
3. Concerns of copyright issues in my works	2.50	1.008	90
4. Topic is sensitive/controversial	2.19	.847	90

Table FB3.4b Item Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1. Concerns in quality of my works	6.74	3.316	.510	.488
2. Topic is not interesting	6.92	4.073	.521	.513
3. Concerns of copyright issues in my works	6.48	3.421	.437	.551
4. Topic is sensitive/controversial	6.79	4.505	.235	.680

Table FB3.5b Scale Statistics

Mean	Variance	Std. Deviation	N of Items
8.98	6.067	2.463	4

SPSS Syntax for Generating the Tables Above

```
RELIABILITY
/VARIABLES=IRnocontrib_Quality IRnocontrib_NotInterest IRnocontrib_Copyright
IRnocontrib_Sensitive
/SCALE('Internal Aspects INCLUDE Topic Sensitive') ALL
/MODEL=ALPHA
/STATISTICS=DESCRIPTIVE SCALE
/SUMMARY=TOTAL.
```

Appendix E Documents related to interview

The documents listed in this appendix are the formal letter sent to institutions (universities) to solicit participation in the survey, Information Sheet, Consent Form, In-depth Interview Protocol, and In-depth Interview Participants Coding Table. Formal letter and Information Sheet are provided in English and Bahasa Indonesia. Consent Form is in Bahasa Indonesia only. In-depth Interview Protocol and In-depth Interview Participants Coding Table are in English only. Signatures of the researcher and Supervisor have been masked for privacy reason.

The interviews were conducted on different dates in different institutions. The documents listed in this appendix are for the first institution only. Documents for the other two institutions have essentially the same content with different date range of the respective interviews.

This appendix consists of nine pages (including this page).

1. Formal letter for soliciting participation

Faculty of Humanities

Dear Rector,



School of Media, Culture
and Creative Arts

GPO Box U 1987
Perth Western Australia 6845

Telephone +61 8 9266 7211
Facsimile +61 8 9266 3152
Web curtin.edu.au

CRICOS Provider Code 00301J

Through this letter we are seeking permission to conduct **in-depth interviews** in **Universitas Surabaya** on **09-14 Nopember 2015**. The interviews are the continuation of the previous online survey on Institutional Repositories in Indonesian Higher Education, and part of a doctoral research titled "Institutional Repositories and Open Access in Indonesian Higher Education Sector: Case Studies of 3 Indonesian Universities" at the Department of Information Studies, Faculty of Humanities, Curtin University, Australia.

The interviews are expected to be conducted to the following participants:

- a. Institutional Repository (IR) manager
- b. Head of Library
- c. Head of the Research and Community Outreach Office
- d. Vice Rector for Academic Affairs
- e. 3-4 lecturers/researchers

Every interview will take only 45-60 minutes and consist of questions related to opinions and attitudes towards institutional repository in Universitas Surabaya. The results will be published without any reference to individual or institutional name. Please find attached the Information Page related to the interviews.

We would appreciate if the university could appoint a contact person, who will be able to help us in coordinating technical arrangements for the interviews.

Thank you for your time and kind attention.

Perth, 24 September 2015

Toong Tjiek Liauw
Researcher

A/Prof. Paul Genoni
Supervisor

Yth. Rektor,

School of Media, Culture
and Creative Arts

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7211
Facsimile +61 8 9266 3152
Web curtin.edu.au

CRICOS Provider Code 00301J

Dengan hormat,

Melalui surat ini perkenankan kami memohon ijin untuk melakukan **wawancara** di Universitas Surabaya pada tanggal **09-14 Nopember 2015**. Adapun wawancara ini merupakan kelanjutan dari survey daring (*online*) tentang Repositori Institusi Perguruan Tinggi di Indonesia beberapa bulan sebelumnya, yang mana adalah bagian dari penelitian doktoral dengan judul "Repositori Institusi dan Akses Terbuka di Sektor Pendidikan Tinggi Indonesia: Studi Kasus 3 Universitas di Indonesia" di Departemen Studi Informasi, Fakultas Humaniora, Universitas Curtin, Australia.

Ada pun wawancara akan dilakukan terhadap:

- a. Pengelola repositori insitusi (*IR manager*)
- b. Kepala Perpustakaan
- c. Kepala Lembaga Penelitian dan Pengabdian Masyarakat (atau Kepala Pusat Penelitian)
- d. Wakil Rektor 1 (Bidang Akademik)
- e. 3-4 orang dosen/peneliti

Setiap wawancara hanya akan membutuhkan waktu 45-60 menit dan terdiri dari sejumlah pertanyaan terkait pendapat (*opinion*) dan sikap (*attitude*) terhadap repositori institusi di Universitas Surabaya. Hasil penelitian yang dipublikasikan tidak akan mengandung informasi terkait institusi maupun individu. Bersama surat ini kami sertakan Halaman Informasi terkait.

Mohon kiranya pihak universitas berkenan menunjuk seorang *contact person* yang dapat membantu kami dalam mengkoordinasikan hal-hal teknis terkait wawancara ini.

Terima kasih untuk perhatian Bapak/Ibu.

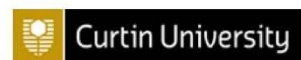
Perth, 24 September 2015

Toong Tjiek Liauw
Peneliti

A/Prof. Paul Genoni
Supervisor

2. Information sheet

Faculty of Humanities



School of Media, Culture
and Creative Arts

GPO Box U1987
Perth Western Australia 6845

Telephone +61 8 9266 7211
Facsimile +61 8 9266 3152
Web curtin.edu.au

CRICOS Provider Code 00301J

INFORMATION SHEET

Research Title:

Institutional Repositories and Open Access in Indonesian Higher Education Sector: Case Studies of Three Indonesian Universities

Dear participant,

Thank you for your participation in this **in-depth interview**, which is being conducted as part of a Ph.D. Research at the Department of Information Studies, School of Media, Culture and Creative Arts, Faculty of Humanities, Curtin University, Perth, Western Australia. The research aims to investigate the current state and future prospects for institutional repositories in supporting open access for the benefit of Indonesian higher education teaching and research.

Your participation in this in-depth interview will involve responding to questions relating to demographic information about yourself, your employment history and/or title, and your personal and/or professional views/opinions regarding the institutional repository in your institution. To IR manager, some further questions relating to the repository will also be asked. As a participant you have the right to withdraw your participation in this research at any time without any consequences. The interview will take approximately **45 to 60 minutes** to complete.

Information obtained from this survey will be used as part of this research project and results may be published in journals and/or conference presentations, as well as the associated Ph.D. Thesis; containing no institutionally- or personally-identifiable information. Please be assured that all responses will remain confidential. All participants will be anonymous (no personally-identifiable information will be recorded without your consent). Data relating to this research will be kept securely and access is limited to the principal investigator and the Supervisors.

Your participation in this research is invaluable and greatly appreciated.

Sincerely,

Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au)

Ph.D. Student – Curtin University

Student ID#: 16763823

You may address any questions or concerns about this research, including the results obtained, to the researcher: Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au) at Curtin University. If you have any questions about your rights as a study participant, or are dissatisfied at any time with any aspect of this research, you may contact — anonymously, if you wish — Associate Prof. Paul Genoni, Department of Information Studies, School of Media, Culture and Creative Arts, Faculty of Humanities, Curtin University by phone at +61 (8) 9266-7256 or e-mail at P.Genoni@curtin.edu.au.

This research has been approved by the Curtin University Human Research Ethics Committee (Approval Number **RDHU-08-15**). The Committee is comprised of members of the public, academics, lawyers, doctors, and pastoral carers. Its main role is to protect research participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845 or by calling +61 (8) 9266-2784 or by emailing hrec@curtin.edu.au.

HALAMAN INFORMASI

Judul Penelitian:

Repositori Institusi dan Akses Terbuka di Sektor Pendidikan Tinggi Indonesia: Studi Kasus 3 Universitas di Indonesia

Bapak/Ibu/Saudara responden,

Terima kasih untuk kesediaan berpartisipasi di **wawancara** ini, yang mana merupakan bagian dari penelitian Doktoral di Departemen Studi Informasi, Fakultas Humaniora, Universitas Curtin, Perth, Australia. Penelitian ini bertujuan untuk menyelidiki kondisi saat ini dan prospek di masa depan terkait repositori institusi serta perannya dalam menunjang akses terbuka bagi kemajuan penelitian dan pendidikan tinggi di Indonesia.

Partisipasi Bapak/Ibu/Saudara dalam wawancara ini adalah dengan menjawab sejumlah pertanyaan terkait data demografis, riwayat pekerjaan dan/atau jabatan, dan pendapat pribadi dan/atau profesi dari Bapak/Ibu/Saudara terkait repositori institusi di lembaga tempat Bapak/Ibu/Saudara bekerja. Khusus untuk pengelola repositori, sejumlah pertanyaan lanjutan terkait repositori juga akan ditanyakan. Sebagai responden, Bapak/Ibu/Saudara berhak untuk menarik partisipasi setiap saat tanpa ada konsekuensi apa pun. Wawancara ini hanya akan membutuhkan waktu **45 hingga 60 menit**.

Informasi yang diperoleh dari wawancara ini akan digunakan dalam penelitian secara keseluruhan dan hasil-hasilnya kemungkinan akan dipublikasikan di jurnal dan/atau konferensi, termasuk menjadi bagian dari Tesis Doktoral; tanpa mengandung informasi terkait institusi maupun pribadi. Bapak/Ibu/Saudara dapat merasa yakin bahwa semua respon yang diberikan di survey ini akan bersifat rahasia. Data terkait penelitian ini akan disimpan secara aman dan akses akan dibatasi hanya untuk peneliti dan *Supervisor*.

Partisipasi Bapak/Ibu/Saudara sangat berharga dan sangat kami hargai.

Salam hormat,

Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au)

Ph.D. Student – Curtin University (Student ID#: 16763823)

Pertanyaan terkait penelitian ini, termasuk hasil penelitian, dapat ditujukan ke peneliti: Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au) di Universitas Curtin. Pertanyaan terkait hak sebagai responden atau pernyataan ketidak-puasan terhadap aspek mana pun dari penelitian ini dapat ditujukan – secara *anonymous* bila dibutuhkan – ke – Associate Prof. Paul Genoni, Departemen Studi Informasi, Fakultas Humaniora, Universitas Curtin melalui telepon di +61 (8) 9266-7256 atau e-mail di P.Genoni@curtin.edu.au.

Penelitian ini telah mendapatkan persetujuan dari Komite Etik Penelitian (No. **RDHU-08-15**). Komite ini terdiri dari anggota masyarakat, akademisi, ahli hukum, dokter, dan *pastoral carers*. Peran utama dari komite ini adalah untuk melindungi responden. Bila dibutuhkan, verifikasi terhadap persetujuan untuk penelitian ini dapat diperoleh secara tertulis ke Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845 atau melalui telepon di +61 (8) 9266-2784 atau melalui email di hrec@curtin.edu.au.

3. Consent form

Faculty of Humanities



School of Media, Culture
and Creative Arts

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CRICOS Provider Code 00301J

HALAMAN PERSETUJUAN

Judul Penelitian:

**Repositori Institusi dan Akses Terbuka di Sektor Pendidikan
Tinggi Indonesia: Studi Kasus 3 Universitas di Indonesia**

Bapak/Ibu/Saudara responden,

Dengan menanda-tangani **Halaman Persetujuan** ini Bapak/Ibu/Saudara menyatakan bahwa Bapak/Ibu/Saudara telah:

1. membaca **Halaman Informasi** serta penjelasan yang diberikan oleh peneliti;
2. telah memahami maksud dan tujuan dari diadakannya wawancara ini;
3. telah memahami hak sebagai responden yang dapat meminta wawancara dihentikan setiap saat tanpa harus memberikan alasan dan tanpa konsekuensi apa pun; dan
4. telah memberikan persetujuan untuk berpartisipasi dalam wawancara ini.

Nama : _____

Institusi : _____

Tanda
tangan : _____ Tanggal : _____

Pertanyaan terkait penelitian ini, termasuk hasil penelitian, dapat ditujukan ke peneliti: Toong Tjiek Liauw (t.liaww@postgrad.curtin.edu.au) di Universitas Curtin. Pertanyaan terkait hak sebagai responden atau pernyataan ketidak-puasan terhadap aspek mana pun dari penelitian ini dapat ditujukan – secara *anonymous* bila dibutuhkan – ke – Associate Prof. Paul Genoni, Departemen Studi Informasi, Fakultas Humaniora, Universitas Curtin melalui telepon di +61 (8) 9266-7256 atau e-mail di P.Genoni@curtin.edu.au.

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4. In-depth interview protocol

Faculty of Humanities



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CRICOS Provider Code 00301J

In-depth Interview Protocol

Research Title:

Institutional Repositories and Open Access in Indonesian Higher Education Sector: Case Studies of Three Indonesian Universities

PREPARATION

1. Confirm the date, time and venue of the interview to the participant one or two days before the interview date.
2. Gather information on where the interview venue is located and how to get there.
3. Prepare these things for the interview:
 - a. Digital Voice Recorder (bring extra batteries)
 - b. Notebook & Pen (bring extra pens)
 - c. Curtin University Business Cards
 - d. Small gifts for Contact Person(s)
4. Plan to have sufficient time to reach the venue for the interview and to travel between different venues on the same day.

ON THE INTERVIEW DAY – BEFORE THE INTERVIEW

5. Introduce yourself.
6. Present the Curtin University Business Card to the participant.
7. Explain your research topic to the participant without going into too many details that might introduce bias to the interview.
8. Explain to the participant that if he/she is interested to know more about your research topic, further discussion can be engaged AFTER the interview. Explain to the participant that this is an effort to avoid introducing any bias to the interview.
9. Present the Information Sheet and ask the participant to read it, if he/she has not read it before.
10. Ask the participant whether he/she understands the content of the Information Sheet and whether he/she has any question.
11. Present the Consent Form and ask the participant to fill and sign on it. Collect the Form.
12. Explain to the participant that:
 - a. the interview will be done in Bahasa Indonesia and tries to capture the CURRENT condition of IR in his/her institution and that there is no RIGHT or WRONG answer;
 - b. Explain to the participant that his/her opinion or answers will not be linked to his/her personal identity or institutional affiliation in any of the publication resulting from the interview (Thesis and journal articles); and
 - c. at the beginning of the interview he/she will need to answer (in Bahasa Indonesia) verbally on the record some consent-related questions that the researcher will ask (in Bahasa Indonesia).

In-depth Interview Protocol

Research Title:
**Institutional Repositories and Open Access in Indonesian Higher
Education Sector: Case Studies of Three Indonesian Universities**

PREPARATION

1. Confirm the date, time and venue of the interview to the participant one or two days before the interview date.
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8. Explain to the participant that if he/she is interested to know more about your research topic, further discussion can be engaged AFTER the interview. Explain to the participant that this is an effort to avoid introducing any bias to the interview.
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 - b. Explain to the participant that his/her opinion or answers will not be linked to his/her personal identity or institutional affiliation in any of the publication resulting from the interview (Thesis and journal articles); and
 - c. at the beginning of the interview he/she will need to answer (in Bahasa Indonesia) verbally on the record some consent-related questions that the researcher will ask (in Bahasa Indonesia).

5. In-depth interview participants coding table

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In-depth Interview Participants Coding Table

Research Title:
**Institutional Repositories and Open Access in Indonesian Higher
Education Sector: Case Studies of Three Indonesian Universities**

No.	Institution & Personal Name	Code
A University A		
1.		A1VR
2.		A2RD A2RD1
3.		A3HL
4.		A4IR
5.		A5LC
6.		A6LC
7.		A7LC
B University B		
8.		B2RD
9.		B3HL
10.		B4IR
11.		B5LC
12.		B6LC
13.		B7LC
14.		B8LC
C University C		
15.		C1VR
16.		C3HL
17.		C4IR1
18.		C4IR2
19.		C5LC
20.		C6LC
21.		C7LC
D Ministry of Research, Technology, and Higher Education (KemenristekDikti)		
22.		D1 D2

Appendix F List of questions for interviews

The documents listed in this appendix are the list of questions for:

- Vice Rector and Head of Office of Research and Development (ORD)
- Head of Library
- Institutional Repository Manager
- Academics (Lecturers/Researchers)

All the documents listed in this appendix are in Bahasa Indonesia only.

This appendix consists of nine pages (including this page).

1. List of questions for vice rector and head of office of research and development (ORD)

Faculty of Humanities



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List of Questions for In-depth Interview

Research Title:

Institutional Repositories and Open Access in Indonesian Higher Education Sector: Case Studies of Three Indonesian Universities

HEAD OF ORD & VICE RECTOR

Code: _____

1. Bisakah dijelaskan tentang kebijakan universitas terkait pembentukan RI dan pengelolaannya?

2. Apa alasan atau pemikiran utama yang melandasi dibangunnya RI di universitas ini?

3. Menurut Bapak/Ibu, apa saja manfaat dari RI bagi universitas?

4. Sebagai seorang pejabat struktural, informasi apa saja yang Bapak/Ibu inginkan ada dalam laporan terkait RI? Mengapa informasi tersebut penting untuk Bapak/Ibu?

5. Bisakah dijelaskan tentang dampak dari RI terhadap proses belajar mengajar dan penelitian dari staf akademik di universitas ini?

6. Bisakah dijelaskan secara umum bagaimana respon atau sikap dari staf akademik terhadap RI?

7. Apakah penting bagi universitas bahwa karya-karya para staf akademik dapat diakses oleh komunitas internasional?

a. Apakah penggunaan Bahasa Inggris untuk memperluas diseminasi menjadi prioritas?

8. Bagaimana Bapak/Ibu melihat prospek pengembangan RI di universitas ini dalam kaitannya dengan proses belajar mengajar dan penelitian?

9. Adakah hal lain yang ingin Bapak/Ibu tambahkan terkait RI di universitas Bapak/Ibu saat ini?

2. List of questions for head of library

Faculty of Humanities



Curtin University

List of Questions for In-depth Interview

Research Title:

Institutional Repositories and Open Access in Indonesian Higher Education Sector: Case Studies of Three Indonesian Universities

School of Media, Culture
and Creative Arts

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Perth Western Australia 6845

Telephone +61 8 9266 7211
Facsimile +61 8 9266 3152
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CRICOS Provider Code 00301J

HEAD OF LIBRARY

Code: _____

1. Bisakah Bapak/Ibu menceritakan sejarah dibangunnya RI di universitas ini?
2. Apa peran Perpustakaan dalam konteks dimulainya RI dan pengelolaannya sehari-hari?
3. Apa alasan atau pemikiran utama yang melandasi dibangunnya RI di universitas ini?
4. Bisakah dijelaskan apa saja manfaat dari RI bagi universitas?
5. Bisakah dijelaskan tantangan dan peluang dalam pengelolaan RI di universitas ini?

6. Apa saja kriteria yang menentukan konten tertentu dapat disimpan dalam RI?
 - a. Siapa atau unit mana yang memiliki wewenang untuk menentukan kriteria tersebut?

7. Bagaimana respon atau penerimaan dari pada dosen terkait kontribusi konten mereka ke RI

8. Apakah faktor bahasa dari konten atau bidang ilmu dari konten berpengaruh dalam proses pengumpulannya ke dalam RI? Bagaimana dengan pemanfaatannya?

9. Apakah Perpustakaan atau Universitas memiliki rencana pengembangan RI? Bisakah dijelaskan? Dan bagaimana Perpustakaan melihat perannya di masa depan terkait pengembangan RI ini?

10. Adakah hal lain yang ingin Bapak/Ibu tambahkan terkait RI di universitas Bapak/Ibu saat ini?

3. List of questions for institutional repository manager

Faculty of Humanities



School of Media, Culture
and Creative Arts

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Perth Western Australia 6845

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Facsimile +61 8 9266 3152
Web curtin.edu.au

CRICOS Provider Code 00301J

List of Questions for In-depth Interview

Research Title:

**Institutional Repositories and Open Access in Indonesian Higher
Education Sector: Case Studies of Three Indonesian Universities**

IR MANAGER

Code: _____

1. Kumpulkan Kuesioner dan Dokumen terkait lainnya dari IR Manager.
2. Bisakah Bapak/Ibu jelaskan tugas-tugas yang dilakukan sehari-harinya terkait operasional RI?

3. Bagaimana konten untuk RI dikumpulkan?
 - a. Apakah Bapak/Ibu yang bertugas untuk mengumpulkan konten untuk RI?
 - b. Apakah Bapak/Ibu mengetahui kriteria dari konten yang bisa disimpan dalam RI?
 - c. Siapa atau unit apa yang memiliki wewenang untuk menentukan kriteria ini?

4. Bisakah dijelaskan tentang aspek teknis dari operasional RI?
 - a. Siapa yang bertanggung jawab untuk membangun & memelihara infrastruktur IT?
 - b. Bagaimana hubungan kerja antara Bapak/Ibu dengan pihak penanggungjawab IT?

4. List of questions for academics (lecturers/researchers)

Faculty of Humanities



School of Media, Culture
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Facsimile +61 8 9266 3152
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CRICOS Provider Code 00301J

List of Questions for In-depth Interview

Research Title:

**Institutional Repositories and Open Access in Indonesian Higher
Education Sector: Case Studies of Three Indonesian Universities**

LECTURERS/RESEARCHERS

Code: _____

1. Bisakah Bapak/Ibu memberikan penjelasan apakah RI itu menurut pemahaman Bapak/Ibu?
 - a. Bisakah dijelaskan terkait perbedaan antara RI dan Online Journal Database menurut apa yang Bapak/Ibu pahami saat ini?

2. Apakah Bapak/Ibu SETUJU dengan keputusan institusi untuk membangun RI? Bisakah dijelaskan sekilas tentang pendapat Bapak/Ibu terkait keputusan membangun RI ini?

3. Apakah Bapak/Ibu PERNAH mengakses/menggunakan/membaca karya-karya yang disimpan dalam RI di universitas Bapak/Ibu?
 - a. Jika YA, bisakah diceritakan pengalaman Bapak/Ibu dalam mengakses/menggunakannya?
 - b. Jika TIDAK, bisakah dijelaskan apa faktor yang menyebabkan Bapak/Ibu BELUM PERNAH mengakses/menggunakannya?

4. Apakah Bapak/Ibu PERNAH mengakses/menggunakan/membaca karya-karya yang disimpan dalam RI universitas LAIN?
 - a. Jika YA, bisakah diceritakan pengalaman Bapak/Ibu dalam mengakses/menggunakannya?
 - b. Jika TIDAK, bisakah dijelaskan apa faktor yang menyebabkan Bapak/Ibu BELUM PERNAH mengakses/menggunakannya?

5. Apakah Bapak/Ibu lebih memilih mengakses atau membaca karya-karya dalam Bahasa Indonesia atau Bahasa Inggris?
 - a. Bisakah dijelaskan mengapa?
 - b. Atau faktor bahasa tidak ada pengaruhnya?

6. Adakah karakteristik khusus dari karya-karya ilmiah di bidang yang Bapak/Ibu tekuni? Misal: penulis pada umumnya lebih dari satu orang, karya ilmiah cenderung padat & singkat, karya kebanyakan dalam format multimedia, dll.

7. Apakah Bapak/Ibu sudah PERNAH memberikan kontribusi konten ke RI di universitas Bapak/Ibu? Bisakah dijelaskan pendapat atau pengalaman Bapak/Ibu terkait hal ini?

8. Apakah Bapak/Ibu merasakan dampak dari RI ini secara pribadi sebagai pengajar/peneliti?

9. Apakah Bapak/Ibu merasakan dampak dari RI ini terhadap universitas Bapak/Ibu?

10. Apa saja aspek RI yang harus ditingkatkan agar dapat menjawab kebutuhan Bapak/Ibu?

11. Adakah hal lain yang ingin Bapak/Ibu tambahkan terkait RI di universitas Bapak/Ibu saat ini?

Appendix G Questionnaire for institutional repository manager

The document listed in this appendix is the questionnaire sent to institutional repository managers prior to the interviews. The first page is the letter accompanying the questionnaire. The document is in Bahasa Indonesia only. Signatures of the researcher and Supervisor have been masked for privacy reason.

Some of the questions in this questionnaire have been developed by adopting some questions from the following book:

The Survey of Institutional Digital Repositories (2011 Edition) by Primary Research Group (ISBN: 1-57440-161-0).

Written permission has been obtained from the book publisher for the use of the questions for this research (see Appendix H).

This appendix consists of ten pages (including this page).

Yth. *Institutional Repository Manager*,

Universitas

.....

Dengan hormat,

**School of Media, Culture
and Creative Arts**

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Telephone +61 8 9266 7211
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CRICOS Provider Code 00301J

Menindaklanjuti persetujuan formal institusi dan sebagai persiapan terkait wawancara yang akan kami adakan pada bulan Nopember 2015, melalui surat ini perkenalkan kami mengirimkan kuesioner berupa daftar pertanyaan terkait repositori institusi di **Universitas Surabaya**.

Dokumen MS Word yang kami kirimkan adalah *Protected Document* yang dapat diisi pada bagian yang telah ditentukan (berwarna kelabu). Khusus untuk halaman 1 dan 2 cukup diisi salah satu (versi Bahasa Indonesia atau Inggris). Setelah diisi lengkap mohon dokumen dapat dikirimkan kembali via email ke peneliti di alamat t.liauw@postgrad.curtin.edu.au.

Saat mengirimkan kembali kuesioner ini, mohon berkenan pula melampirkan dokumen-dokumen terkait repositori institusi, yang dinilai dapat membantu peneliti untuk mendapatkan gambaran lengkap terkait repositori institusi di kampus Bapak/Ibu. Contoh dokumen terkait antara lain:

1. SK Rektor atau pejabat lainnya terkait pembentukan repositori institusi
2. Posisi/jabatan, tanggung jawab, dan cakupan tugas dari IR *Manager*
3. Data Statistik terkait Konten dan Akses/Penggunaan dari repositori institusi
4. Laporan Bulanan/Tahunan terkait repositori institusi (termasuk program promosi)
5. Materi promosi (misal: brosur, buku panduan, email promosi, foto kegiatan, dokumentasi seminar/pelatihan, dll) terkait repositori institusi
6. Kliping berita di media massa maupun terbitan/media internal kampus terkait repositori institusi

Akan sangat berguna bagi kami bila kuesioner dan/atau dokumen terkait dapat kami terima via email beberapa hari sebelum tanggal wawancara. Terima kasih untuk perhatian Bapak/Ibu.

Perth, 20 Oktober 2015

Toong Tijek Liauw

Peneliti

A/Prof. Paul Genoni

Supervisor

CONTENT	Types of Work Available in IR	ENGLISH VERSION
Type	Criteria	
PUB Published Works	<input type="checkbox"/> Peer-reviewed journal articles (including articles published by the author's institution) <input type="checkbox"/> Articles in conference proceedings (including papers published by the author's institution) <input type="checkbox"/> Books or book sections (including books or sections published by the author's institution)	
UNPUB Unpublished Works	<input type="checkbox"/> Unpublished/internal research reports (submitted internally for reports or for tenure requirements) <input type="checkbox"/> Unpublished institutional research reports <input type="checkbox"/> Audio/video recordings or text of professoriate inaugural speeches/orations	
THESES Theses and Dissertations	<input type="checkbox"/> Non-degree (diploma) theses <input type="checkbox"/> Master theses <input type="checkbox"/> Undergraduate theses <input type="checkbox"/> Ph.D. theses (Dissertations) <input type="checkbox"/> Journal-style articles derived from students theses and/or presentation slides of the thesis defense	
TEACH Teaching Materials	<input type="checkbox"/> Classroom presentation slides <input type="checkbox"/> Course/class-related (includes laboratory-based) materials	
STDW Student Works	<input type="checkbox"/> Works by students outside the scope covered by THESES and UREC <input type="checkbox"/> Course/class-based works/assignments <input type="checkbox"/> Visual resources (photographs, drawings, computer renderings, animations, etc.) produced by students as part of assignments <input type="checkbox"/> Works produced by students as part of their participation in non-course-based activities such as competitions, internship and/or volunteer work, etc.	
UREC University Records	<p>The emphasis of this category is on the evidential value of the documents, instead of the informational value (topic/subject) of the works.</p> <input type="checkbox"/> Internal campus newspapers, magazines, bulletins, or newsletters, including student-published journals or media <input type="checkbox"/> Promotional materials (flyers/posters/brochures) of campus notifications, events, facilities, services, programs/activities, or issue-based campaign <input type="checkbox"/> Photography/audio/video recordings of campus notifications, events, facilities, services, programs/activities, or issue-based campaigns <input type="checkbox"/> Newspaper clippings (includes screen captures in JPG/PDF of online news) <input type="checkbox"/> Audio/video/text of general speeches (except professoriate inaugural speeches/orations, which are categorized as UNPUB) <input type="checkbox"/> Institutional or departmental constitutions, by-laws, reports, guidelines, presentation slides, and other formal documents <input type="checkbox"/> Documents (presentations, handouts, flyers, etc.) used in campus events/activities.	
SPEC Special Coll.	<input type="checkbox"/> Digitized or born-digital resources related to special/rare collections and/or local collections	
OTHER Other/Misc.	<input type="checkbox"/> Documents that are not related to the institution or its intellectual output or its unique collections (SPEC) but might be used or stored for reference purposes. Example: government documents, ministerial decrees, scanned books or eBooks; of which authors are not from the institution, etc. <input type="checkbox"/> Documents that are not the main works but supplemental to the main works and cannot be categorized as UREC since the emphasis is on the informational value instead of evidential value. Example: conference presentations (of a research/paper/article). The presentation slides can be stored in the same record as the main works (articles) in the repositories.	

KONTEN		Jenis Konten di Repositori	VERSI BAHASA INDONESIA
Tipe	Kriteria		
PUB Karya Terpublikasi	<input type="checkbox"/> Artikel jurnal ilmiah <i>peer-review</i> (termasuk yang diterbitkan institusi sendiri) <input type="checkbox"/> Artikel untuk konferensi/prosiding (termasuk yang diterbitkan institusi sendiri) <input type="checkbox"/> Buku atau Bab/ <i>Chapter</i> Buku (termasuk yang diterbitkan institusi sendiri)		
UNPUB Karya Tak Terpublikasi	<input type="checkbox"/> Laporan penelitian yang tak dipublikasikan (dilaporkan secara internal universitas atau untuk pengurusan KUM/angka kredit) <input type="checkbox"/> Laporan penelitian institusional yang tak dipublikasikan <input type="checkbox"/> Rekaman audio/video atau teks dari pidato/orasi pengukuhan Guru Besar		
THESES Tesis dan Disertasi	<input type="checkbox"/> Skripsi Diploma (non-gelar) <input type="checkbox"/> Skripsi S2 (Master) <input type="checkbox"/> Skripsi S1 <input type="checkbox"/> Skripsi S3 (Disertasi) <input type="checkbox"/> Artikel ilmiah dengan format jurnal ilmiah hasil konversi dari Skripsi mahasiswa dan/atau slide presentasi dari ujian Skripsi mahasiswa		
TEACH Bahan Ajar	<input type="checkbox"/> Slide presentasi yang digunakan di ruang kelas (untuk perkuliahan) <input type="checkbox"/> Materi yang digunakan untuk mata kuliah/kelas (termasuk aktivitas laboratorium atau praktikum)		
STDW Student Works	<input type="checkbox"/> Karya mahasiswa di luar cakupan dari kategori THESES dan UREC <input type="checkbox"/> Tugas-tugas mata kuliah/perkuliahan <input type="checkbox"/> Materi visual (foto, gambar, hasil olahan komputer, animasi, dll) yang dihasilkan oleh mahasiswa sebagai bagian dari tugas mata kuliah/perkuliahan <input type="checkbox"/> Karya mahasiswa sebagai hasil partisipasi mereka dalam kegiatan non-perkuliahan seperti lomba, magang kerja, kegiatan sukarelawan/pengabdian masyarakat, dll.		
UREC Rekod Universitas	<p>Penekanan di kategori ini adalah pada nilai dokumen sebagai <u>bukti</u> sebuah kegiatan atau proses, <u>bukan</u> pada nilai informasi (topik/subjek) dari sebuah karya.</p> <input type="checkbox"/> Koran internal kampus, majalah, bulletin, atau <i>newsletter</i> , termasuk jurnal atau media yang diterbitkan oleh mahasiswa atau organisasi kemahasiswaan. <input type="checkbox"/> Materi promosi (<i>flyer/poster/brosur</i>) terkait pengumuman, acara, fasilitas, layanan program/kegiatan, atau kampanye isu-isu tertentu di kampus. <input type="checkbox"/> Foto/rekaman audio/video terkait pengumuman, acara, fasilitas, layanan program/kegiatan, atau kampanye isu-isu tertentu di kampus. <input type="checkbox"/> Kliping surat kabar tentang karya & kegiatan kampus (termasuk dari media online). <input type="checkbox"/> Teks/rekaman audio/video dari pidato umum (TIDAK termasuk pidato/orasi pengukuhan Guru Besar, yang mana masuk dalam kategori UNPUB). <input type="checkbox"/> Statuta, peraturan, laporan, panduan, slide presentasi, dan dokumen formal lainnya terkait institusi/kampus. <input type="checkbox"/> Dokumen (presentasi, <i>handout, flyer</i> , dll) terkait kegiatan/acara institusi/kampus.		
SPEC Kol. Khusus	<input type="checkbox"/> Materi terkait koleksi khusus/langka dan/atau koleksi lokal, baik yang merupakan hasil digitalisasi maupun yang ber-format asal digital.		
OTHER Lainnya	<input type="checkbox"/> Dokumen yang tak terkait dengan institusi atau output intelektual dari kampus atau koleksi khususnya (SPEC) namun mungkin digunakan atau disimpan sebagai referensi. Contoh: dokumen pemerintah, Peraturan Menteri, hasil pindaian buku atau eBuku; yang mana penulisnya tidak berasal dari institusi sendiri, dll. <input type="checkbox"/> Dokumen yang bukan berupa karya utama tapi pelengkap dan tak dapat dikategorikan sebagai UREC karena penekanannya pada nilai informasinya, bukan nilai pembuktiannya. Contoh: presentasi di konferensi (untuk suatu riset/makalah/artikel). Slide presentasi dapat disimpan di rekod yang sama dengan rekod dari karya utamanya (artikel) di repositori.		

LAYANAN, PENGGUNAAN & STATISTIK AKSES

Bila data statistik tidak tersedia, jawaban dapat diberikan secara perkiraan/estimasi.

1. Jumlah akses ke repositori institusi di tahun terakhir, sesuai periode laporan tahunan di institusi ini?
 - a. Dalam satuan *Hits*: ketik jawaban di sini
 - b. Dalam satuan *Unique Visitor*: ketik jawaban di sini
2. Berapa % dari keseluruhan akses di atas berasal dari:
 - a. Institusi sendiri: ketik jawaban di sini
 - b. Luar institusi, dari Indonesia: ketik jawaban di sini
 - c. Luar institusi, dari luar Indonesia: ketik jawaban di sini
3. Bila repositori setempat mengizinkan pengunduhan (*download*) dokumen *full-text*, berapa jumlah pengunduhan (*download*) yang terjadi di tahun terakhir, sesuai periode laporan tahunan di institusi ini?
ketik jawaban di sini
4. Apakah repositori institusi menyediakan fasilitas bagi para penulis/pencipta/kontributor konten, di mana mereka akan mendapatkan email atau pemberitahuan lain bila seseorang mengunduh (*download*) konten yang berasal dari mereka? Ya Tidak
5. Apakah repositori institusi menyediakan fasilitas bagi para penulis/pencipta/kontributor konten, di mana mereka bisa mengetahui atau mendapat laporan terkait jumlah akses dan/atau jumlah pengunduhan (*download*) dari konten yang berasal dari mereka? Ya Tidak
6. Apakah sistem dan/atau konten dari repositori institusi sudah tersambung atau terintegrasi dengan sistem kredit (KUM) bagi staf akademik atau sistem pengelolaan riset universitas? Ya Tidak
7. Apakah sistem dan/atau konten dari repositori institusi sudah tersambung atau terintegrasi dengan sistem manajemen perpustakaan (*library management system*) atau *online catalog* (OPAC) perpustakaan? Ya Tidak
8. Apakah sistem dan/atau konten dari repositori institusi juga **sudah** dimanfaatkan untuk program penerbitan **ilmiah** kampus? Misal repositori institusi juga digunakan sebagai sistem penerbitan buku atau jurnal ilmiah seperti halnya OJS (*Open Journal Systems*) yang mampu menangani proses *submission*, *editorial*, (*peer*) *review*, dll. Ya Tidak
9. Apakah ada **rencana** untuk memanfaatkan repositori institusi sebagai sistem penerbitan **ilmiah** (buku dan/atau jurnal) seperti halnya OJS (*Open Journal Systems*) yang mampu menangani proses *submission*, *editorial*, (*peer*) *review*, dll. Ya Tidak

10. Keterangan tambahan terkait trend penggunaan dan/atau pengunduhan (*download*) konten dari repositori institusi. Misal: penggunaan konten dari disiplin ilmu tertentu lebih dominan, pengguna internal kampus lebih dominan, dll.

ketik deskripsi di sini

PROMOSI & LAYANAN PUBLIK

11. Siapa saja yang **boleh** berkontribusi konten ke repositori institusi? (pilihan dapat lebih dari satu)

- | | |
|--|--|
| <input type="checkbox"/> Staf Dosen/Peneliti | <input type="checkbox"/> Pustakawan |
| <input type="checkbox"/> Mahasiswa Pasca Sarjana | <input type="checkbox"/> Arsiparis |
| <input type="checkbox"/> Mahasiswa S1 | <input type="checkbox"/> Humas universitas |
| <input type="checkbox"/> Penerbitan universitas | <input type="checkbox"/> Staf Pusat Komputer |
| <input type="checkbox"/> Kontributor eksternal | <input type="checkbox"/> Tenaga Kependidikan (non dosen) |
| <input type="checkbox"/> Pengelola universitas | <input type="checkbox"/> Lainnya, sebutkan:
ketik jawaban di sini |

12. Siapa yang **paling banyak** berkontribusi konten ke repositori institusi? (pilihan tunggal)

- | | |
|--|--|
| <input type="checkbox"/> Staf Dosen/Peneliti | <input type="checkbox"/> Pustakawan |
| <input type="checkbox"/> Mahasiswa Pasca Sarjana | <input type="checkbox"/> Arsiparis |
| <input type="checkbox"/> Mahasiswa S1 | <input type="checkbox"/> Humas universitas |
| <input type="checkbox"/> Penerbitan universitas | <input type="checkbox"/> Staf Pusat Komputer |
| <input type="checkbox"/> Kontributor eksternal | <input type="checkbox"/> Tenaga Kependidikan (non dosen) |
| <input type="checkbox"/> Pengelola universitas | <input type="checkbox"/> Lainnya, sebutkan:
ketik jawaban di sini |

13. Apakah tersedia brosur atau materi promosi lainnya terkait repositori institusi? Ya Tidak

14. Apakah tersedia laporan tahunan terkait repositori institusi?

- Ada, dapat diakses publik Ada, internal (tidak untuk publik) Tidak ada

15. Apakah institusi pernah mengirimkan *press release* ke media internal kampus (cetak atau elektronik atau *online*) terkait repositori institusi? Pernah Tidak pernah

16. Apakah institusi pernah mengirimkan *press release* ke media massa (cetak atau elektronik atau *online*) terkait repositori institusi? Pernah Tidak pernah

17. Berapa banyak pemberitaan di media internal kampus (cetak atau elektronik atau *online*) yang pernah ada terkait repositori institusi? (isi dengan angka nol "0" bila tidak ada)

ketik jawaban di sini

18. Berapa banyak pemberitaan di media massa (cetak atau elektronik atau *online*) yang pernah ada terkait repositori institusi? (isi dengan angka nol "0" bila tidak ada)

ketik jawaban di sini

19. Jelaskan bagaimana repositori institusi dipromosikan/diperkenalkan ke pengguna internal maupun eksternal. Misal: pernahkan menggunakan *search engine optimization* (SEO), pertukaran *link*, promosi di *event* seminar/konferensi, dll.

ketik deskripsi di sini

20. Jelaskan bagaimana upaya menjangkau para dosen/peneliti agar mereka mendukung dan bersedia berkontribusi konten ke repositori institusi. Adakah pengalaman atau *best practice* yang bisa dibagikan/diceritakan?

ketik deskripsi di sini

ASPEK MANAJERIAL & INSTITUSIONAL

21. Berapa jumlah repositori institusi yang SAAT INI ada dan sudah beroperasi di kampus?

ketik jawaban di sini

22. Unit atau departemen apa yang memiliki tugas dan tanggung jawab untuk mengelola repositori institusi?

ketik jawaban di sini

23. Jelaskan dari mana sumber pendanaan atau anggaran terkait repositori institusi di kampus Bapak/Ibu.

ketik jawaban di sini

24. Menurut Bapak/Ibu, apa alasan yang mendasari dibangunnya repositori institusi di kampus Bapak/Ibu?

Mohon tuliskan angka 1 hingga 17 di depan masing-masing alasan, di mana angka 1 menandakan alasan yang paling penting. Kosongkan bagian yang dinilai tidak relevan.

- Meningkatkan reputasi institusi
- Memberikan layanan yang lebih baik bagi para kontributor konten
- Memberikan layanan yang lebih baik bagi sivitas kampus
- Memberikan layanan baru bagi komunitas di luar kampus
- Upaya mengontrol atau mengelola kekayaan intelektual kampus
- Upaya memotret atau mengumpulkan output intelektual kampus
- Kontribusi bagi reformasi di bidang publikasi ilmiah dan komunikasi ilmiah
- Memperpendek waktu antara hasil riset atau penemuan, dan diseminasinya ke komunitas ilmiah
- Upaya meningkatkan jumlah sitasi/sitiran ke karya-karya sivitas kampus
- Meningkatkan visibilitas atas karya-karya sivitas kampus ke para peneliti di INDONESIA
- Meningkatkan visibilitas atas karya-karya sivitas kampus ke para peneliti INTERNASIONAL
- Meningkatkan aksesibilitas dari hasil-hasil penelitian, khususnya yang dibiayai pajak/pemerintah
- Solusi bagi permasalahan terkait preservasi dari output intelektual kampus
- Meningkatkan peran perpustakaan sebagai mitra yang layak dalam proses atau alur penelitian
- Mengurangi ketergantungan terhadap koleksi tercetak (*print collection*) perpustakaan
- Preservasi jangka panjang bagi output institusi dalam format digital
- Meningkatkan aksesibilitas dari aset-aset pengetahuan seperti data numerik, audio, video & multimedia

25. Menurut Bapak/Ibu, apa dampak positif dari keberadaan repositori institusi di kampus Bapak/Ibu dalam kondisi yang ada SAAT INI? Mohon tuliskan angka 1 hingga 17 di depan masing-masing alasan, di mana angka 1 menandakan dampak positif yang paling dominan. Kosongkan bagian yang dinilai tidak relevan.

- Meningkatkan reputasi institusi
- Memberikan layanan yang lebih baik bagi para kontributor konten
- Memberikan layanan yang lebih baik bagi sivitas kampus
- Memberikan layanan baru bagi komunitas di luar kampus

A - 7

Upaya mengontrol atau mengelola kekayaan intelektual kampus
 Upaya memotret atau mengumpulkan output intelektual kampus
 Kontribusi bagi reformasi di bidang publikasi ilmiah dan komunikasi ilmiah
 Memperpendek waktu antara hasil riset atau penemuan, dan diseminasinya ke komunitas ilmiah
 Upaya meningkatkan jumlah sitasi/sitiran ke karya-karya sivitas kampus
 Meningkatkan visibilitas atas karya-karya sivitas kampus ke para peneliti di INDONESIA
 Meningkatkan visibilitas atas karya-karya sivitas kampus ke para peneliti INTERNASIONAL
 Meningkatkan aksesibilitas dari hasil-hasil penelitian, khususnya yang dibiayai pajak/pemerintah
 Solusi bagi permasalahan terkait preservasi dari output intelektual kampus
 Meningkatkan peran perpustakaan sebagai mitra yang layak dalam proses atau alur penelitian
 Mengurangi ketergantungan terhadap koleksi tercetak (*print collection*) perpustakaan
 Preservasi jangka panjang bagi output institusi dalam format digital
 Meningkatkan aksesibilitas dari aset-aset pengetahuan seperti data numerik, audio, video & multimedia

26. Mohon deskripsikan secara umum dampak (positif atau negatif) dari keberadaan repositori institusi di kampus Bapak/Ibu dengan menggunakan kata-kata Bapak/Ibu sendiri.

ketik deskripsi di sini

27. Kata atau kalimat pendek apa yang paling tepat untuk menggambarkan pengalaman kampus Bapak/Ibu terkait repositori institusi?

ketik jawaban di sini

Mohon berkenan melampirkan dokumen-dokumen terkait repositori institusi yang sifatnya tidak rahasia (*confidential*), yang dinilai dapat membantu peneliti untuk mendapatkan gambaran lengkap terkait repositori institusi di kampus Bapak/Ibu. Contoh dokumen terkait antara lain:

1. SK Rektor atau pejabat lainnya terkait pembentukan repositori institusi
2. Posisi/jabatan, tanggung jawab, dan cakupan tugas dari IR *Manager*
3. Data Statistik terkait Konten dan Akses/Penggunaan dari repositori institusi
4. Laporan Bulanan/Tahunan terkait repositori institusi (termasuk program promosi)
5. Materi promosi untuk repositori institusi (misal: brosur, buku panduan, email promosi, foto kegiatan, dll)
6. Kliping berita di media massa maupun terbitan/media internal kampus terkait repositori institusi
7. Dokumentasi kegiatan terkait repositori institusi (misal: seminar, pelatihan, dll)

Appendix H Documents related to Primary Research Group - List of questions and email correspondence for permission to use

The document listed in this appendix is the email correspondence of the researcher to Primary Research Group, requesting permission to use some of the questions that the company has used in its previous survey(s) on institutional repositories. The email also contains the list of the relevant questions. The document is in English only.

This appendix consists of four pages (including this page).



Aditya Nugraha <anugraha@petra.ac.id>

Re: Request for Permission to Re-use Questions and Response Sets from a Publication by Primary Research Group

1 message

Primary Research Group <primaryresearchgroup@gmail.com>

Wed, Mar 25, 2015 at 10:37 AM

To: Toong Tjiek Liauw <t.liauw@postgrad.curtin.edu.au>

Dear Toong:

We grant our permission for you to use the data sets that you requested (and the associated questions) in your email to us of 3/23/2015. Please attribute the data and questions to Primary Research Group, New York, New York. Use is restricted to non-commercial purposes. If possible we would appreciate a PDF copy of your thesis when it is finished. Good luck.

James Moses, President
Primary Research Group Inc.

On Mon, Mar 23, 2015 at 10:36 PM, Toong Tjiek Liauw <t.liauw@postgrad.curtin.edu.au> wrote:

Dear Sir/Madam,

I am a Ph.D. student in Information Studies at Curtin University, Perth, Western Australia. I am currently doing my Ph.D. research on how institutional repositories (IRs) have impacted the higher education sector in Indonesia. The title of my Ph.D. Thesis is "Institutional Repositories and Open Access in Indonesian Higher Education Sector: Case Studies of Three Indonesian Universities." This research has been approved by the Curtin University Human Research Ethics Committee (Approval Number RDHU-08-15). As part of my research I will be conducting an online survey and in-depth interviews.

I am emailing you or your organization to request permission to re-use some of the Questions and Response Sets from the following publication:

The Survey of Institutional Digital Repositories (2011 Edition) by Primary Research Group
ISBN: 1-57440-161-0

The Question(s) and/or Response Set(s), that I am requesting the permission for their re-use, are listed at the bottom of this email.

I will of course give credit to you or your organization in my Ph.D. Thesis and any publications arising from the research. Some Question(s) and/or Response Set(s) might need slight modifications (re-wording, change of country name, etc.) to make it relevant to my research.

In the case that you are not the proper person to respond to this request, would you please kindly direct me to one. Looking forward to hearing from you.

Sincerely,
Toong Tjiek Liauw
Ph.D. student in Information Studies
Curtin University, Perth, Western Australia
Student ID#: 16763823
Email: t.liauw@postgrad.curtin.edu.au, anugraha@petra.ac.id

This research has been approved by the Curtin University Human Research Ethics Committee (Approval Number RDHU-08-15). The Committee is comprised of members of the public, academics, lawyers, doctors, and pastoral carers. Its main role is to protect research participants. If needed, verification of approval can be obtained either by writing to the Curtin University Human Research Ethics Committee, c/- Office of Research and Development, Curtin University of Technology, GPO Box U1987, Perth, 6845 or by calling +61 (8)

9266-2784 or by emailing hrec@curtin.edu.au.

You may address any questions or concerns about this research, including the results obtained, to the researcher: Toong Tjiek Liauw (t.liauw@postgrad.curtin.edu.au) at Curtin University. If you have any questions or are dissatisfied at any time with any aspect of this research, you may contact — anonymously, if you wish — Associate Prof. Paul Genoni, Department of Information Studies, School of Media, Culture and Creative Arts, Faculty of Humanity, Curtin University by phone at +61 (8) 9266-7256 or e-mail at P.Genoni@curtin.edu.au.

Question(s) and/or Response Set(s) which permission for their re-use is sought-after:

List of Questions:

1. Does your digital repository contain books written by faculty? (page 42)
2. Does your digital repository contain journal articles written by faculty? (page 44)
3. Does your digital repository contain presentations made by faculty? (page 46)
4. Does your digital repository contain magazine or newspaper articles written by faculty? (page 48)
5. Does your digital repository contain dissertations and/or theses? (page 52)
6. Does your digital repository contain lectures, courses and course works? (page 54)
7. Does your digital repository contain textbooks written by faculty? (page 56)
8. Does your digital repository contain university records? (page 58)
9. Does your digital repository contain college publications such as the alumni magazine? (page 62)
10. Does your digital repository contain notebooks, scholarly papers of noted college scholars? (page 66)
11. Does your digital repository have a link to the college library website? (page 74)
12. Does your digital repository have a link to the college website apart from any link to the library? (page 76)
13. Does your digital repository have a brochure? (page 84)
14. Does your digital repository have a published annual report? (page 88)
15. How many press releases about or from the repository did the library send out in the past year? (page 90)
16. Describe how you market the repository both to internal and external users. Have you used search engine optimization techniques? What about site linking strategy. Your press release efforts? Outreach at conferences, etc. (page 92)
17. Approximately how many unique visitors has the repository website or web page received in the past year? (page 98)
18. If the repository allows direct downloads approximately how many downloads of articles or other materials occurred within the past year? (page 102)
19. What percentage of downloads from the repository come from within the United States? (page 104)
20. What percentage of downloads from the repository come from other foreign countries? (page 108)
21. What percentage of downloads from the repository come from within your institution? (page 110)
22. Do authors have a user interface to track downloads? (page 117)
23. Do authors get an email or can they download or retrieve a record periodically summarizing the downloads of their materials? (page 119)
24. Comment on trends in the downloading of materials from your repository. Are downloads increasing in a particular subject area? For a particular part of the world or from certain types of institutions? We are particularly interested in the trend in downloads from scholars and educators in developing countries. (page 125)
25. Does the repository have an e-publishing program through which it publishes monographs or books in either a print or digital format (or both) that might not have been initially published elsewhere? (page 132)
26. Does the repository publish any open access journals? (page 134)
27. Describe the repository attitude towards becoming an actual publisher. Does it plan to publish its own open access journals? Has it taken measures to organize peer review councils or editorial staff or other measures associated with academic publishing? (page 136)
28. Approximately what percentage of the journal articles published by your faculty is archived in any form in the institutional repository? (page 163)
29. Describe how you have gone about trying to assure faculty participation in the digital repository program. What methods have you used? Can you advise your peers on best practices in gaining faculty awareness and acceptance? (page 167)
30. In general what has been the impact of the digital repository on your institution's overall online presence? (page 191)
31. Which choice best describes your institutional experience with your institutional repository? (page 214)
32. What best describes how your digital repository is funded? (page 217)

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James Moses, Research Director
Primary Research Group Inc.
2753 Broadway #156
New York, New York 10025
PrimaryResearchGroup@gmail.com
www.PrimaryResearch.com

Appendix I Guidelines for transcribing interviews

The document listed in this appendix is the guidelines used to transcribe interview recording to produce the interview transcripts. The document is in English only. The document in this appendix has also been inserted as the last page of the relevant interview transcripts, which is available separately as an external dataset (Liauw, 2018b).

This appendix consists of two pages (including this page).

Guidelines for Transcription of Interview Recordings

1. Use naturalized approach.
2. Arial 10-point face-font.
3. All text shall begin at the left-hand margin with indentation used only for the interviewee parts.
4. Entire document shall be left justified.
5. Use Transcription Header with info on the interview participant (such as participant ID, interviewer ID, date, and transcriber name and ID.)
6. Note 'unnatural' disruption in the discussion or when information have been recorded only partially.
7. The "end-of-interview" line signals that the interview session had formally reached completion.
8. Use double pound or hash signs, appears immediately before and after a Source ID. Example: ##AN## (where "AN" is the code for interviewer or interviewee).
9. Use a format template so that each transcript has an identical structure and appearance.
10. Assign a unique name or case identifier for each transcript.
11. When interviewer and interviewee are simultaneously talking, and distinct comments are indecipherable, insert the "[CT: ...]" to mark the "cross talk." When there are more than one person participating in the interview, add the Source ID of person cross-talking: [CT ##AN##: ...]
12. Insert time stamp at certain interval (e.g., approximately every 5 minutes) to support the quick retrieval of an audio component that matches the transcribed text.
13. Nonverbal meaningful sounds shall be typed in brackets, for example, [short sharp laugh], [group laughter], etc. However non-meaningful or background sounds shall not be typed, for example: coughing, police siren, background TV conversation, etc.
14. Filler words such as hm, huh, mm, mhm, uh huh, um, okay, yeah, yuhuh, nah huh, ugh, whoa, uh oh, ah, and ahah shall be transcribed.
15. Use brackets for inaudible sounds: (inaudible words)
16. Use double question marks for unintelligible sound: ?(club on Avalon)?

Example of Transcription Header

Interview #: 4

Participant Code: A4IR

Site/Location: University A

Date of Interview: 09 November 2015

Interviewer & Transcriber: Toong Tjiek Liauw (Aditya Nugraha)

Interviewer & Transcriber Code: AN

Appendix J NVivo codebook

The document listed in this appendix is NVivo Codebook used for coding the interview transcripts. The codebook consists of:

- Nodes: the label assigned to a portion of text to enable NVivo to perform further processing of the text.
- Description: the general definition of the respective Node to enable categorization of portion of text into certain Node(s).
- Sources: the number of documents (interview transcripts, text responses from survey, and memos), of which portion(s) of text has/have been coded into the respective Nodes.
- References: the number of portions of text from different documents (Sources) that have been coded into the respective Nodes.

This codebook is related to Figure 7.1 and Figure 7.2 in Chapter 7. The document is in English only. The interview transcripts used to produce this Codebook is available separately as an external dataset (Liau, 2018b).

This appendix consists of eight pages (including this page).

In-depth Interviews on Institutional Repositories

Nodes

Name	Description	Sources	References
1. General Opinions	General opinions of interviewees on the impacts of institutional repositories. This topic has also been asked in the Online Survey that preceded the In-depth Interviews.	0	0
a. Institutional	General opinions of interviewees on the INSTITUTIONAL impacts of institutional repositories.	15	22
b. National	General opinions of interviewees on the NATIONAL impacts of institutional repositories.	7	9
c. Personal	General opinions of interviewees on the PERSONAL impacts of institutional repositories.	16	38
2. Language Issues	Issues relating to the use of English as the language used in scholarly works. This topic has also been asked in the Online Survey that preceded the In-depth Interviews.	19	30
3. Local Practices	Local practices of Indonesian universities in populating and managing their institutional repositories. This topic is generated from one of the Research Objectives.	17	81
4. Management Issues	Issues relating to the management structure in the university in charge for maintaining the institutional repository. Including jurisdictional issues on	0	0

Name	Description	Sources	References
	which division (Library, Office of Research & Development, Human Resource Department, Computing Center, Academic Department) should have the authority to maintain & manage the database of scholarly works and expertise information in a university and/or the relationship and interactions among them. This topic is generated from one of the Research Objectives.		
a. Advocacy	Issues relating to the advocacy (including marketing and promotional) efforts to communicate institutional repositories and the related issues to the campus communities. Including guidance and mediated uploads to institutional repositories on behalf of the lecturers/researchers. Also other programs or activities that can directly or indirectly support the institutional repository in the institution. This topic emerged as the coding process was undertaken.	24	79
b. Institutional Policies	Institutional policies relating to the population, management, and use of institutional repository in the institution.	20	84
c. Jurisdictional Issues	Issues relating to which division/unit is/are the information producer(s) and which division/unit should have the authority or jurisdiction over the scholarly and expertise information in the university.	20	78
d. Management of Info	Issues relating to the how the scholarly and expertise information should be managed and/or organized.	20	49
e. Use of Info	Issues relating to the use of the scholarly and expertise information in the university, either personally by lecturers/researchers and students, as well as institutionally by the university.	3	11

Name		Description	Sources	References
5.	Potential of IRs & OA	General issues relating to the potential of institutional repositories and open access to support teaching, learning, and research in Indonesian universities. Specific issues relating to the fear of plagiarism should be coded to the relevant sub code. This topic is generated from one of the Research Objectives.	0	0
a.	Collaborative Platform	Issues relating to the collaborative nature of institutional repositories, of which contents might attract potential collaborations with the contributors. As well as the expressed wish of lecturers/researchers for institutional repositories to have the characteristics of subject repositories.	12	32
b.	Fear or Plagiarism	Issues relating to the fear that opening up access to scholarly works and/or data will encourage plagiarism or making plagiarism easier. These issues might introduce barriers in the adoption of open access policies relating to the institutional repositories.	14	33
c.	General Ideas	General ideas relating to the prospect or future of institutional repositories in the Indonesian higher education sector; EXCEPT issues relating to Collaborative Platform, Fear of Plagiarism, Open Access, Grey Literature, and System Integration.	20	48
d.	Grey Literature	Issues relating the prospect of grey literature as important or essential contents in institutional repositories in Indonesian higher education sector.	9	18
e.	Open Access	The prospect of open access in Indonesian higher education institutional repositories, which can be seen from the lecturers/researchers opinions and/or attitudes toward open access (opening up access to scholarly works for public).	12	44

Name	Description	Sources	References
f. System Integration	The prospect of the integration of institutional repositories into a larger system that can accommodate the functions as information source & dissemination (scholarly communication, library perspective), research information system (office of research and development perspective), and faculty tenure (human resource department perspective).	12	21
6. Potential Quotes	Quotes that can potentially be used in the Thesis document.	6	20
7. Publish vs. Accessible	Issues relating to the confusion between making scholarly works available and publicly accessible online AND publishing scholarly works through formal peer-review process.	10	23
8. Technology Issues	Technology issues relating to institutional repositories. This topic emerged as the coding process was undertaken.	0	0
a. Human Aspects	Human or social aspects relating to technology adoption that can assist or hinder the management of information in the institution. Including the barriers of adoption based on academic fields, generational gap, etc.	11	18
b. Technical Aspects	Technical aspects relating to technology adoption that can assist or hinder the management of information in the institution.	17	36
9. Uptake Barriers	Barriers for the uptake of institutional repositories by the Indonesian higher education sector, according to lecturers/researchers. This topic has also been asked in the Online Survey that preceded the In-depth Interviews.	0	0
a. Administrative Burden	Barriers that relate to PROCESS or ADMINISTRATION aspects that are involved in contributing scholarly works to an institutional repository.	10	17

Name	Description	Sources	References
b. External Aspects	Barriers that relate to the EXTERNAL aspects of scholarly works, such as issues on privacy, confidentiality, security, patent, and concerns that the works will be plagiarized when the works made openly accessible to the public.	13	23
c. Internal Aspects	Barriers that relate to the INTERNAL aspects of scholarly works, such as whether the topic is interesting to readers, the authors are not confident about the quality of their works, concerns about the copyright status of some of the materials used in the works, when the works are made openly accessible to the public.	4	5
d. Other Aspects	OTHER barriers that are not covered elsewhere.	15	42
e. Tools Aspects	Barriers that relate to the SYSTEM or SOFTWARE aspects of the institutional repositories.	17	77
10. Uptake Drivers	Drivers for the uptake of institutional repositories by the Indonesian higher education sector, according to lecturers/researchers. This topic has also been asked in the Online Survey that preceded the In-depth Interviews.	0	0
a. Information Management	INFORMATION MANAGEMENT (IM) drivers for the uptake of institutional repositories by the Indonesian higher education sector, according to lecturers/researchers.	0	0
• Institutional	INSTITUTIONAL-related drivers relating to the CIM aspect for the uptake of institutional repositories by the Indonesian higher education sector, according to lecturers/researchers.	0	0

Name	Description	Sources	References
✓ Combating Plagiarism	The use of an institutional repository to build a corpus of works that can be used to detect plagiarism and to avoid duplications in research topics, especially within the institution (and especially, but not limited to, for the use in detecting plagiarism in the undergraduate theses).	8	17
✓ DIKTI Mandate	The use of an institutional repository to upload scholarly works of students and (especially) lecturers/researchers as mandated by the DIKTI (The Ministry of Research, Technology and Higher Education).	21	51
✓ Institutional Development	The use of an institutional repository to manage PERSONAL and SCHOLARLY information of the lecturers/researchers in the context of INSTITUTIONAL DEVELOPMENT, such as institutional accreditations, mandated-reporting to DIKTI (The Ministry of Research, Technology, and Higher Education), etc.	18	105
✓ Prestige-Ranking	The use of an institutional repository to increase INSTITUTIONAL PRESTIGE, such as Webometrics rankings, content contributions Indonesia OneSearch (The National Library of Indonesia), etc.	17	72
• Personal	PERSONALLY-related drivers relating to the CIM aspect for the uptake of institutional repositories by the Indonesian higher education sector, according to lecturers/researchers.	0	0
✓ Personal Info Mgmt	The use of an institutional repository to manage PERSONAL information, such as CV/Resume, scholarly portfolio, or other forms of personal information management that can help lecturers/researchers to get their information organized and facilitate collaborations.	13	39
✓ Tenure	The use of an institutional repository to manage PERSONAL and SCHOLARLY information of the lecturers/researchers in the context of their tenure	22	45

Name	Description	Sources	References
	process, which relates mainly with the institution's human resource department (HRD).		
b. Scholarly Communication	SCHOLARLY COMMUNICATION as drivers for the uptake of institutional repositories by the Indonesian higher education sector, according to lecturers/researchers.	0	0
<ul style="list-style-type: none"> • Info Dissemination 	The use of an institutional repository to disseminate SCHOLARLY works of the lecturers/researchers to a national and/or global audience. This relates more to the READERSHIP aspect of scholarly communication.	19	115
<ul style="list-style-type: none"> • Info Source 	The use of an institutional repository as a SOURCE of scholarly information that can help lecturers/researchers in producing their scholarly works.	14	93
<ul style="list-style-type: none"> • Scholarly Prestige-Citation 	The use of an institutional repository to acquire citations to the SCHOLARLY works of the lecturers/researchers. This relates more to the scholarly PRESTIGE aspect of scholarly communication that comes with the number of citations to one's works.	12	31