

Modelling Governance Indicators and Managing e-Business Information Systems

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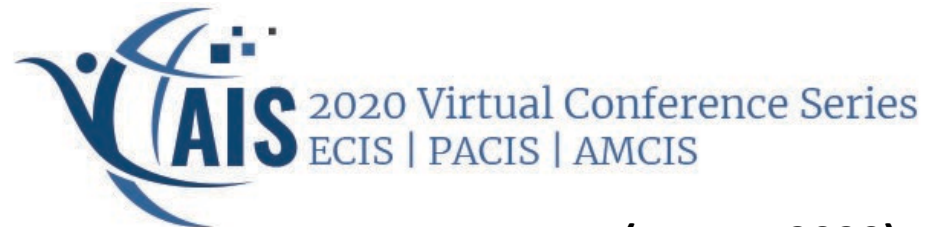
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(August 2020)

Introduction

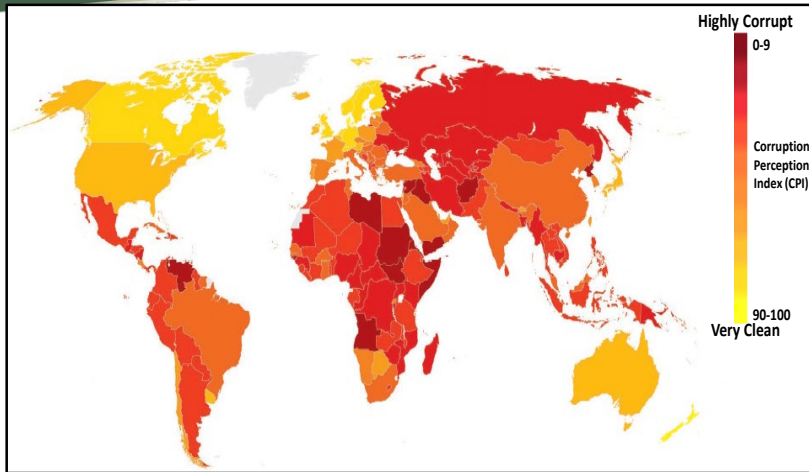


Figure 1: Worldwide Corruption Perception Index, CPI (Transparency International 2016)

Managers often foresee the use and reuse of resources in organizations for achieving the business goals and objectives. **Effective use of informatics tools can keep the organization and business process move in the right direction.** The meta-knowledge in business environment can stimulate investment opportunities and ease implementation challenges occur in strategic decision support systems. In addition, **IS/IT governance depends on governance indicators and their attribute strengths. Governance indicator measures can realistically support and regulate effective use/reuse of IS/IT resources within an organization (Sharma and Pokharel 2016).**

- In the current empirical research, **we consider “estimates” of all governance indicator attributes as dimensions. In addition, the Economic Fitness (EF) is a basic measure of a country considered to cognize the diversification and ability to produce complex goods on a globally competitive basis that are connected to the governance indicators.** As shown in Figure 1, **the worldwide Corruption Perception Index (CPI) is examined for discerning the extent of global governance and its indicators, their models in business information systems.**
- **We consider different countries for which more than 70% scores of CPI interpreted, shown in the deep red colour in Figure 1. When the countries are corrupt, the governance gets affected and thus conduct of e-businesses. As illustrated in a schematic view (Figure 2), how the IS strategies can connect business and government/governance strategies are described.**

Issues and Challenges

- **For growth and profitability of e-businesses, we need innovative IS artefacts and renovation of existing Information Systems (IS), keeping in view the internal and external influences, and the design and implementation constraints.** The corruption in political, legal, economic institutions causes a great concern for fair and honest conduct of e-businesses (Pant and Ravichandran 2001).
- The recent trends in electronic businesses suggest a great deal of **digital automation and transformation required not only at the economic front but also the experience of supply and demand of online products and service to valued customers.** In addition, an increase in competition has led to the emergence and enhancement of supplier connections in the digital world, making online markets mandatory.
- **The social networks to redefine the businesses and their interactive boundaries.** On one hand, business models are in great appearance but surrounded by challenging online firms with unfair and non-transparent practices forcing them to redefine and fine-tune the existing business models to changed management.
- Moreover, the recent trends in digital ecosystems and technologies suggest government and businesses do participate in online activities, supporting an increase in the assembly of public policies and methods of governance. **A novel research framework that uses innovative data models with new mining, visualization and interpretation artefacts appears in growing demand for managing e-business challenges.**
- **The influence of governance indicators on IS design and information-based decision-making has not been explored,** even how it affected the makeup of information system development strategies is undiscerned. **It is not clear so far, how governance indicators can help analyse the requirements of e-business practice and its preparation for designing artefacts.**
- **The governance-indicator attribute dimensions that can provide values to IS planning practices and e-businesses have not been assessed. Whether the governance needs must be matched with information architecture needs is not made explicit in the existing literature.**

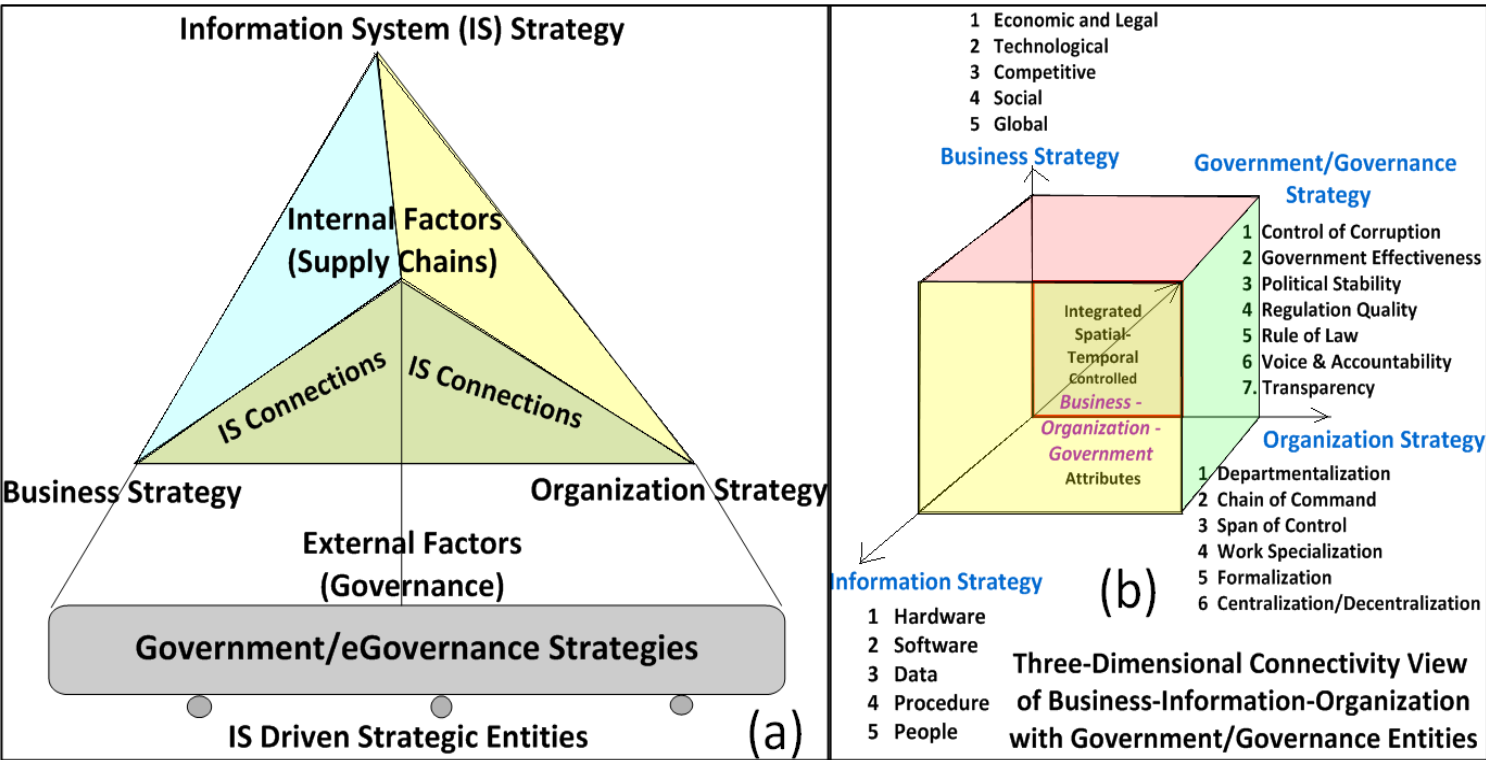


Figure 2: Description of information strategies with (a) business, organization and governance entities (b) 3D conceptualization insight with strategic entities

The purpose of the research is to analyse governance indicators in the context of IS/IT implementations to offer transparent and fair business with adequate public services. We have considered various such governance indicators as multidimensional, for designing and implementing the information system articulations not only in industry situations but also in alignment of the business needs and demands.

Design of IS articulations in the current application strategize to collaborate the governance indicator attributes with business and organization strategies. The research is based on empirical secondary data investigation to test and validate different artefacts in e-business contexts. In addition, the method describes the artefact design and its science. Furthermore, exploration of data, probing e-governance for e-business solutions and arriving at the implementable solutions in various governmental institutions are key research areas. The metadata structures with meta-knowledge of e-governance are deliverables of the research study.

System Architecture and Methodology

- Besides, IS/IT governance ensures effective use of indicators in business and organization contexts, to make sure the information management is more decisive and accountable (Ramachandran 2007). The governance indicators described in the literature for different countries and their governments may constrain the effective use of IS/IT resources and their control in various operational units. We investigate various data attribute dimensions that can fit in artefact designs.
- **We have used secondary data sources from WGI (2019a and 2019b) for identifying and describing attributes for data artefact designs and their modelling. As per Research Objectives 1 and 2, we have recognized the requirements of different attribute dimensions to examine their necessity in the artefact design process.**
- To prepare the organizations and facilitate their businesses electronically, we ensure, **IS artefacts to match and comply with e-governance and e-business conditions. To investigate the Research Objective 2, we intend to put a rigor on architectural designs, data science of governance indicators and their analytics in business contexts.**
- **The governance indicator instances cover both private and public sector industries. The range lies in between -2.5 and +2.5, as a standard normal distribution of attribute instances.**

Design Science guided Sports Information System Development

(a) Ontology based star-schemas for connecting various governance attribute dimensions

(b) a framework used in e-Business The integrated framework, which is simulated with IS articulations in e-Cloud scenarios, provides a metadata structure with evaluable meta-knowledge.

The integrated framework successfully explores the connections among different domains in geographic contexts and activating system articulations. The framework (Figure 3b) adds more commercial value, since multiple domains manifest organization and government interests, where and how much to invest in achieving the e-governance and e-business objectives.

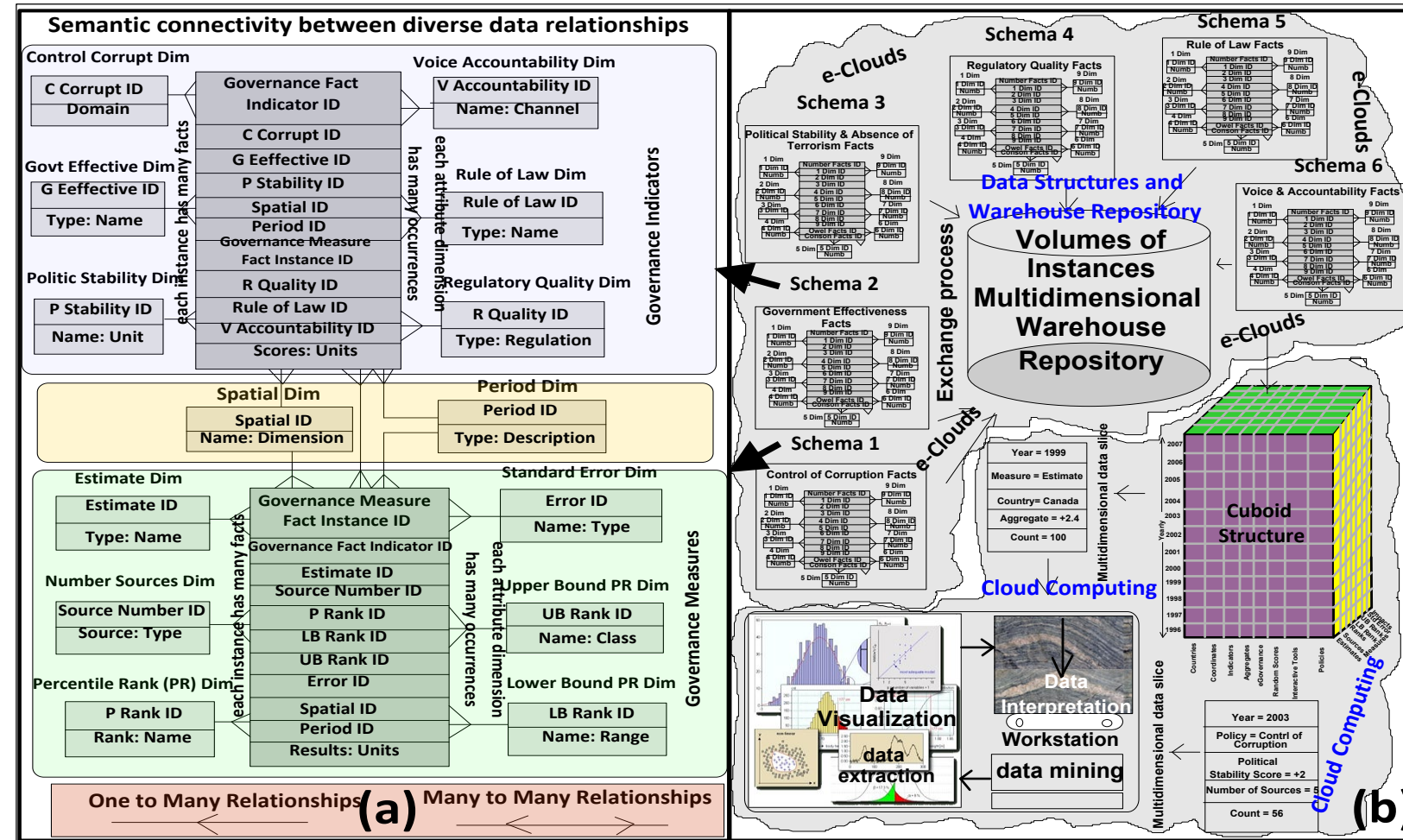


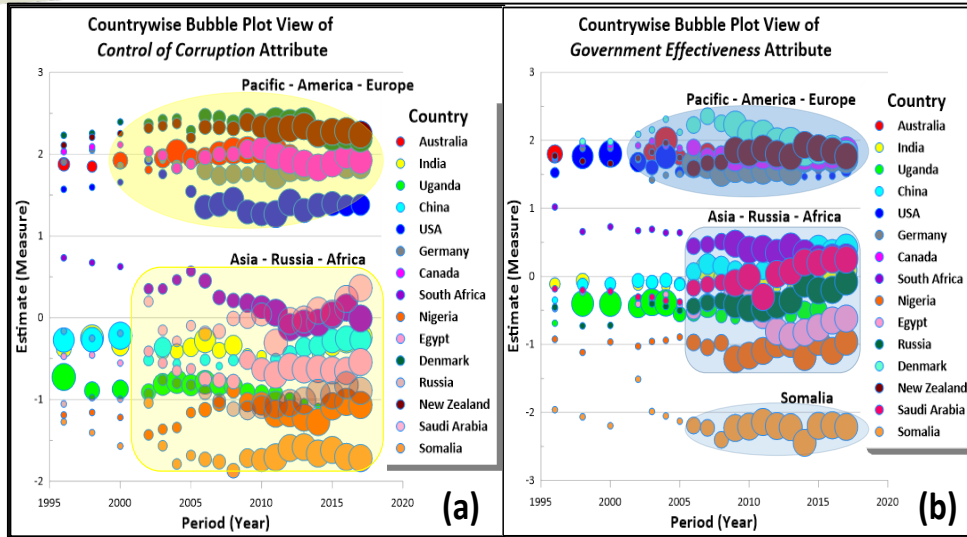
Figure 3: IS articulations in an Integrated Framework

Research Findings and Analysis

- The data views construe statistical correlations, trends, and patterns among governance data indicators. Data instances considered in the interpretation and analysis, vary with geographic dimensions and in diverse domains. However, **subject to inheritance and interoperability, the connectivity between attributes within various domains of e-government and e-business ecosystems is interpreted to adjudge the artefact implementations.** The basic structures are the same in many domains in spite of that the governance data vary in different geographic locations and time periods. Interoperability is achievable through judicious implementation of IS articulations.
- **Since the data sources are spatial-temporal, understanding the phenomena of connectivity between IS, government and organization strategies is challenging. Various aspects of data relationships, such as the degree of relationships, roles of entities or attributes dimensions participating in the relationships, architectural features relevant to the type of relationship and mapping constraints considered in the integration process, all support the modelling development.**
- **In addition, the information requirements detailed in the documentation and data dictionaries are captured for building IS artefacts.**

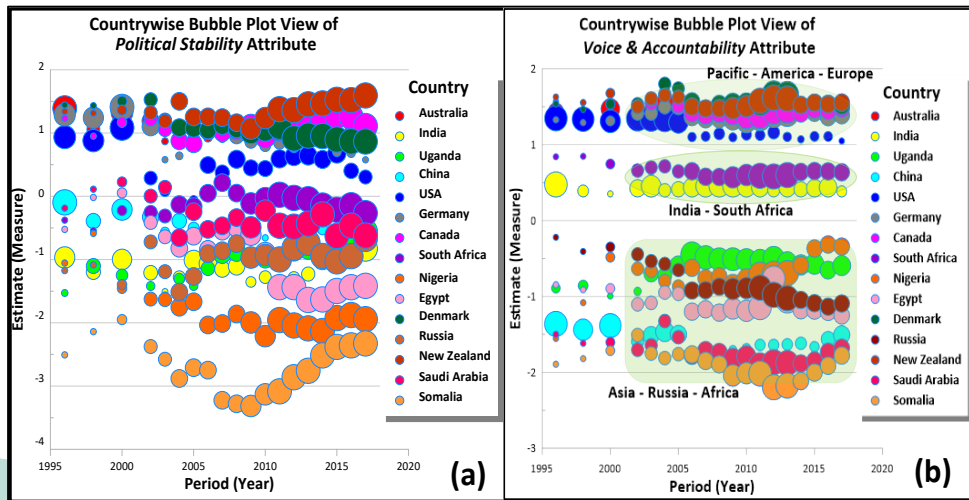
Analysis – Periodic Contexts

Figure 4:
Country wise analysis of (a) control of corruption (b) government effectiveness attributes



1. Several data views drawn from **semantically structured metadata are made for interpretation and knowledge discovery process as presented in Figure 4.**
2. As visualized in Figure 4a, we have shown the metadata views in the form of various bubble plot views using grapher software solutions.
3. We present the **“estimate” measure attribute instances with respect to periodic instance.**
4. The control of corruption attribute is plotted for different countries.
5. **Bubble size and its orientation determine the strength of the attribute instances in different spatial-temporal alignments as illustrated in Figures 4a and 4b.**

Figure 5: Country wise analysis of (a) political stability (b) voice and accountability attributes



Analysis – Geographic Contexts

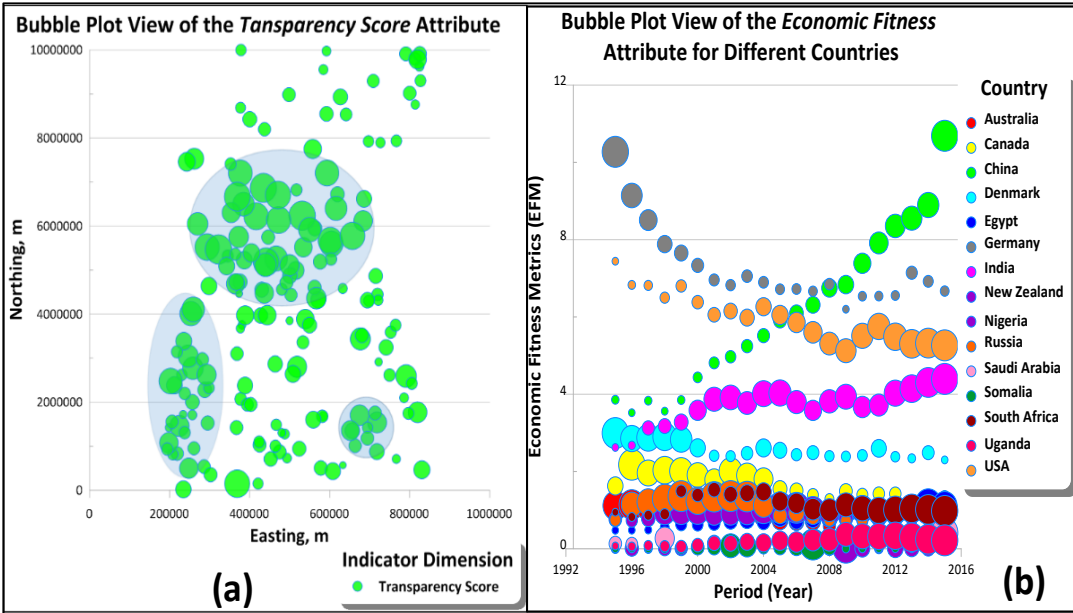


Figure 6: A bubble plots of (a) transparency score (b) Economic Fitness (EF) attributes

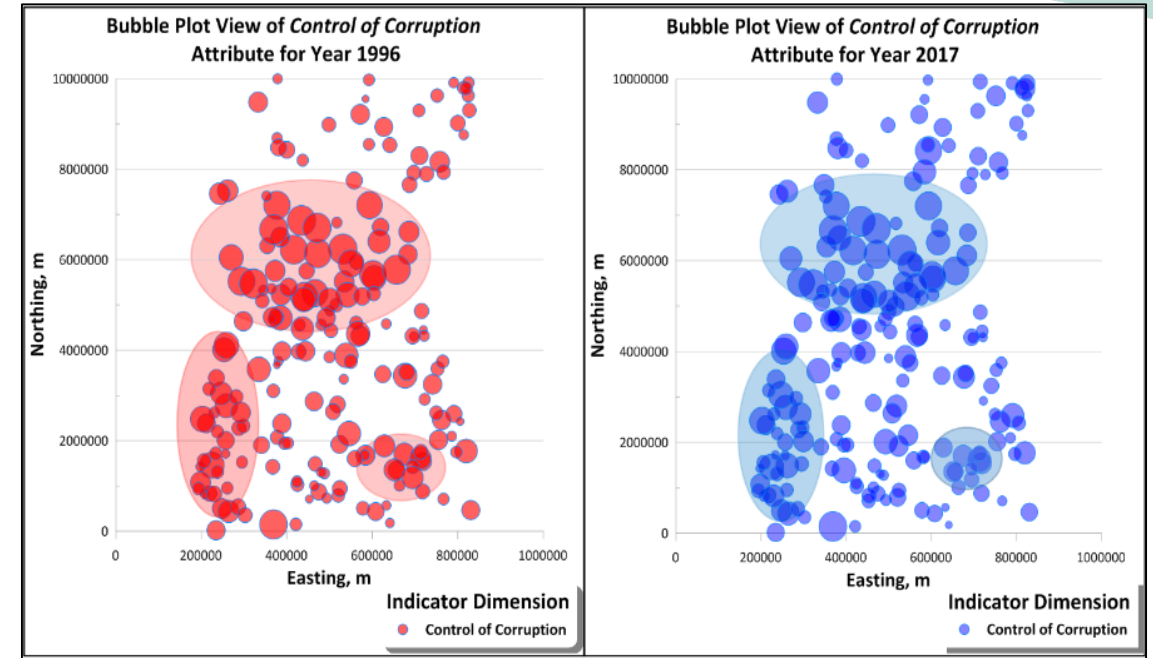


Figure 7: Bubble plot views drawn for Control of Corruption attribute

Ascertaining the connectivity between attributes to ease the interpretation in new knowledge domains. The connectivity is better where dense bubbles are clustered

Analysis – Geographic Contexts

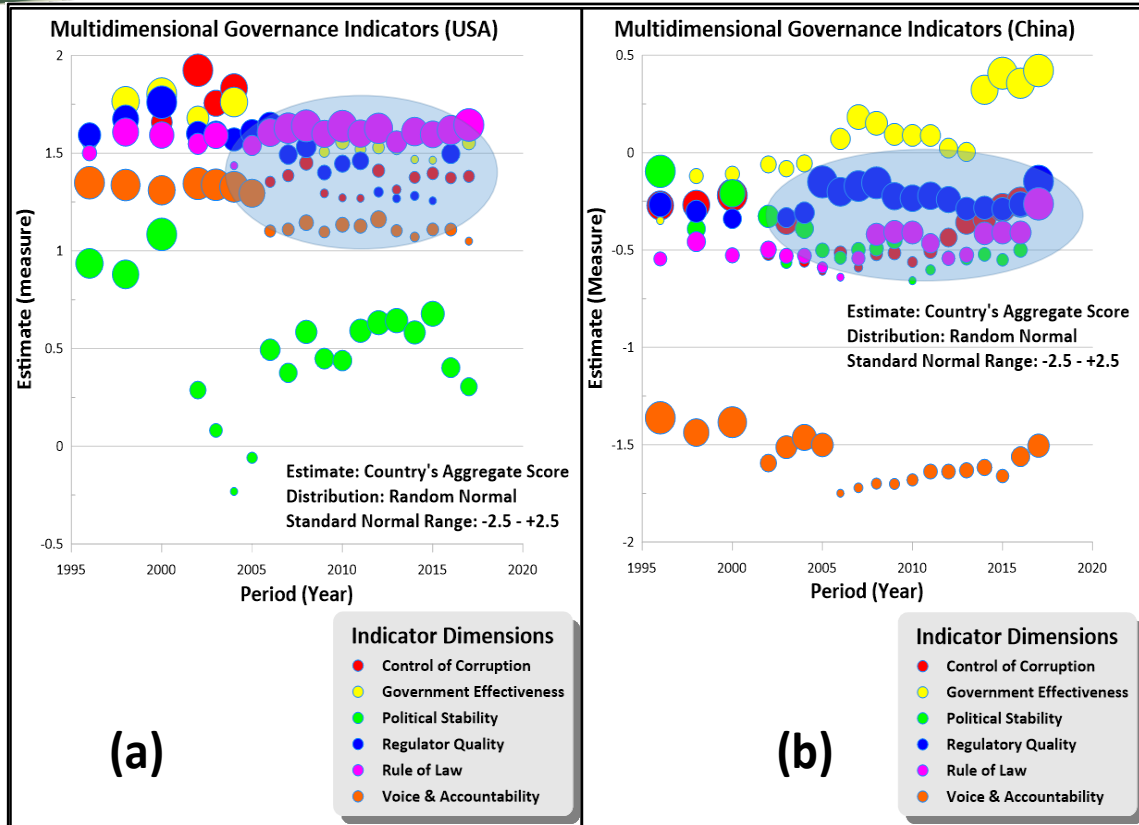


Figure 8: Bubble plot views of governance attributes for (a) USA (b) China

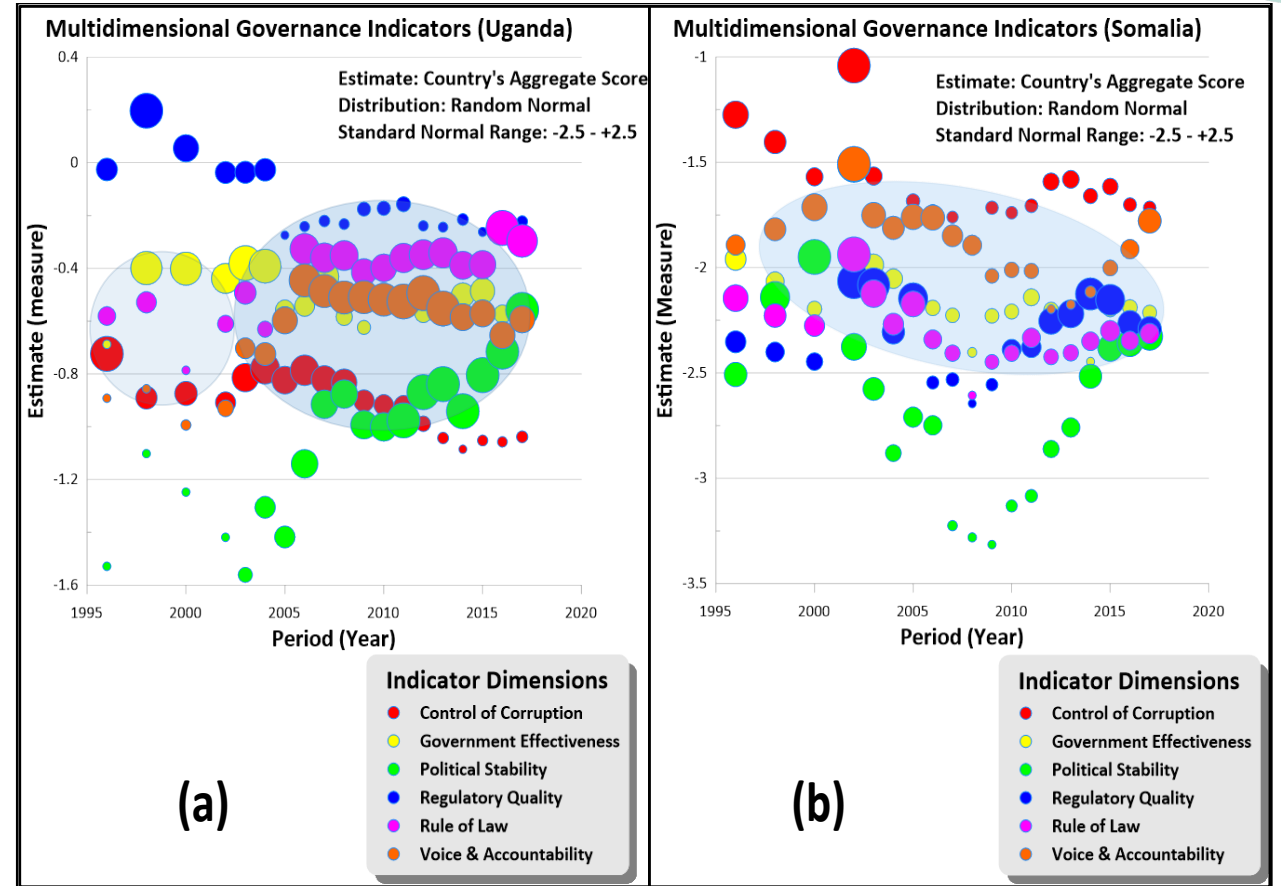


Figure 9: Bubble plot views drawn for governance attributes for (a) Uganda (b) Somalia

Conclusions

1. While achieving control of corruption, government effectiveness, transparency and fit-economics, innovative information systems and their articulations are needed to guide the governments and their businesses online worldwide.
2. The governance indicators facilitate the development of infrastructure associated with e-governments and their related e-businesses. We have made good use of multidimensional articulations that can accommodate a variety of multiple dimensions in diverse domains.
3. The influence of governance indicators on e-governance and e-businesses is explicit in our empirical research analysis. The governance indicators are treated as attribute dimensions, based on which the artefacts made, can connect and align in a way, the government and business establishments can cherish as pathways to ethic business advantages and benefits.
4. The data modelling and integrated framework discussed in the article are successfully implemented to achieve the e-governance and e-businesses objectives. The data analytics, visualization and interpretation provide new insights on IS framework and its implementation for e-governance and e-businesses for different countries.
5. The methodologies have a further scope of implementing and analysing individual member countries of United Nations (UN) and assess their governance, transparency and economic fit attributes for viable e-business solutions.