Graduate School of Business

The Influence of Atmospheric Cues on Online Impulse Buying across Product Categories: The Mediating Role of Consumer Impulsiveness

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This thesis is presented for the Degree of Master of Philosophy (Management) of Curtin University

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DECLARATION

"I, Farah Hasan Sarah, declare that the Master by Research thesis entitled "*The Influence of Atmospheric Cues on Online Impulse Buying across Product Categories: The Mediating Role of Consumer Impulsiveness*" is a presentation of my original research work. This thesis has no more than 60,000 words in length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes, except where this is appropriately cited through full and accurate referencing.

To the best of my knowledge, this thesis contains no material previously published by any other person except where due acknowledgment has been provided. The work was carried out by me for the degree of Master of Philosophy in Marketing under the guidance and supervision of Dr. Goi Chai Lee and Dr. Fayrene Chieng Yew Leh, Faculty of Business, Curtin University, Malaysia. This thesis also contains no material which has been accepted for the award of any other degree or diploma in any university.

The study obtained human research ethics approval from the Curtin University Human Research Ethics Committee (EC00262), Approval Number HRE2019-0041.

Farah Hasan Sarah (MPhil Candidate)

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ACCRONYMS AND ABBREVIATIONS			
OIBB	Online Impulse Buying Behavior		
IS	Information System		
B2C	Business-to-Consumer		
СМВ	Common Method Bias		
RQ	Research Question		
RO	Research Objective		
Н	Hypothesis		
DOI	Digital Object Identifier System		
EC	E-Store Content		
ED	E-Store Design		
EN	E-Store Navigation		
IMP	Impulsiveness		
DV	Dependent Variable		
IV	Independent Variable		
SEM	Structural Equation Modeling		
CB-SEM	Covariance Based Structural Equation Modeling		
CFA	Confirmatory Factor Analysis		
SD	Standard Deviation		
ANOVA	Analysis of Variance Apps Applications		
CR	Composite Reliability		
AVE	Average Variance Extracted		
RMSEA	Root Mean Square Error of Approximation		
AMOS	Analysis of Moment Structure		
CFI	Comparative Fit Index		
CMIN	Chi-Square Statistics		
PLS-SEM	Partial Least Squares Structural Equation Modeling		
ML	Maximum Likelihood		
GFI	Goodness of Fit Index		
AGFI	Adjusted Goodness of Fit Index		
NFI	Normed Fit Index		
SRMR	Standardised Root Mean Square Residual		
HREC	Human Research Ethics Committee		
NHMRC	National Health and Medical Research Council		

ABSTRACT

Online shopping is extensively recognised at the present time with the proliferation of ecommerce. Impulse buying behavior is one of the most important parts of online shopping. This research is guided by online impulse buying behavior and "Stimulus-Organism Response (S-O-R) model". Built on this model, the study strengthens its research gaps suggested by past studies to explore the direct and indirect relationship between different web atmospheric cues and online impulse buying behavior through the mediating role of impulsiveness. Moreover, in this study, a moderating role of product category is used to understand whether the influence of different atmospheric cues on online impulse buying behavior varies across different product categories. A total of 335 cross-sectional self-administered completed questionnaires are collected from the undergraduate students who have recent experience of online impulse shopping. Screening questions were used to get suitable respondents. Covariance-based structural equation modeling (CB-SEM) is used for data analysis. Specifically, measurement model is used to test the reliability and validity of the constructs while structural model is used to test the hypotheses. Both SPSS (version 17) and AMOS (version 20) software packages are used for analysing the data.

The results of this study supported the validity of S–O–R model in the context of online impulse-buying behavior. The study reveals that among the three different atmospheric cues namely e-store content, e-store design and e-store navigation, two factors (e-store design and e-store navigation) have significant direct and indirect effect on online impulse buying behavior via the mediating role of consumer impulsiveness. Results regarding moderation effect demonstrated that e-store content is insignificant across all three product categories whereas product category has moderating effect in the relationship between e-store design, e-store navigation and online impulse buying behavior.

The results of this study have significant theoretical and managerial implications. Theoretically, the study confirmed that different atmospheric cues have varying influence on online impulse buying behavior across different product categories where e-store content is not a determining factor. These findings have clear strategic implications for online retailers relating to tailoring different atmospheric cues for different product markets in stimulating impulse shopping decision, which would bring pleasant experience for online shopping community at large. This report ends with finding the major limitations of the study and suggesting for relevant future research.

Keywords: online shopping, atmospheric cues, impulse buying behavior, consumers' impulsiveness, electronic commerce.

Chapter 1: Introduction

Chapter 1 will provide an introduction of the dissertation. It will also broadly explain the phenomenon understudying the influence of atmospheric cues on online impulse buying behavior across product categories and the mediating role of consumer impulsiveness. The sections below will discuss about the general background of the topic and its justification, research context, statement of the problem, research gaps, research questions and objectives, research significance, and finally the thesis layout. Thesis layout will describe the structure of the dissertation of a whole.

1.1 Research Background

Researchers in marketing as well as information systems have been trying to understand online shopping behavior using different theoretical issues applied in bricks-and-mortar retailing since the beginning of e-commerce (Floh and Madlberger 2013). Online shopping is rapidly becoming a regular activity for many as the amount of time people spend on online activities such as social networking, gaming, and web browsing are increasing (Jiang, Yang and Jun 2013). A significant portion of online shopping is of impulse buying which is mainly contributed by tremendous growth of e-commerce and advanced information technology (Chan, Cheung and Lee 2017).

Verhagen and Van Dolen (2011) estimated that approximately 40% of all online purchase happens through impulse buying. Recent statistics suggest that in United States, 49% consumers aged from 18 to 24 years are online impulse buyers (Bedford 2019). Retailers from traditional commerce setting first realized the importance of this issue (Dholakia 2000) because a significant bulk of product sales is accounted for by impulse shopping (Parboteeah 2005). Consequently, digital marketers are heavily focusing on shopping mall site design so that they can attract more customers' attention than other competitors as the number of online shoppers increases rapidly (Kim and Shin 2016).

One such important issue is atmospheric cues in retail settings and its role in online shopping (Floh and Madlberger 2013). This is especially important for online impulse buying as impulse buying is primarily stimulus driven (Rook and Fisher 1995) where a typical online shopper spends about 30 seconds viewing a website before deciding to click away or stay on the site to browse for merchandise (Dawson and Kim 2010). A review of this body of

knowledge indicates that although the study of impulse buying starts from brick and mortar commerce setting along with environmental cues, but it is also studied vastly in online settings with atmospheric cues too (Parboteeah 2005).

In line with online shopping context, past researchers have attempted to understand the impact of different atmospheric cues on online shopping such as aesthetics (Cai and Xu 2011), background music (Ding and Lin 2012), colours (Cheng, Wu and Yen 2009), and the interaction effects of atmospherics and perceptual curiosity (PC) on consumers' emotional states (Koo and Ju 2010). Another study by Floh and Madlberger (2013) also investigated the influence of atmospheric cues specifically on online impulse buying behavior where they chose three categories of atmospheric cues namely e-store content, e-store design, and e-store navigation. A recent study also used colour and scents as olfactory cue to examine the multisensory effects (Kim and Shin 2016). Correspondingly, some researchers even recognized that website attributes are important atmospheric cues for online impulse purchases (Liu, Li and Hu 2013; Sheng and Joginapelly 2012; Wells, Parboteeah and Valacich 2011). However, less attention has been found in integrating product categories in examining the influence of different atmospheric cues on impulse buying. This is specifically scarce in the context of online impulse buying, though past studies recommended to include product categories in understanding online impulse buying behavior (Mallapragada, Chandukala and Liu 2016; Nagra and Gopal 2014; Dai, Forsythe and Kwon 2014).

Many past researchers used environmental psychology theories to analyse the stimulus driven online consumer behavior (Deng and Poole 2012; Li et al. 2011) and stimulus– organism–response (S–O–R) model was one of the key theories that is used in marketing research to examine the environmental cues and store atmospherics. Remarkably, Chang et al. (2010) successfully applied S–O–R theory on impulse buying research in the brick-and-mortar context. The current study focuses on the influence of web atmospheric cues (i.e. web environment) on online impulse buying behavior moderated by product categories and mediated by consumer impulsiveness. Thus S–O–R theory is deemed appropriate theoretical lens to understand these relationships on online consumer behavior (Chan et al. 2017). Specifically, the current study integrates atmospheric cues as stimulus (S), impulsiveness as organism (O), and online impulse buying as response (R) under S-O-R framework, where product category is used as moderating variable to address the research gap.

Prior research suggested that generational cohorts are a more efficient way than just by age for segmenting market (Lissitsa and Kol 2016; Schewe, Meredith and Noble 2000). Generational cohorts refer to "several generations were distinguished based on the specific time periods into which people were born and the time periods they grew up in" (Hemlin et al. 2014, 151). Gurău (2012) identified different generational cohorts who are born in different eras such as Baby Boomers (between 1946 and 1960), Generation X (between 1961 and 1979) Generation Y (between 1980 and 1999). Another new generation has been emerged and known as Generation Z (between 1995-2015) who are basically raised with social websites and can be identified as technology and digital centric (Singh and Dangmei 2016).

Generation Y (= Gen Y) members are known as Millennials, because they are considered as first high-tech generations (Norum 2003) and in terms of shopping, they are also perceived as consumption oriented and sophisticated (Jackson, Stoel and Brantley 2011). Furthermore, in the world population, Gen Y were found to consist more than 25 percent and they can make faster decision with less deliberation (Bilgihan, Okumus and Cobanoglu 2013). Interestingly, Gen Z is known as post millennials, i-Generation or dotcom-children (Hoque 2018a). This generation is born and raised in the digital world and are more connected with electronic devices which is basically distinguishing them from the older generations (Singh and Dangmei 2016). However, although Gen Z is known as digital generations, this segment is being ignored by many studies (Hoque et al. 2018b). According to Rahman (2015), people from age group of 18-25 who are undergraduate students have been clearly defined as Gen Y in the context of Bangladesh. In contrast, a study by Hoque (2018a) claimed that Gen Z includes those who are less than 25 years old. Considering this differences in opinion, the current study focuses on both Gen Y and Gen Z as the target population to understand their online impulse buying behavior.

1.2 Research Context

The world is glorified as "Digital Age" due to the gigantic increasing rate of internet users in all parts of the world. Asian countries are not lagging behind as there is an impressive digital growth trend in Asia in the past decade (TNT 2018). Similarly, Bangladesh, a South Asian developing country, is moving very fast in its digital pathways through the growing percentage of its per capita income and huge production of cheaper smart devices (Farhana, Khan and Noor 2017). The internet user of Bangladesh is gradually increasing every year. According to recent statistics (see Figure 1.1), Bangladesh has been ranked fifth largest internet

using country among the rapidly growing world of internet users in Asia (Internet World Stats 2018).

No of	Internet Users 2000	Country	Internet Users 2017
Positions			
1.	22 million	China	772 million
2.	5 million	India	462 million
3.	2 million	Indonesia	143 million
4.	47 million	Japan	118 million
5.	0.1 million	Bangladesh	80 million
6.	2 million	Philippines	67 million
7.	0.2 million	Vietnam	64 million
8.	2.3 million	Thailand	57 million
9.	19 million	Korea, South	47 million
10.	0.13 million	Pakistan	44 million

Table 1.1 The growth of top 10 countries Internet usage in Asia since 2000

(Source: Internet World Stats 2018)

It has just recently crossed the milestone of 100 million people who got access to the internet in Bangladesh in March of 2020 (Xinhua 2020), which was 80 million in 2017 (BTRC 2017) and 0.1 million in 2000 (Internet World Stats 2018). This also contributed to the remarkable growth of electronic retailing targeting to tech savvy customers (Farhana, Khan and Noor 2017).

A recently published report about the e-commerce condition in the Global South showed that the total national percentage of internet users in Bangladesh is 13% (After Access 2018). Moreover, in 2017, about 167 different electronic retailers targeted 54 million internet users along with 133 million mobile users in Bangladesh (Farhana, Khan and Noor 2017). In line with the increasing use of internet, online shopping is also exponentially increasing in Bangladesh ranging from paying the internet bills to ordering foods from online food sellers (Hasan 2018). According to Islam (2018), 1000 established e-commerce sites are currently available in the country. In fact, many traditional brick-and-mortar retailers are also now entering into online platform to reach to their customers.

Online shopping is growing especially in the capital city of Bangladesh which is Dhaka. The primary reason for the increase in online shopping is that Dhaka is the world's third most densely populated mega city with 23,234 people living in per square km where traffic jam is tremendous during the day time around the city (World Population Review 2018). While in

brick-and-mortar shopping context consumers need to visit physical stores to buy goods, online retailers create the opportunity to reach consumers directly across world (Al-Maghrabi, Dennis and Halliday 2011). A recent study on consumers' online shopping tendency in Bangladesh was conducted by some students of Urban and Regional Planning Department of BUET (Bangladesh University of Engineering and Technology) in 2018. Their study came up with the reasons that Bangladeshi consumers prefer online shopping because they want to avoid traffic jam (45.7%), to save their time (40.8%), to scan their desired items easily from huge collections (29.9%) and finally to reduce the transportation costs (25.2%) (Mahbub 2019). Therefore, people often choose to buy from online as it is a hassle-free shopping environment and they can also save their energy and money. The most popular form of e-commerce in Bangladesh is B2C (business to consumer) than B2B (business to business) and the market share were found to be 90% and 10% respectively (Islam 2018). Hence, this study will focus on B2C.

To deal with customers' choice for shopping different categories of product, a variety of retailers can be found in selling wide categories of product to satisfy their customer. Some very popular online shopping sites available in Bangladesh that deal with selected product categories are Rokomari.com (number one online bookshop in Bangladesh), Chaldal.com (number one online grocery shop in Bangladesh), iferi.com (for home living products), Sheba.xyz (for home services), HungryNaki.com (online food delivery system in Bangladesh) and Branoo.com (best online shopping store in Bangladesh for branded products). Some mixed categories of online shopping websites are also present that sell varieties of product in one platform such as Daraz.com.bd (selling fashion, electronics and mobile), Pickaboo.com (for mobile and electronics), and Bagdoom.com (for fashion, watches and electronics items) (Hasan 2018). These different online retailers in Bangladesh attract customers to purchase impulsively from them using different promotional offers.

Attitude toward a behavior refers to the extent to which an individual has a favorable or unfavorable evaluation or appraisal of any specific behavior to be acted on (Farhana, Khan and Noor 2017). Similar cases can be found in the context of online shopping when consumers often feel an urge to buy immediately from online when they see a good review of a product or services especially for cosmetics and apparel items because these are the highly demandable products that are being purchased frequently. Online impulse buying behavior were mostly studied in the developed countries by the previous researchers (e.g., Chan, Cheung and Lee

2017; Wells, Parboteeah and Valacich 2011; Parboteeah, Valacich and Wells 2009) and some developing countries such as India (e.g., Muruganantham and Bhakat 2013; Mohan, Shivakumaran and Sharma 2013), Pakistan (e.g., Bashir et al. 2013; Nazir et al. 2012) and China (e.g., Wang 2015; Liu, Li and Hu 2013) who provided their contribution in this particular issue.

In the context of Bangladesh, researchers focused some basic factors that are affecting online buying behavior and moving the youth groups towards it. More precisely, past studies in the context of Bangladesh included trust (Rana and Islam 2019; Islam 2019; Farhana et al. 2017; Tabassum, Khan and Farhana 2017), attitude (Rana and Islam 2019; Islam 2019; Tabassum, Khan and Farhana 2017), convenience (Datta and Acharjee 2018; Farhana et al. 2017; Tabassum, Khan and Farhana 2017), price (Farhana et al. 2017; Tabassum, Khan and Farhana 2017), price (Farhana et al. 2017; Tabassum, Khan and Farhana 2017), price (Farhana et al. 2017; Tabassum, Khan and Farhana 2017). The main reason of focusing in these topics is the increasing maturity of Bangladeshi consumers' internet usage. Currently, more than 7000 e-commerce firms are operating their businesses online (both website and social media) which have been extended beyond the borders of Dhaka city (capital) towards the semi-urban and rural areas too (Rahman et al. 2018; Azad 2015). Moreover, Azad (2015) has revealed that 22% consumers in Bangladesh used Internet for online shopping and annually they spent Tk 7594.10 on average. Hence, previous researchers focused on the topics discussed above to understand the consumers' attitudes and intentions towards online shopping.

Past studies mainly focused on the factors that are affecting online shopping behavior of Bangladeshi consumers (Rana and Islam 2019; Akter and Saifuddin 2018; Datta and Acharjee 2018) to identify the key factors that influence individual consumers' online purchase intensions. As mentioned above, the most significant factors found from these studies are trust, price, and convenience that influence consumers to shop online (Islam 2019; Datta and Acharjee 2018; Farhana, Khan and Noor 2017). A detailed literature table is attached in chapter 2 (see Table 2.3). Therefore, to the best knowledge of the researcher, the study on online impulse buying behavior was limited but not available online in the context of Bangladesh. Thus, this is the uniqueness of the current study.

Moreover, the influence of different atmospheric cues on online impulse buying varies across different product categories has not yet been discovered. As internet users are growing exponentially with 49% new online shopping visitors and 51% returning visitors (Rahman et al. 2018), therefore, Bangladesh is considered as the appropriate context to fill this research gap where the number of category specific online retailers is increasing.

Data of Bangladesh Cosmetics and Toiletries Manufacturers Associations (BCTMA) showed that the annual turnover of cosmetics products in Bangladesh reached Taka 150 billion in 2014 and majority consumers in the upper middle income class are purchasing imported cosmetics (Bhowmik, Akash and Ahmed 2017). Therefore, cosmetic products are in high demand among Bangladeshi consumers. Another product with higher demand in Bangladesh is apparel products. A recent study in Bangladesh reported that 33.75% online shoppers prefer to buy apparels online, 30% consumers buy accessories (e.g. cosmetics) online (Rahman et al. 2018) and 15% consumers prefer to buy electronics online (Rahman 2015). Clearly, apparels, cosmetics and electronics account for a major share of online shopping in Bangladesh.

1.3 Research Problem

Online shopping is a regular activity for an increasing number of people because nowadays they spend enormous amount of time on different online activities such as visiting social networking sites, gaming, and web browsing. As they spend a significant amount of time on online activities, their intension includes shopping online to avoid visiting shopping malls while saving time. This changing trend of consumers' preference to online shopping has led many retailers to shift to online retailing as an attractive platform. This has also contributed to the surging growth of competition in electronic commerce.

Impulse buying is one of the most important parts of online shopping category, where online retailers can persuade their customers to buy impulsively. Theoretically, impulse buying is primarily stimulus driven. It indicates that during impulse buying, consumers take sudden and immediate decisions to buy a product. Therefore, the key challenges for the researchers are to identify those factors which influence online impulse buying and design those stimuli accordingly.

Initially, early studies have conducted the study on impulse buying in the context of brick-and-mortar retailing where they found that environmental cues have a positive and significant effect on impulse buying. More precisely, store atmospherics such as window display, store layout, architecture, background music and colours can substantially increase the consumers' unplanned shopping expenditure and time in a retail shop. Based on the findings of impulse buying on a retail store context, IS (Information System) researchers are also focused to see the impact of atmospheric cues in an online impulse buying. Later on, in last few years, the IS researchers have attempted to understand the impact of different atmospheric cues on online shopping in general as well as on online impulse buying. They also showed significant influence of product categories on consumers' willingness to shop online (Mallapragada, Chandukala and Liu 2016; Dai, Forsythe and Kwon 2014; Nagra and Gopal 2014).

Critical analysis of these findings lead to one important research question that requires researchers' attention: does the influence of different atmospheric cues on online impulse buying behavior vary across different product categories? It is very important to know because not all stimuli influence impulse buying of all products equally. Previous studies suggested that consumer preferences usually vary between different product attributes whether they prefer online shopping and traditional outlets based on the importance of specific type of product. Thus, this study focuses on product category as a moderating factor to investigate whether the influence of different atmospheric cues varies across product categories.

Furthermore, early studies also indicated that the influence of different stimuli on impulse buying may also depend on the degree of individual consumer's impulsiveness. The reason discovered was that website quality can increase an urge for consumers to buy impulsively. Although many studies integrated impulsiveness as a moderating variable and some as mediating variable in the context of online settings, the researchers did not focus whether different atmospheric cues have both direct and indirect effect on consumers' online impulse buying tendencies. Thus, this study will also measure the mediating effect of consumer impulsiveness in the context of atmospherics cues and online impulse buying behavior.

These relationships will be measured by integrating different atmospheric cues (e.g., estore content, e-store design, and e-store navigation) where they will act as independent variables, product category as grouping variable (moderator) and consumer's impulsiveness as mediating variable. It is very important to understand these relationships for online retailers so that it can help them to tailor to different atmospheric cues for different product categories for specific target market to induce online impulse shopping

1.4 Research Gap

Based on the literature review, the current study addresses two research gaps in this context. These two research gaps are presented in the following sections.

1.4.1 Research Gap 1

First of all, majority studies that extant on online shopping context have investigated the role of environmental cues in general (e.g., Thomas, Kavya and Monica 2018; Koo and Park 2017; Prashar, Vijay and Parsad 2017) as well as on online impulse buying (e.g., Godara 2019; Lin and Liu 2019; Floh and Madlberger 2013). These studies focused on the factors of different atmospheric cues and its impact on online impulse buying tendencies. However, less attention has been found in integrating product categories in understanding online impulse buying behavior. Specifically, the influence of different atmospheric cues on impulse buying has not been empirically tested across product categories. Therefore, this research will extend its findings more specifically by using three product categories such as apparel, cosmetics and electronics as a moderating effect in the S–O–R framework to see whether the influence of different atmospheric cues on online impulse buying varies across these three product categories.

1.4.2 Research Gap 2

The second research gap refers to the impact of individual's level of impulsiveness on their tendency to buy online impulsively. Several studies examined the influence of impulsiveness on consumers' tendency who buy impulsively in the context of both offline (Parsad, Prashar and Sahay 2017; Beatty and Ferrell 1998) and online (Zhang et al. 2018; Wells, Parboteeah and Valacich 2011). In fact, in the offline shopping context, previous researchers found that consumer impulsiveness enhances the influence of environmental cues on their shopping behavior. However, such effect has not been proposed or empirically tested in the context of online impulse buying behavior. Since most of the past studies in online impulse buying has used the S–O–R framework for justifying the mediating or indirect relationships in their studies, current study will extend its finding more specifically by using the consumers' impulsiveness tendency as a mediating effect on the relationship between the atmospheric cues and online impulse buying behavior in the S–O–R framework. The literature table (see table 2.1) in chapter 2 shows the summary of corresponding studies done by early studies about consumer impulsiveness.

1.5 Research Questions

Based on the literature review, this thesis developed the following research questions that are specific in nature:

1.5.1 Research Question 1

Does e-store content as an atmospheric cue influence online impulse buying behavior?

1.5.2 Research Question 2

Does e-store design as an atmospheric cue influence online impulse buying behavior?

1.5.3 Research Question 3

Does e-store navigation as an atmospheric cue influence online impulse buying behavior?

1.5.4 Research Question 4

Does the degree of consumer impulsiveness mediate the relationship between e-store content, e-store design, e-store navigation and online impulse buying behavior?

1.5.5 Research Question 5

Does the product category moderate the influence of e-store content, e-store design and e-store navigation on online impulse buying behavior?

1.6 Research Objectives

The proposed research aims at attaining the following objectives:

1.6.1 Research Objective 1

To examine the influence of three atmospheric cues (i.e e-store content, e-store design and e-store navigation) on online impulse buying behavior

1.6.2 Research Objective 2

To test the mediating effect of consumer impulsiveness in the relationship between atmospheric cues and online impulse buying behavior

1.6.3 Research Objective 3

To determine the moderating effect of product category on the relationship between atmospheric cues and online impulse buying behavior.

1.7 Summary of Research Questions and Objectives

Based on the above discussions of research objectives and research questions, table 1.2 has summarised research objectives, research questions and hypothesis for clearer presentation.

No.	Research Objectives	Research Questions	Hypothesis
1.	RO 1 : To examine the influence of atmospheric cues on online impulse buying behavior	 RQ 1: Does e-store content as an atmospheric cue influence online impulse buying behavior? RQ 2: Does e-store design as an atmospheric cue influence online impulse buying behavior? RQ 3: Does e-store navigation as an atmospheric cue influence online impulse buying behavior? 	Hypothesis 1, 2, 3
2.	RO 2: To test the mediating effect of consumer impulsiveness in the relationship between atmospheric cues and online impulse buying behavior	RQ 4: Does the degree of consumer impulsiveness mediate the relationship between e-store content, e-store design, e-store navigation and online impulse buying behavior?	Hypothesis 4, 5, 6
3.	RO 3: To determine whether the influence of different atmospheric cues on online impulse buying behavior varies across product categories	RQ5: Does the product category moderate the influence of e-store content, e-store design and e-store navigation on online impulse buying behavior?	Hypothesis 7a, 7b, 7c

 Table 1.2: Summary of research questions, objectives and hypothesis

The table represents that the first research objective (RO1) addresses first three research questions (RQ1, RQ2, and RQ3) and first three hypotheses (1, 2, 3). Specifically, first research objective aims at examining the influence of atmospheric cues on online impulse buying behavior. This research objective addresses three research questions (RQ1, RQ2, and RQ3) regarding the potential influence of three specific atmospheric cues including e-store content, e-store design and e-store navigation on online impulse buying behavior. These three RQs will then be answered by testing three corresponding hypotheses (H1, H2, and H3). The second research objective aims at determining the mediating effect of consumer impulsiveness in the relationship between atmospheric cues and online impulse buying behavior. This research objective addresses one research question (RQ4) regarding the possible mediating influence of consumer impulsiveness in the relationship between three specific atmospheric cues and online impulse buying behavior. This RQ on possible mediating effect will be answered by testing three corresponding hypotheses (H4, H5, and H6). Finally, the third research objective aims at examining whether the influence of different atmospheric cues on online impulse buying behavior varies across product categories. This research objective will be achieved by answering one research question (RQ5) on possible moderation effect of three product categories on online impulse buying behavior. Subsequently, this research question on possible moderating effect will be answered by testing three hypotheses (H7a, H7b, and H7c) on moderating effect of product categories on online impulse buying behavior.

	Table 1.3 – Definition of terms				
No.	Constructs	Definition	References		
1.	Online Impulse Buying Behavior	Consumers' quick online purchase responses with no pre-planned intentions which is spontaneous and instant.	Chan, Cheung and Lee 2017; Gwee and Chang 2013; Atici and Bati 2010.		
2.	Atmospheric Cues	"A conscious designing of space and its various ddimensions to evoke certain effects in buyers" which can be used both in traditional shopping and online shopping context. For example, colour, layout, sound, smell, lightings are used in brick-and-mortar shopping while graphics, text, audio, colour, and streaming video,	Floh and Madlberger 2013; Eroglu, Machleit and Davis 2003; Childers et al. 2001.		

1.8 Definition of Terms

		navigations and contents are used in online context.	
3.	E-store content or information	"All of the communicated material that is available on a website" such as product characteristics, price related offers, information content, product return policy etc.	Floh and Madlberger 2013.
4.	E-store design	"The degree to which a person believes that the e-store is aesthetically pleasing to the customer" such as using of colours, fonts, images, shapes, animations, and overall layout of a website.	Hasan 2016; Li and Yeh 2010; Van der Heijden et al. (2003a, 544).
5.	E-store navigation	"It is the organization and hierarchical layout of the content and pages in a Web store" which includes directions, menus, buttons, frames, site maps, subject trees, mage map and colours.	Cao, Zhang and Seydel 2005; Montoya-Weiss, Voss and Grewal (2003, 499)
6.	Consumer Impulsiveness	"It is a tendency of a customer to buy goods and services without planning in advance" which is also known as the " <i>spur of moment</i> " of buying decision of a consumer.	The Economic Times 2020

1.9 Significance of the Study

In recent years with the advancement of technology, online shopping has become a part and parcel of everyday life. People spend a large amount of time in different website activities and they visit many webpages to complete their shopping and this saves their time, energy and money. Thus, many online retailers are emerging while traditional offline retailers are also switching their retailing businesses to online platform to gain competitive advantage.

In online shopping context, one important part of shopping is impulse buying context where marketers persuade their customers to buy impulsively from online platforms. The tremendous growth of e-commerce as well as rapid advancement of information technology has further accelerated the online impulse buying in recent years (Chan, Cheung and Lee 2017). In fact, in response to rapid increase of online shopping, online retailers are increasingly focusing on shopping site design to attract shopper's attention (Kim and Shin 2016).

Researchers identified that impulse buying is stimulus driven and many past studies investigated the influence of atmospheric cues in online shopping context (Floh and Madlberger 2013; Ding and Lin 2012). Past studies have already examined the impact of different online environmental attributes on impulse purchases (Wells, Parboteeah and Valacich 2011; Kukar-Kinney et al. 2009; Adelaar et al. 2003). However, product category is an important consideration in online shopping as consumers cannot touch or smell the product but purchase according to the presentation made by the marketers. Therefore, whether the influence of different atmospheric cues on online impulse buying varies across different product categories remains an important research question which has not yet been explored, though it is recommended by scholars to include product categories in the context of online shopping (e.g., Mallapragada, Chandukala and Liu 2016; Nagra and Gopal 2014). Furthermore, the influence of different stimuli on impulse buying also may depend on the degree of individual consumer's impulsiveness. It is very important to investigate this area because not all stimuli may equally influence impulse buying of all products among customers with different levels of impulsiveness.

Theoretically, the study aims at adding to the literature of online retailing by integrating product category and consumer impulsiveness as new dimensions into stimulus-organism-response (S-O-R) theoretical framework which has been widely used for studying the effects of atmospheric cues on an individual's behavior (Parboteeah 2005). Managerially, the findings of the study would aim at assisting the online retailers in tailoring different atmospheric cues for different product categories for different target markets.

1.10 Summary

This chapter is basically presenting an overview of the general structure of the entire thesis. It also provides an adequate thesis layout which can be seen in Figure 1.2. the thesis layout will discuss the main issues covered in the entire study.

This thesis is organized in six main chapters. The chapter titles and the corresponding contents are outlined the following figure (Figure 1.2). In chapter 1, the research background and research context of online sopping behavior in the context of Bangladesh have been discussed. Then, the research problem is identified from the past studies. Based on that point, research gaps are discussed along with research questions and objectives. Finally, the significance of the study is explained.

Chapter 2 discusses the literature review of online impulse buying behavior and atmospheric cues in detail. Then the hypotheses of e-store content, e-store design, e-store navigation, impulsiveness and product category are developed based on the research outlines. These hypotheses are formulated based on the extensive literature review and associated field study findings. At the end of this chapter, the conceptual framework is presented based on the S-O-R Theory.

Chapter 3 presents the research methodology and research design of the current study. In the beginning of this chapter, the research is processed for quantitative study, while designing of the questionnaire and pre-testing the questionnaires are discussed. After that, this chapter illustrates the sample selection, data collection and data analysis techniques in detail. Later, the assessment of both measurement model and structural model is described. Lastly, the fitness of the model is provided along with the ethical considerations.

In chapter 4, the presentation and interpretation of hypotheses testing are presented. The hypotheses that are supported are complemented with viable propositions. Furthermore, the hypotheses that are not supported are provided with plausible explanations.

Finally, Chapter 5 provides the discussion and implication of the current study. Here, a brief summary of hypotheses results is explained in line with the research objectives and questions. This chapter also discusses the significant theoretical and managerial contributions for both the academicians and related online industry players. Similarly, it concludes with key summary findings of this study. It also discusses about the limitations that are faced during the projection of this study. In the last part, this study suggests the directions for future research under recommendations.



Figure 1.1: Thesis layout

Chapter 2: Literature Review

2.1 Introduction

Chapter 2 presents a comprehensive relevant literature review. This chapter starts with the definition and discussion about atmospheric cues and online impulse buying behavior attached with a relevant literature table. Next, the chapter presents the details of relevant literature review regarding different online atmospheric cues (e-store content, e-store design, e-store navigation) and corresponding hypotheses. The chapter also provides a detailed literature review regarding the mediating influence of consumer impulsiveness and moderating influence of product categories on online impulse buying behavior, followed by corresponding hypotheses. The chapter ends with presenting the proposed research framework.

2.2 Online Impulse Buying Behavior

Impulse purchase occurs to consumers when they experience a quick, usually habitually and instant urge of buying something (Akram et al. 2018). According to Rook (1987), impulse buying is hedonically complex and it has the power that stimulates consumers towards emotional conflicts for buying a product. Although consumers do not have any intension to purchase any product while entering into the stores, they experience an immediate and sudden purchasing desire after seeing those products (Chih, Wu and Li 2012). A very recent metaanalytic review identified a range of internal and external factors influencing impulse buying including utilitarian and hedonic motives, consumer resources such as time and money, and different marketing stimuli (Iyer et al. 2020). Recent studies also revealed that store environment has influence on consumers' impulse buying behavior (e.g. Atulkar and Kesari, 2018; Husnain et al. 2019). Correspondingly, online impulse buying is also influenced by numerous factors such as enjoyment, hedonic and utilitarian benefits, social shopping, adventure shopping, idea shopping, and visual attraction. These factors lead customers for unplanned purchases (Akram et al. 2018; Xiang et al. 2016). Chan, Cheung and Lee (2017, 1) defined online impulse buying as "a sudden and immediate online purchase with no preshopping intentions".

The term "impulse buying" is very popular nowadays for online shopping (Madhavaram and Laverie 2004). Although the importance of impulse shopping was first identified over sixty years ago in the marketing literature (Clover 1950), but in the context of online impulse buying behavior, it was studied by Adelaar et al. (2003) who explored how the

effect of different media formats (text, still image, and music video) affect the consumers' intentions on impulse buying behavior. Consumers' emotions, spontaneous behavior, low cognitive control, and appealing objects are the elements of online shopping behavior which trigger consumers for impulse purchases without considering the financial and other aspects of online shopping (Sharma, Sivakumaran and Marshall 2010). Based on this standpoint, some scholars found that internet shoppers are more impulsive in nature than traditional shoppers (Akram et al. 2018; Chan, Cheung and Lee 2017; Park et al. 2012). However, some scholars argue that offline impulse buying is slightly more encouraging than online impulse shopping (Aragoncillo and Orus 2018). For example, if a customer idly browses iTunes for spending some quality time and purchases a song without any pre-shopping intension would be considered as pure impulse purchase (Verhagen and van Dolen 2011).

Wu, Chen and Chiu (2016) have shown that 82 percent consumers are now buying their goods impulsively whereas in 2010, the percentage was only 50 percent (Dawson and Kim 2010). Almost eighty per cent of young consumers do impulse shopping online (Carter 2018). The main reason behind this phenomenon is a significant growth of e-commerce and advanced information technology (Chan, Cheung and Lee 2017). Verhagen and van Dolen (2011) also reported that impulse shopping contributes to about 40 percent of total money shoppers spent e-commerce platform. Park et al. (2012) elucidated that the nature of online consumers is more spontaneous than the consumers in traditional stores. Generally, impulse buying is driven by some factors such as consumers' emotions, economic positions, personality, low cognitive control, time pressure, social visibility, location and sometimes cultural factors that trigger impulse buying among consumers without them considering the monetary aspects of online shopping (Sharma, Sivakumaran and Marshall 2010). Based on this viewpoint, some academics found that internet shoppers are more impulsive in nature than non-online shoppers (Liu, Li and Hu 2013).

When consumers decide to buy from online stores, they always want an easy access of products in the form of click ordering, hassle-free delivery, and absence of social pressure, where these conveniences encourage them to act impulsively (Jeffrey and Hodge 2007). Prior research showed that consumers often engage in impulse buying based on particular factors and using of website was found to be the biggest driver among them (Deng and Poole 2012; Zhang, Prybutok and Koh 2006). Previous studies also found the relationship between website attributes and online impulse buying decisions where website attributes such as information

fit-to-task, product availability, visual appeal and ease of use affect the emotions and personality of consumers' which finally trigger them for online impulse buying decisions (Liu, Li and Hu 2013; Verhagen and Dolen 2011; Wells, Parboteeah and Valacich 2011). A study by Zhang et al. (2018) enlightened that high impulsive consumers focus on hedonic values whereas low impulsive consumers are utilitarian in nature. The relevant literature summary of online impulse buying behavior is presented in Table 2.1 below.

S N	Author, Year	Independent variable	Mediati ng variable	Moderati ng variable	Sample, Country and Subject type	Key finding
1.	Ahmad et al. 2019	Self-esteem, hedonism, shopping enjoyment, impulse buying tendency, fashion involvement	Positive mood	None	300 Pakistan Consume rs	Positive mood, impulse buying tendency and fashion involvement significantly affect impulse buying behavior. Conversely, self- esteem, shopping enjoyment and hedonism insignificantly affect impulse buying behavior.
2.	Farid and Ali 2018	Openness, Conscientiousn ess, Extraversion, Agreeableness, Neuroticism,	None	None	381 Pakistan Consume rs	Significant effects of openness, extraversion, conscientiousness and neuroticism and insignificant effect of agreeableness on IBB studies.
3.	Khawaja 2018	Age, gender, income, musical appeal, sexual appeal, fear appeal, humour appeal	None	None	300 Lebanon hyperma rket customer s	Demographic factors (e.g. age, gender, income) and musical appeal, sexual appeal, fear appeal, and humour appeal positively influence impulse buying behavior.

Table 2.1: List of studies on online impulse buying behavior

4.	Zhang et al. 2018	Utilitarian value, hedonic value	Browsin g, urge to buy impulsiv ely	None	315 China Students	Consumers with high impulsiveness focus on hedonic value and consumers with low impulsiveness focus on utilitarian values in case of reading online reviews.
5.	Handaya ni et al. 2018	Experimental marketing, shopping enjoyment, impulse buying	None	None	150 Indonesi a Women consume rs	Experimental marketing and shopping enjoyment influence impulse buying which impacts happiness.
6.	Sofi and Nika 2017	Extensive planning, Prudence and cognitive deliberation, High regard to potential consequences, belief, undesirable advocacy, cognitive dissonance and affirmative buying sensations	None	Gender Difference	624 India Consume rs	Intrinsic factors significantly influence impulsive buying decision
7.	Pradhan 2016	Product category, financial independence, availability of money, mood of consumers, pos terminal / atm facility, price. Store layout, availability of time, product promotion, store environments,	None	Age, gender, occupation , income, marital status	200 Nepal Primary data: Retail Consume rs and secondar y data: reports, past research, publishe d articles and journals	Product category and financial independence has an insignificant role in influencing impulsive buying behavior.

		reference groups				
8.	Wu and Lee 2016	Experiential marketing, brand image, impulse buying behavior	Experien tial marketin g	None	160 Taiwan Outlet consume rs	Consumption situation and experiential marketing positively influence brand image leading consumers toward impulse buying behavior.
9.	Ozer and Gultekin 2015	Impulse shopping trend, Pre-shopping mood	Satisfacti on	None	207 Turkey Retail store customer	Consumer impulse buying tendency and pre-purchase mood positively influence impulse buying whereas post-purchase mood does not influence impulse buying.
10.	Badgaiy an and Verma 2014	personality, culture, materialism, shopping enjoyment tendency, impulsive buying tendency	None	Gender, age	508 India Retail store customer	Although situational variables have a significant impact on impulse buying behavior, gender and age do not have positive impact on impulse buying behavior.
11.	Lin and Chuan 2013	Information content, interactive attributes, trust, pleasure, impulse buying traits	None	None	115 Undergra duate students	Information quality and interactive features are affected by consumers' impulsive purchase behavior.
12.	Jiang, Yang and Jun 2013	Access convenience, Search convenience, Evaluation convenience, Transaction convenience, Possession/post	None	None	550 Hong Kong Online survey consume r	Five identified dimensions (such as access, search, evaluation, transaction, and possession/post- purchase convenience has a significant and positive effect on

		-purchase convenience				customers' perceived online shopping convenience.
13.	Chih, Wu and Li 2012	Normative evaluations, Positive affect, Buying impulsiveness	Normati ve evaluatio ns, Positive affect, Buying impulsiv eness	None	364 Taiwan Online survey	Hedonic consumption needs, impulsive buying tendency, positive affect, and normative evaluations have a significant and positive impact on buying impulsiveness.
14.	Verhage n and Van Dolen 2011	Merchandise Attractiveness, enjoyment, website communication style, ease of use	Consum ers' emotions	None	532 Dutch online store customer	Merchandise attractiveness, enjoyment, and online store communication style have significant effect on impulse buying behavior which is mediated by consumers' emotions.
15.	Lee and Yi 2008	Arousal, perceived risk	None	Buying impulsive ness trait	163 Korea Retail Shoppers	Perceived risk negatively connected with impulse buying behavior. Pleasure acted as a predictor of impulse buying intension. Buying impulsiveness trait moderately affects pleasure and impulse buying intension.

Floh and Madlberger (2013) found in their study that atmospheric cues have significant implications in online shopping environment which was previously established by Baker (1986). Marketers can manipulate the atmospheric cues of a retail store in a brick-and-mortar shopping context to attract impulse purchasers (Rook and Fisher 1995). Likewise, the manipulation of online environment can also lead consumers to impulse purchases which was

previously examined by several researches (Parboteeah, Valacich and Wells 2009; Kukar-Kinney et al. 2009; Adelaar et al. 2003). These environmental cues can influence consumers' behavior which are also known as website characteristics (Wells, Parboteeah and Valacich 2011). Zhang et al. (2006) found that among all the website characteristics, ease of use of the web site was found to be the biggest driver of impulse purchases. Designing a home page of the website can affect significantly on the level of impulse purchases (Zhang et al. 2006). Such study was also previously done by Donovan et al. (1994) in a traditional retail context who concluded that store atmospherics can significantly increase the time and spending capacity of impulse buying.

Based on these solid empirical evidence that provide clearer understanding about online impulse buying behavior, thus it can be postulated that the quality of the website (environmental cue) can influence a consumer in online impulse buying behavior (Wells, Parboteeah and Valacich 2011).

2.3 Atmospheric Cues

Atmospheric cue is an important aspect which has been developed in bricks-and-mortar retailing concepts and it also possesses significant implications in online shopping behavior (Floh and Madlberger 2013). Rayburn and Voss (2013) refer atmospheric cues of a website to elements that provokes consumers' online shopping intensions such as ease of navigation system, portals effectiveness, site aesthetics and informative content of a website. Dailey (2004) defines web atmosphere as a collection of atmospheric cues that increases buyers' purchase possibility through favourable consumer responses. A study also suggested that building these online environments will help retailers to provoke shoppers and create an impact on shoppers' perception about e-retailing (Rayburn and Voss 2013).

Back in 1986, Baker demonstrated the importance of atmospheric cues in store atmosphere in his early studies and other researchers (Dawson and Kim 2010; Youn and Faber 2000) also found that smells, sights, sounds, store layouts etc. are the environmental cues of a retail environment which had been considered as external stimuli that can help consumers in triggering their impulse buying tendencies. The main features of the environment factors are social, design (e.g., color and layout) and ambient factors (e.g., sound, smell, and lighting) (Eroglu, Machleit and Davis 2003). Marketers can manipulate these factors by stimulating five senses to improve the store environment (Kim and Shin 2016). For example, Baker et al. (2002) identified that perceived merchandise value and patronage intensions are significantly influenced by social, design, and ambient factors. Even marketers manipulate atmospheric cues to trigger impulse purchases in a retail shopping context (Wells, Parboteeah and Valacich 2011). Kim, Kim and Lennon (2009, 7) identified that although there is an effect of atmospheric cues on consumer behavior in a physical environment, "web atmospheric cues (sometimes called a website's 'look and feel') also affect consumers' emotional and cognitive states, thereby influencing their purchase intentions".

The significant impact of store atmospheric cues on consumers' online shopping behavior has been demonstrated by the Information Systems (IS) researchers in last few years (Floh and Madlberger 2013; Ding and Lin 2012; Cai and Xu 2011). For example, a conceptual model was proposed by Eroglu, Machleit and Davis (2001) where they examined how the atmospheric qualities potentially influenced a virtual store. Numerous researchers have also examined the characteristics of the online environment and its effect on impulse purchases (Wells et al. 2011; Kukar-Kinney et al. 2009). According to Turley and Milliman (2000), consumers can stay, browse, evaluate and encourage or discourage an organization if the atmospherics create emotional reactions by creating attention, communicating an image to a potential customer through affective responses. The key features of e-commerce among these cues are interactivity and vividness which actually influence consumers emotional and cognitive responses (Sheng and Joginapelly 2012). These environmental cues are also referred to as different website characteristics that may affect consumer's behavior (Wells, Parboteeah and Valacich 2011).

Gounaris, Koritos and Vassilikopoulou (2010) proposed a more comprehensive conceptualization of website characteristics where they considered key atmospheric cues to be product-related information, navigation and aesthetics. The concept of aesthetics is defined as a "philosophy of beauty" (Dickie 1997). In the context of webpage, the aesthetics refer to pleasant impression created by the mixture of different attractive elements and features (Liu et al. 2016). In line with this, Lindgaard et al. (2006) concluded that visitors develop their first impression of any website immediately as soon as they visit the site and such impression remains consistent over the exposure of time. Other researchers also reported the importance of website atmospherics and their influence on shopping behavior. For example, according to Richard et al. (2010), website structure is the correspondent of store layout in terms of online
context and consumers' goal achievement which can be enabled by the easy access of information.

Childers et al. (2001) initially referred the term 'webmospherics' in online setting that include site design features like text, frames, images, pop-up windows, structure of search engine, "one-click" check-out process, and hypertext links, media dimensions (e.g., graphics, text, audio, color, and streaming video) and site layout dimensions (e.g., organization and grouping of merchandise). These website features stimulate impulse buying in the context of online in different ways. Recommendations for products, price point categories, promotional announcement etc. are the features of websites that encourage customers in impulse buying (Dawson and Kim 2010). Past studies, for instance, also applied environmental psychology to examine the influence of different website features including information fit-to-task, visual attractiveness and site's user friendliness on shoppers' mood eliciting impulse buying in online context (Liu, Li and Hu 2013; Verhagen and van Dolen 2011).

Online atmosphere is categorized by two types of cues such as high task-relevant cues ("all the site descriptors which facilitate and enable the consumer's shopping goal attainment") and low task-relevant cues ("an atmosphere that has the potential to make the shopping experience more pleasurable" but "relatively inconsequential to the completion of the shopping task") (Eroglu, Machleit and Davis 2001, 179-180). For example, download delay, navigability and security are the examples of high task-relevant cues while visual appeal and website pleasantness are low task-relevant cues (Wells, Parboteeah and Valacich 2011). Studies found that these task cues (i.e., navigation, product description) were played a major role in online environments (Tang and Zhang 2020). In addition, supplying various product attribute cues such as price cues, aesthetic sense, assortment, and visual elements affect both utilitarian (i.e., goal-directed) and hedonic (i.e., experiential mood) web browsing which ultimately impact individual's decisions to purchase online (Park et al. 2012; Kim, Shin and Koo 2008; Novak, Hoffman and Duhachek 2003). Moreover, Verhagen and van Dolen (2011) argued that buying product online becomes spontaneous when a website is easily accessible to search for the desired products. This is also confirmed by another recent study (Turkyilmaz et al. 2015). Consistent with the previous studies, a summary relevant literature of atmospherics cues on online impulse buying behavior is presented in Table 2.2.

S N	Author, Year	Independent variable	Mediating variable	Moder ating variabl e	Sample, Country and Subject type	Key finding
1.	Hashmi et al. 2019	Website quality (service quality, system quality and information quality)	Hedonic value, Utilitarian value	None	300 Pakistan Online shoppers (banking sector)	Website quality dimensions have a significant impact on OIBB. Moreover, hedonic value and utilitarian value mediate the website quality dimensions and online impulsive buying behavior relationship across gender and educational level
2.	Vijay, Prashar and Sahay 2019	Hedonic shopping value, utilitarian shopping value, website informativene ss, website effectiveness, website entertainment	E- satisfactio n	None	200 India Undergrad uate students	Website cues such as effectiveness of information content has the largest influence on e-satisfaction. Furthermore, e- satisfaction also mediates relationships between shopping values, website features and e- loyalty.
3.	Akram et al. 2017	Website quality, Sales promotion, Credit card	None	Sales promoti on, Credit card use	1,161 China Online shoppers	Website quality positively affects the OIBB. Sales promotion significantly influences OIBB as a strong moderator. Credit card positively

 Table 2.2: List of atmospheric cues studies on online impulse buying behavior

						influences impulse buyers as a moderator.
4.	Zou 2018	Security, navigability, visual appeal, novelty, fun, escapism, word of mouth, social norms	None	None	402 China Undergrad uate students	Online shop owners manage their website as physically attractive by changing their products and improved word of mouth regarding the product they offer.
5.	Rezaei et al. 2016	Website personality	Utilitarian value, hedonic value	None	405 Experienc ed online shoppers	Website personality positively influences utilitarian, hedonic web browsing and online impulse buying. Both hedonic and utilitarian web browsing positively influence online impulse buying.
6.	Liu et al. 2016	Perceived ease of use, Energetic arousal, Tense arousal, Aesthetic formality	Aesthetic appeal	None	241 China University students	Aesthetic positively influences on energetic arousal through aesthetic appeal but does not have significant impact on positive arousal.
7.	Longdong and Pangeman an 2015	Virtual atmospheric cues, sales promotion, situational factor	None	None	60 Indonesia Online consumers	Sales promotions and situational factors have significant positive effect on online impulse buying but do not have in case of atmospheric cues.

8.	Turkyilma z et al. (2015)	Website quality, Personality traits,	None	None	612 Turkey Online consumers	Among other website quality, ease of use has the most important role on online impulse buying. Moreover, usefulness and website entertainment is another two important dimensions for online buying impulsiveness.
9.	Hsieh et al. 2014	informativene ss, navigational cues, perceived organization entertainment	perceived dominance	Situatio nal involve ment	417 Taiwan Online consumers	Perceived dominance has direct effects on purchasing intentions and indirect impacts through pleasure. Additionally, Situational involvement has moderating effect between perceived dominance and pleasure.
10.	Gao and Bai 2014	Informativene ss, Effectiveness, Entertainment	Flow	None	354 China Online consumer	Flow experience was functioned as a mediator between atmospheric cues and behavioral outcomes and is supported by S-O- R theory in the tourism sector.
11.	Floh and Madlberge r 2013	e-store content, e- store design, e-store navigation	Shopping enjoyment , impulsive ness	None	508 Online consumer	Two virtual atmospheric cues (e.g. design and navigation) have a significant positive effect on online impulse buying behavior.

12.	Liu, Li and Hu 2013	products availability, website ease of use, instant gratification, normative evaluation, impulsiveness	Perceived visual appeal	None	318 China University students	Instant gratification, normative evaluation and impulsiveness play as key determinants of urge to buy impulsively. Visual appeal, Website ease of use and product availability work as important antecedents.
13.	Shin et al. 2013	Site quality	customer satisfactio n, customer trust, customer commitme nt	None	230 South Korea University students	Although site quality positively affected customer satisfaction and customer trust, it did not affect customer commitment and repurchase intention. The mediating effect of customer satisfaction, trust and commitment between site quality and repurchase intentions was identified.
14.	Cyr 2013	Website design, Website Trust, Transaction Security	None	None	1156 Canada, the USA, India, Germany, Japan, Mexico, Chile and China Online consumer	Website users in low uncertainty avoidance, high institutional trust and social capital countries (Canada and USA) have the most favourable perceptions of website design.
15.	Park et al. 2012	Variety of Selection, Price Attribute,	Utilitarian Browsing, Hedonic Browsing	None	356 South Korea	Variety of selection has a positive effect on utilitarian web

		Sensory Attribute			University students	browsing and price has a positive effect on hedonic web browsing. Utilitarian web browsing has a negative effect on impulse buying however hedonic web browsing has a positive effect on impulse buying.
16.	Wells, Parboteeah and Valacich 2011	Impulsiveness , website quality	None	Consu mer impulsi veness	223 the United States Undergrad uate students	Website quality directly influences consumers' urge to buy impulsively because environmental cue manifested as website quality.
17.	Koo and Ju 2010	Atmospherics, Emotional responses, Intention	None	Percept ual curiosit y	356 South Korea Online consumer	Online atmospheric cues such as graphics, colors, and links influences customer emotions (i.e. pleasure and arousal) which subsequently effects on online shopping intentions.

2.4 Online Shopping Behavior in the context of Bangladesh

As a developing country, Bangladesh is moving toward digital pathways as a result of the improvement of per capita income and cheaper smart electronic devices (Farhana et al. 2017). Although e-commerce in Bangladesh is still at developing phase, online transactions have been increasing recent years (Khan 2020). A study found that Bangladeshi e-commerce market has reached BDT (currency of Bangladesh) 100-115 million where the annual sales growth rate is approximately 50% (Khan 2020). Presently, small and medium enterprises (SMEs) in e-commerce have reached approximately 35000 individual sites (Khan 2020).

A study by LightCastle Partners (2016) found that C2C (consumer to consumer) ecommerce category has bigger market in Bangladesh than B2C (Business to consumers). Bangladeshi consumers often prone to buy products from online where there is a possibility to get products with lower prices. Thus, a positive correlation was found between lower prices products and high sales on online (Faruq 2017). The study also reveals that over the year, 73% of the respondents have bought things online, 28% respondents are frequent buyers and 43% respondents are occasional buyers. Essentially, the main characteristics of Bangladeshi consumers are categorised as "Browse first, Buy later" (Faruq 2017).

Although consumers from developing countries can be categorized as price sensitive, but currently 167 e-commerce businesses have targeted 54 million internet users (Tabassum et al 2017). Among them, 38% respondents were between 21 years to 25 years and can be categorized as university students (Faruq 2017). Since Bangladesh is a developing country and the e-commerce industry is still emerging, it is very challenging to find consumers who have done shopping impulsively from online. Although consumers are more engaged in online transactions than previous times, studies on online impulse buying in the context of Bangladesh are very scarce and not available online. A summary of the literature on the studies relating to online shopping behavior in the context of Bangladeshi consumers is presented in Table 2.3 below to give a clear picture.

S N	Author and year	Independent variable	Medi ating varia ble	Sample, Country and Subject type	Key findings
1.	Rana and Islam 2019	Attitude, subjective norm, perceived usefulness, trust	Techn ologic al Know ledge	390 Banglade sh Universit y students	Convenience attitude is the most significant factor among others that influence online shopping behavior. Technological knowledge partially mediates both the relationship between attitude and online shopping behavior; and perceived usefulness and online shopping behavior.

Table 2.3: List of studies on online shopping behavior in the context of Bangladesh

2.	Islam 2018	Sense of Security, Pricing Strategy, online marketing activities	None	133 Banglade sh Online survey	Most of the online marketing activities induce customers purchase intensions followed by implementing pricing strategy and sense of security provided to them.
3.	Datta and Acharjee 2018	Security, after sale service, convenience, online vendor reputation, return policy, time saving, site design, online shopping experience, product quality	None	166 Banglade sh Dhaka Universit y students	Influential factors have a positive impact on young consumer's attitude towards online shopping. This study also reveals that socio-demographic factors significantly associated with consumer's attitude towards online shopping.
4.	Rahman et al. 2018	Advantages of online shopping, disadvantages of online shopping,	None	160 Banglade sh	Bangladeshi consumers prefer online shopping to save time and select a variety of products and services. Gender does not have any differences regarding the likings and disliking factors. Consumers also prefer to buy apparels with cash on delivery system. Finally, they are mostly acquiring shopping information from social medias.
5.	Chowdhury and Chowdhury 2017	Ease of Product Ordering and Delivery, Security in Monetary Transaction, Availability of Product Information, Wide Product Categories and Quality Control, Convenience of Shopping & After Sales Service, Communication and Problem Solving	None	250 Banglade sh People in Chittago ng city	A positive relationship was found between online shopping stimulators and shopping behaviors of respondents. Although young people were found extremely popular customer for online shopping but old people failed to draw satisfactory attention into it.

6.	Farhana, Khan and Noor 2017	Convenience, price, trust, experience	None	318 Banglade sh Online survey	Price is the most influential factor impacting online shopping attitude.
7.	Tabassum, Khan and Farhana 2017	Attitude, convenience, price, trust, experience	None	318 Banglade sh Youth urban consume rs	Price was found to be more significant attribute among the other influential factors toward online shopping.
8.	Hayder 2017	Ease of use, product information, entertainment, trust, customer support, currency	None	151 Banglade sh Undergra duate students	Website factors such as ease of use, product information, entertainment, trust, currency, customer support have influences on consumer buying behavior.
9.	Rahman 2015	Information channel (printed newspaper, TV, Facebook, Chat with friends, online news portal	None	305 Banglade sh Universit y students	Gen Y consumers have similar traits like developed online shoppers who have internet accessibility and living in capital of Bangladesh. Social media is their main source for collecting information.
10.	Khan and Ali 2012	Convenience, website design, trust, security, price, normative belief	None	122 Banglade sh Online survey	Convenience, trust, price and normative belief have significant relationship with intension toward online shopping but website design and security have insignificant impact.
11.	Tinne 2011	Promotional offer, product display, staff's behavior, product popularity, reference group influence, consumer income and festival season	None	50 (30 impulsiv e buyer) Banglade sh Retail store consume rs	Pricing strategies, store characteristics, situational factors and promotional activities mostly influence the impulse buying behavior of consumers at superstores in Bangladesh.

2.5 Hypothesis Development

The following sections will illustrate the development of the conceptual model and hypotheses:

2.5.1 E-store content or information

E-store content or information can be defined as "all of the communicated material that is available on a website" (Montoya-Weiss, Voss and Grewal 2003, 450). Another definition by Cyr (2013, 375) described that "Information content refers to information that is of high quality and assessed by the user to be complete, sufficient, and effective". This includes product features, price offers, return policies, contact information, and more. Rice (1997) confirmed that the reason for significant increase in internet users and their possibility of revisiting the website is the availability of appropriate content. A well-known slogan on content was proposed by Huizingh (2000, 124) where "Content is king". Similarly, Sheng and Joginapelly (2012, 3) termed e-store content as "vividness" and defined as "the richness of a mediated environment and the way the environment presents and communicates information to the senses of users." A study by Bhatti et al. (2000) suggested that the basic goal of a website is to provide information. Another study showed that accurate information and features can affect customers' acceptance level (Lin and Lu 2000). In addition, the importance of updated information and adaptive website design (a website system for web developers to create websites that adjust to the size of browser's window) was explored by another study (Perkowitz and Etzioni 1999).

Liang and Lai (2002) suggested that most of the time consumers look for the relevant information about products before making a purchase intension. Information or content can be represented in two ways: one is information accuracy, and another is information relevancy (Cao, Zhang and Seydel 2005). They also suggested that it is very important for the online marketers to update their website information and to keep their contents informative and accurate. Information accuracy is also known as "Intrinsic quality" and is defined by Chen, Su and Widjaja (2016, 59) as "the "accuracy" of information that is given". If the companies have inappropriate information in their website, it may threaten their business image among the customers (Cao, Zhang and Seydel 2005). Therefore, it is essential for those companies (who pretend themselves as commanding) to extend their attention towards the factors that will help them to increase the quality in their website's information (Lin and Lu 2000).

Information relevance is an essential element for a website that must be ensured by the web developers. According to Cao, Zhang and Seydel (2005, 651), information relevance defined as "the extent to which the information on the web site is related to the information needs of the customer". However, without considering information needs of different customers, some companies provide the same information to the customers who belong to different groups which is not appropriate (Huizingh 2000). It is important to note that the quality of information can have direct positive effect on customers' online shopping behavior (Chen, Su and Widjaja 2016). Liang and Lai (2002) proposed some guidelines to make an estore content more fruitful with relevance to information:

- The website can provide their consumers a good search engine so that it can serve fast product information to satisfy their needs
- E-stores can provide some value-added information such as best sellers, headline news, fashion trends or announcements that will help them to choose the years or seasons best seller items
- Electronic stores can provide customized information to their customers such as sales data analyzation or data mining from consumers' preferences.

Thus, it is very important for the website designers to design the website into different parts so that it can meet the needs of different groups of people (Cao et al. 2005). For example, information quality as well as perceived visual appeal of a website can directly influence consumers' online impulse buying decision (Parboteeah, Valacich and Wells 2009).

Consumers are often prone to hedonic browsing and impulse-buying behavior (Brown, Pope and Voges 2003; Koufaris 2002; Beatty and Ferrell 1998), especially when they enjoy their shopping experiences and perceive these activities as leisure (Floh and Madlberger 2013). Therefore, an e-store's atmosphere consists of highly task relevant and less task-relevant cues (Mazaheri, Richard and Laroche 2012) where highly task relevant cues provide relevant information to the online shoppers using product descriptions and pictures which is the contrast of a physical store (Floh and Madlberger 2013). Clearly, both the availability of and the easy access to relevant information can positively influence customers' purchasing decision and related tasks (Hasan 2016). Based on the previous literature, Park et al. (2012, 3) suggested "consumers are likely to browse for product information about sensory attributes over the shopping website". Therefore, a website which is full of efficient and helpful information might have the ability to influence consumers for online impulse purchases and the following hypothesis has been proposed:

H1: E-store content directly affects online impulse buying behavior

2.5.2 E-store design

Van der Heijden et al. (2003a, 544) defined e-store design as "the degree to which a person believes that the e-store is aesthetically pleasing to the customer". The concept of aesthetics is also defined as *"philosophy of beauty"* (Dickie 1997). In the context of webpage, aesthetics means various website features that create a pleasant look of a website (Liu et al. 2016). The visual design of a website represents the site's overall look integrating colors, fonts, images, shapes, animations, and overall layout that should be consistent, pleasant looking, and appealing to the users (Hasan 2016). For example, Website containing information of aesthetic product attributes (e.g., colour, design, style) affects consumers web browsing behavior (Park et al. 2012). Therefore, visual appearance of a webpage is vital, as it has influencing role in creating user's first impression and subjective experience (Tuch et al. 2010).

Liang and Lai (2002) claimed that it is very complicated to design a good website because there are many factors that need proper explanations. For example, Adelaar et al. (2003) identified that human sensory modalities such as taste, touch, smell, kinaesthesia, vision, and hearing were represented by different media contents which will affect the perception of consumer's environmental stimuli and determine the outcome of their emotional and behavioral responses. Visual appeal pertains to the display of fonts and other visual components (e.g., graphics), enriching the overall presentation information on the website (Parboteeah, Valacich and Wells 2009). A study revealed that when online users open a website, they first notice the homepage (Liu et al. 2016). So web designers have to be very careful while designing the webpage as this is an important factor to be taken into consideration in the design process. For example, when consumers purchase specific products such as clothing, jewellery, or accessories, they often want to know full information with sensory attributes, such as colour, design, fabric, and fit (Kim and Knight 2007; Bei, Chen and Widdows 2004; Watchravesringkan and Shim 2003). Thus, a shopping website's first impression, usually the homepage, can have strong influence on first intuitive or 'gut feeling' that may help determining users' attitude toward the website as well as their likelihood of staying on the same site (Liu et al. 2016). Shopping in a visually appealing website will get more positive review from an individual compared to a poorly organized website (Liu, Li and Hu 2013). It is also argued that pleasant website design conveys favourable messages to the shoppers about the quality of the product and marketer (Wells, Parboteeah and Valacich 2011).

A website's hedonic value will be increased by several website characteristics and among them visual appeal (VAP) is the one that actually helps to choose the fonts and graphics and to enhance the overall look of a website (Parboteeah, Valacich and Wells 2009). According to Wickens (2002), visual cue is a sensory cue. In a web based shopping, visual cues dominate other atmospheric cues because the store environment is limited to a computer screen (Floh and Madlberger 2013). For example, a website user will better understand a website's structure and content if the homepage is arranged with better aesthetics (Liu et al. 2016). Another term of e-store design that is considered as a key feature media is interactivity (Sheng and Joginapelly 2012). Interactivity refers to "communication that reflects back on itself, feeds on, and responds to the past" (Newhagen and Rafaeli 1996, 6) In other words, "interactivity is the extent to which a computer-mediated environment allows its users to participate in modifying the content and format of the environment" (Sheng and Joginapelly 2012, 3).

In the impulsive buying concept, internet shoppers can be more impulsive if environmental stimuli such as an image, a description in an email, a banner advertisement, an article in a magazine or on the Internet, and a sign are being exposed to them (Madhavaram and Laverie 2004). Similarly, if the product is visually appealing toward its customers, such as using many appealing pictures of the product, more satisfaction will be generated to the customers during their purchase (Liu et al. 2013). For example, Rowley (2002) identified that female consumers first identify the colour and style of clothing before they confirm in making purchases. Therefore, it is to be seen that e-store design can ensure the impulse purchases of the customers. Again, Adelaar et al. (2003) investigated about the affection between media format of music CD and impulse buying behavior and the result showed that different media formats affect the emotional responses of consumers differently which ultimately lead them to buy impulsively (Liu, Li and Hu 2013). Additionally, they also argued that when a consumer makes an unplanned purchase from a visually appealing website, it creates more positive

evolution of the website than the website which is poorly organized. Therefore, based on the literature, the following hypothesis is formulated:

H2: E-store design directly affects online impulse buying behavior

2.5.3 E-store navigation

E-store navigation refers to "the organization and hierarchical layout of the content and pages in a web store" (Montoya-Weiss et al. 2003, 499). More precisely, some website tools that helps to operate the websites users including directions, menus, buttons, frames, site maps, subject trees, mage map and colours are known as navigation (Cao et al. 2005). Similarly, De Wulf et al. (2006) defined navigation design as a navigational structure which either helps the users to access to different sections or may create an interruption to enter those sections of a website. It is the second highly task-relevant cues of an e-store (Eroglu, Machleit and Davis 2003). E-store navigation is also known as virtual walk through of an e-store where the consumers are looking for product related information (Floh and Madlberger 2013). For example, in online context, navigation indicates the approach to "exploring" the interactive online environment in different ways to search for product-related information (Childers et al. 2001).

Navigational design plays an important role in directing online shoppers who do not want to be overwhelmed with excessive or irrelevant screens, links, options, or clicks (Hasan 2016). Online shoppers prefer easy-to-follow and direct navigation design that helps them save time and effort in searching for information and completing online purchase transactions (Hasan 2016). In line with that, Kalbach (2020) subdivided navigation into two types: main navigation and local navigation. Main navigation indicates an overview of the website which will stay just below the home page and are able to answer users' queries (Kalbach 2020). He suggested some types of queries that users prefer to know when they visit the website for the first time. These queries are as follows:

- Does this website have the products/ items they are actually looking for?
- Provide rich product information for its customers
- Allow to switch topics easily, to move other sections efficiently, and to reset their path towards the main navigation options
- Describe the boundaries of the website.

In contrast, local navigation indicates the "aboutness" of a particular website (Kalbach 2020). The author further explains that navigation helps to find the other options at the same level of a hierarchy and to support general exploration. For example, Liang and Lai (2002) suggested that as e-stores contain a huge variety of items, they must generate a shopping guide and search engine which is good and easily accessible by the consumers. They also suggested that to attract an immediate attention from the consumers, the web designers can use special effects (e.g. dynamic banner for "sale" items) on their web pages. And this can only be achieved if the website designers use local navigation system which will make an extension of the main navigation (Kalbach 2020).

The navigation tools and systems have profound influence on the amount of effort users need to navigate and use different sections of the site in searching for alternative information (Vance et al. 2008). In addition to the physical appearance of the site, the page design should also consider the loading time (Weinberg 2000). This is really important because if the page loading takes longer time than user's expectation, the user is more likely to redirect the webbrowser to another website or quit the site (Cao et al. 2005). Hence, a well-designed navigation tools of a shopping website should provide easy-to-follow navigation steps that direct the users to go smoothly to the desired sections or pages from anywhere in the site (Montoya-Weiss, Voss and Grewal 2003). Conversely, when the website users lose their track about the content and are uncertain about the further procedure, this situation is known as navigational problem (Cao et al. 2005). According to Smith and Merchant (2001), online consumers are fond of websites that are easy to navigate and easy to read. An unclear and confusing navigation design of a shopping site interrupts users and this may lead them to leave the site with no intention to purchase or visit again (Hasan 2016). Therefore, navigation tools of shopping website should assist users in creating a visual map in customers' mind so that they can easily locate various sections/pages that are interrelated (Cao et al. 2005).

Past studies suggested that the main purpose of an efficient navigation design is to help its users to navigate easily and to pass through the site (Zahedi and Song 2009; Shergill and Chen 2005). Liang and Lai (2002) found that shelf management is an important issue in brickand-mortar store which converts as hyperlink in an online website context. Online stores must possess a clear navigational guide as they sell variety of products in one platform (Lo et al. 2016). For example, a clear and step-by-step hierarchical navigation can direct customers from seeking product information to completing the purchase transaction (Lo et al. 2016). On the contrary, if a customer faces much trouble in browsing a site, he/ she is less likely to feel good after purchasing the product from the site (Liu et al. 2013). Therefore, the hyperlinks must be designed carefully as it guides the customers as a shopping route (Liang and Lai 2002).

User's or consumer' decision to stay or abandon a website is largely determined by the ease of navigation during a pre-purchase stage (Parboteeah, Valacich and Wells 2011). Studies also found that store characteristics act as an important trigger for impulse purchases (Stilley, Inman and Wakefield 2010a, 2010b). Thus, to reduce the customer's cognitive effort, the virtual walk through to the web atmosphere must be intuitive, convenient, and logical (Floh and Madlberger 2013). Unclear or complex navigation, in contrast, necessitates the shoppers to put extra cognitive effort and use of external memory, triggering negative mood which hinders shopper's decision making (Floh and Madlberger 2013). Prior studies again suggested that website with easy navigation mostly raises consumers' positive emotions of impulse purchases (Verhagen and van Dolen 2011; Éthier et al. 2006) and creates the urge to buy impulsively (Wells, Parboteeah and Valacich 2011). From the above discussion, the following hypothesis is postulated:

H3: E-store navigation directly affects online impulse buying behavior

2.5.4 Consumer Impulsiveness

Consumer impulsiveness means while purchasing a product, consumers respond to an impulse that are more frequent than the pre-calculated ones, acquiring something in an unpremeditated way and responding to a feeling of urgency (Aquino, Natividade and Lins 2020). It is also known as unplanned buying. The very first definition of Consumer Impulsiveness was defined by Beatty and Ferrell (1998) where they identified that impulsiveness has both tendencies such as "(1) to experience spontaneous and sudden urges to make on-the-spot purchases and (2) to act on these felt urges with little (conscious) deliberation or evaluation of consequence" (p. 174). Piron (1991) defined impulse purchasing as unplanned purchasing that may stem from the consumer's exposure to a stimulus while they are visiting the store or a website. Some psychological sources even described impulsiveness as a basic human trait (Rook and Fisher 1995). Basically, when consumers acquire something unintendedly and responding toward a feeling of urgency, only then the unplanned purchases occurred (Aquino, Natividade and Lins 2020).

Consumer are more impulsive in nature due to the availability of indispensable income, availability of various payment methods and availability of shopping applications in mobile (Bashar and Saraswat 2020). Past studies found that in case of consumer decision making, impulsiveness plays a significant role because it is a well-recognized social psychological trait (Zhang et al. 2006; Joines et al. 2003; Bellman et al. 1999). These studies also argued that impulsiveness is a relatively constant personality characteristic (Zhang et al. 2018; Mohan et al. 2013). In fact, Youn and Faber (2000) identified that impulse purchasers (who have individual characteristics) have a tendency to share characteristics and common personality traits. For instance, Bellenger, Robertson and Hirschman (1978) found that young consumers are more impulsive than the older one. In this case, age is acting as an individual characteristic which has been found to influence impulse buying (Wells, Parboteeah and Valacich 2011). The age factor explanation is similar with the current study as this study considers young urban consumers as their target population.

Impulsive consumers have a tendency to put less cognitive effort while they evaluate their purchasing decisions because emotionally, they feel attracted to the product and also desire to get immediate gratification (Kacen and Lee 2002; Hoch and Loewenstein 1991). For example, in a brick-and-mortar retail environment, consumers who have high level of impulsiveness often engage in impulse buying (Beatty and Ferrell 1998). The reason is because impulsive consumers have less self-control than those who have low level of impulsiveness (Zhang et al. 2018). Puri (1996) defined low impulsiveness consumers as prudent consumers because they have the ability to control themselves and can consider the benefits and costs for all the products. Moreover, low-impulsiveness consumers are also categorised as selfcontrolled consumers (Beatty and Ferrell 1998) because they can control their stimuli when experiencing it compared to highly impulsive consumers (Naderi and Steenburg 2018). On the other hand, high impulsive consumers tend to have less self-control than others (Beatty and Ferrell 1998), they are sensitive to environmental stimuli (Parboteeah, Valacich and Wells 2009) and they are more emotionalized than others (Weinberg and Gottwald 1982). According to Puri (1996), high impulsive consumers can be referred as hedonic consumers because they are searching for immediate gratification. Therefore, past researchers have a tendency to emphasize some words to describe impulsiveness as spontaneity, the inconsequence and the emotional state of the individuals at the moment of purchase (Aquino, Natividade and Lins 2020; Arnould et al. 2004).

Zhang et al. (2018) identified the reaction of a consumer who is an impulsive buyer and suggested that their reaction for impulse buying can be categorized as two-fold. Firstly, as impulse buying is stimulus driven, therefore, a sudden and spontaneous urge for buying the product might be felt by an individual (Rook 1987). The concept of the urge to buy impulsively has been defined by Beatty and Ferrell (1998, p. 172) as "the state of desire that is experienced upon encountering an object in the environment" while Piron (1991) described it as a state which is hedonically complex, sudden, sometimes irresistible, and persistent. Secondly, the individuals can decide whether they will act on the urge for purchasing the product or not. The reason was clarified by Rook and Fisher (1995) that although an urge to buy impulsively may have a powerful and irresistible desire, it does not mean that consumers will always response to it. As a result, capturing actual impulse buying is not an easy task (Wells, Parboteeah and Valacich 2011). This is why past researchers integrated the impulse buying urge to understand different factors influencing impulse buying behavior. Such factors have been postulated in both cases of traditional shopping context (Beatty and Ferrell 1998) and in online shopping context (Dutta, Jarvenpaa and Tomak 2003).

In the context of online shopping behavior, consumers' intention to purchase from online websites has been affected by impulsiveness (Zhang et al. 2006) which can also be caused by website quality that increases an urge in consumers to buy impulsively (Wells, Parboteeah and Valacich 2011). Although the marketers in a traditional shopping context can easily manipulate the atmospheric cues to trigger the impulse purchases (Rook and Fisher 1995), similar studies have also been examined by previous researchers that the influence of online environmental characteristics or known as website characteristics can also lead to impulse purchases (Wells et al. 2011; Kukar-Kinney et al. 2009). In fact, Loiacono, Watson and Goodhue (2007) identified that these website characteristics are the representatives of website quality and Eroglu, Machleit and Davis (2001) categorized these characteristics (online environment) as high task-relevant and low task-relevant cues. According to Eroglu, Machleit and Davis (2001, 179-180), high task-relevant cues means "all the site descriptors which facilitate and enable the consumer's shopping goal attainment" and the examples are such as security, download delay, and navigability. On the contrary, low task-relevant cues means "an atmosphere that has the potential to make the shopping experience more pleasurable", but are "relatively inconsequential to the completion of the shopping task" and the examples are such as visual appeal or website pleasantness (Eroglu, Machleit and Davis 2001, 180). These

clarification of high task-relevant and low task-relevant cues are discussed in detail in the literature review under the atmospheric cues section.

To observe the effect of web atmospheric cues on online impulse buying behavior, researchers used experimental studies (Kim and Shin 2016; Kim, Kim and Lennon 2009). For example, Verhagen and Vandolen (2011) found that website communication style significantly and positively influences online impulse buyers that affect their urge to buy impulsively. Wadera and Sharma (2018) also found that website content can motivate consumers to browse more which leads them to buy impulsively. According to Eroglu, Machleit and Davis (2001-2003), website atmosphere is consisted with highly task relevant cues which provide relevant information to the online shoppers regarding product description. Another study by Kuan, Bock and Vathanophas (2008) revealed that website quality depends of information quality. Therefore, if the e-store content has full of relevant information and availability of products, it might positively influence consumers purchasing decisions (Hasan 2016). Youn and Faber (2000) found that in the context of offline shopping, consumer impulsiveness enhances the influence of environmental cues on shopping behavior. Since such effect has yet to ascertained, therefore, the current study has proposed the following hypothesis:

H4: Consumer impulsiveness has mediating effect in the relationship between e-store content and online impulsive buying behavior.

Early information system (IS) studies and some past studies both have attempted to understand the factors of online environments that affected consumers impulse purchase decision making (Wells et al. 2011; Parboteeah et al. 2009). Among them website ease of use, visual appeal and information fit-to-task are most commonly used by the researchers (Akram et al. 2017; Verhagen and van Dolen 2011; Cyr 2013). Hashmi et al. (2019) suggested that aesthetic appearance of a website plays a crucial role to attract consumers and to encourage their impulsive behavior. For example, according to Cyr (2013), visual design includes some website design elements such as aesthetics, websites overall graphical look and emotional appeal through colours, photographs, shapes or font types which can help consumers to gain knowledge or appreciations from the consumers. A study by Sun (2001) found that Chinese consumers strongly prefer visual aspects of a website. Moreover, another study revealed that different media formats affect the emotional responses of consumers differently which ultimately lead them to buy impulsively (Adelaar et al. 2003). Since, whether consumer impulsiveness is mediated by e-store design and online impulse buying behavior has not yet been discussed in earlier studies, the current study has proposed the following hypothesis:

H5: Consumer impulsiveness has mediating effect in the relationship between e-store design and online impulsive buying behavior.

Customers can get allured by the website quality which ultimately influences their buying decisions (Hashmi et al. 2019). To perform online shopping, a good web skill is required for the consumers to search or navigate their desired items from the websites while shopping from an unfamiliar web stores (Wu et al. 2016). For example, some navigational designs can either help or hinder the users while accessing from one section to another of a website (Cyr 2013). Mostly, consumers from Europeans and North Americans prefer easy navigation system which makes the website simple to use (Cyr 2013). Prior studies found that websites that are easy to navigate and user friendly can easily attract consumers (Hashmi et al. 2019). Besides, websites with easy navigation mostly raises consumers' positive emotions of impulse purchases (Éthier et al. 2006) and creates the urge to buy impulsively (Wells, Parboteeah and Valacich 2011). However, whether e-store navigation and online impulse buying behavior is mediated by consumer impulsiveness has not yet been covered by past researchers. Thus the following hypothesis is postulated by this study:

H6: Consumer impulsiveness has mediating effect in the relationship between e-store navigation and online impulsive buying behavior.

2.5.5 Product category

Past studies showed that there is a significant influence of product categories on consumers' willingness to shop online (Mallapragada, Chandukala and Liu 2016; Nagra and Gopal 2014; Román 2010). The reason is because every consumer has a tendency to trust on different information sources on an online shop so that they can be confirmed about the product quality along with the satisfaction they gained while purchasing different types of products (Dai, Forsythe and Kwon 2014). In fact, consumers' preference to choose online or offline platform also depends on different product attributes as well as on the importance of the product (Levin, Levin and Weller 2005). Therefore, researchers tried to categorize the characteristics of product under digital and non-digital (Dai, Forsythe and Kwon 2014; Biswas and Biswas 2004; Lal and Sarvary 1999).

Digital products are defined by Lal and Sarvary (1999) as products whose characteristics or features can be communicated through the internet. According to them, digital products have less product risk as they can be presented properly through the online channel such as CDs, books, computer software or electronics products. In contrast, non-digital products are those in which consumers may need the physical inspection before they decide to buy (Dai, Forsythe and Kwon 2014). Some examples of non-digital products are clothes, cars, fresh foods or domestic appliances (Nagra and Gopal 2014).

Previously, Levin et al. (2003 and 2005) claimed that consumers prefer apparel products from traditional stores as it can be touched and inspected, which place a greater value for the consumers. However, Marketing Charts (2018) found that apparel category has the greatest online purchasing penetration with more than 30,000 online consumers across 64 countries where 61% consumers in 2018 bought apparels from online stores. Moreover, a survey conducted by Accenture Research (2016) concluded that 96% consumers go online to shop for apparel products and 70% of global apparel retailers have smartphone apps to cater to their customers' demands. In addition, some recent statistics showed that apparel products have the highest score among other product categories. For example, 75% of Chinese consumers buy clothes and accessories online (Business Wire 2017) and 84% of consumers across the world browse for clothing online using a computer or laptop (Thompson 2014).

Another important product category which has emerged its position in online sector and still continuing to grow is cosmetics products (Wu and Lee 2016). Industry and Technology Intelligence Services (2013) found that the cosmetics industry in 2012 grew by 6%. They also concluded that comparatively in the past decade, it was the most significant growth seen by global cosmetics industry (Industry and Technology Intelligence Services 2013).

According to Accenture Research (2016), 80% consumers prefer to shop health and beauty products from online. In fact, in Bangladesh, 50% consumers are purchasing cosmetic products online (Bhowmik et al. 2017). The main reason for purchasing online cosmetics are short videos that demonstrate the texture, the usage and effects of the product toward its consumers, also known as YouTube tutorials (Spector 2017). He even mentioned that these tutorials are conducted by famous makeup consultants who even recommended their viewers to buy these products from different online pages which is very alluring for its consumers (Spector 2017).

Additional study was conducted by a market research company. Grant (2016) found that consumers aged between 18 and 34 years old comprises 29% of the total beauty market. Whereas another survey showed that 67% of online beauty shoppers found what they are looking for in four or more websites (Chain Drug Review 2017).

In the online product category list, another important product category that has slowly enlisted its identity is electronic items (Criteo 2016). In 2016, 36% of Electronics purchasers frequently browsed electronic items to purchase the product. Moreover, Internet Retailer analysed that computers/electronics category got the third-highest e-commerce penetration in 2017 in the retail category (Berthene 2018). Even in UK, 43% of all home consumer electronic products were sold online and online electronics hold the leading position among other categories (Bryant 2016). In Malaysia, consumers spent \$851 million on electronic items from online stores in 2019 (Kemp and Moye 2019). Besides, Accenture Research (2016) found that 90% consumers go online to shop for electronic products.

As Bhatti et al. (2000) suggests, the primary goal of website is to provide information, and e-store content includes information about product features, price offers, return policies, contact information, and more. The design of the information should be relevant to customer needs for information (Cao, Zhang and Seydel 2005). However, without considering information needs of different customers, some companies inappropriately provide the same information to the customers who belong to different groups (Huizingh 2000). E-store content or information requirement of the customers may also vary across product categories. For example, consumers place great value on the very fast and large amount of relevant information for products like computer software through Internet search (Levin, Levin and Heath 2003). Based on this rationale, the current study finds it would be interesting to examine whether the influence of e-store content on impulse buying behavior varies across product categories by testing the following hypothesis:

H7a: The influence of e-store content on online impulse buying behavior is moderated by product categories

Again, as it was discussed before, e-store design is one of the key atmospheric cues in influencing consumers' online impulse buying decision. Different design features of a shopping site may not be equally important for consumers for different product categories. For example, in the case of purchasing clothing and related accessories, different sensory attributes

such as color, image etc. play important role in inducing online shopping (Kim and Knight 2007; Bei, Chen and Widdows 2004). Enjoying the shopping experience is more important for clothing than for any other product category (Levin, Levin and Heath 2003). Adelaar et al. (2003) investigated about the affection between media format of music CD and impulse buying behavior and the result showed that different media formats affect the emotional responses of consumers differently which ultimately lead them to buy impulsively (Liu, Li and Hu 2013). Clearly, the influence of different design features of shopping site on impulse buying behavior may vary across different product categories. This motivated to propose the following hypothesis:

H7b: The influence of e-store design on online impulse buying behavior is moderated by product categories

In general, online customers want simple and easy-to-use web navigation tools so that they can save time and effort in completing their purchasing process (Hasan 2016). In fact, the navigation tools and systems have profound influence on the amount of effort users need to navigate and use different sections of the site in searching for alternative information (Hasan 2016; Vance et al. 2008). One of the important considerations for navigation is page loading time (Weinberg 2000) which may have different degrees of influence across product categories. This is really important because if the page loading takes longer time than user's expectation, the user is more likely to redirect the web-browser to another website or quit the site (Weinberg 2000; Cao et al. 2005). For example, the amount of time customers are ready to spend for buying an electronic gadget versus a clothing accessory may not be the same. Prior studies again suggested that website with easy navigation mostly raises consumers' positive emotions of impulse purchases (Verhagen and van Dolen 2011; Éthier et al. 2006) and creates the urge to buy impulsively (Wells, Parboteeah and Valacich 2011). However, the influence of e-store navigation on online impulse buying behavior has not been examined across product categories. Hence, the following hypothesis is proposed:

H7c: The influence of e-store navigation on online impulse buying behavior is moderated by product categories

2.6 S-O-R Theory and Conceptual Research Framework

An important theoretical framework that has been widely used for studying the effects of atmospheric cues on an individual's behavior is stimulus-organism-response (S-O-R) framework (Parboteeah 2005). The S–O–R framework is grounded in environmental psychology and provides the theoretical basis for the proposed effect of e-store atmosphere on consumer behavior (Floh and Madlberger 2013). Besides, past researchers has found promising results when it was applied extensively in traditional retail environments (Koo and Ju 2010; Sherman, Mathur and Smith 1997; Baker, Grewal and Parasuraman 1994). Floh and Madlberger (2013) explained the main point of S–O–R theory in a simple way where consumers' reaction towards atmospheric influences are either in approach behavior (positive) or avoidance behavior (negative).

The S-O-R framework was first applied into a retail context by Donovan and Rossiter (1982) where they followed Mehrabian and Russell's (1974) environmental psychology model to use stimuli as atmospheric cues, organism as emotional and cognitive states and response as avoidance/approach behaviors (Koo and Joo 2010). This framework is one of the most important theories that are applied widely in brick-and-mortar stores while explaining consumer behavior (consumption realm) (Jacoby 2002; Turley and Milliman 2000). As this framework is prepared with the intention to serve the traditional shopping context, however, Eroglu, Machleit and Davis (2001) took the first step to introduce this framework on atmospheric cues and online impulse buying behavior to study the virtual shopping outlet. In S-O-R framework, online environmental cues affect consumers' emotions and intention and is confirmed by Koo and Ju (2010) in their study. Most importantly, Wang and colleagues (2010) stated that a significant relationship is found among the web aesthetics and online shoppers.

This current study develops a research model based on the theory of Mehrabian and Russell (1974) (see Figure 2.1). This theory stresses the impact of stimuli on emotional states which reveals the dominant role of emotions on impulse buying research and also reduces the significance of cognitive behavior. Thus, Mehrabian and Russell's (1974) theory was appropriate in this case. In consistent with the model, this study investigated three types of atmospheric cues such as e-store content, e-store design and e-store navigation under stimulus (S). According to Beatty and Ferrell (1998) and Rook (1987), consumers' positive or negative feelings strongly affect impulsive behavior. Therefore, this study will find the possible mediating effect of consumer impulsiveness under organism (O) to show the relationship

between atmospheric cues and online impulse buying behavior under response (R) (see Figure 2.2).



Figure 2.1: S-O-R theoretical framework (Source: Mehrabian and Russell 1974).

This study also considers two additional factors, such as a direct effect to see the influence of atmospheric cues on online impulse buying behavior and a moderating effect to see whether the influence of different atmospheric cues varies across different product categories on online impulse buying behavior. Since past studies already showed that there is a significant influence of product categories on consumers' willingness to shop online (Mallapragada, Chandukala and Liu 2016; Dai, Forsythe and Kwon 2014; Nagra and Gopal 2014). However, this moderating effect was not investigated in the context of atmospheric cues and online impulse buying behavior. Hence, this study will find the possible moderating effect of product categories in the relationship between atmospheric cues and online impulse buying behavior.

The following figure (Figure 2.2) displays the proposed conceptual framework representing the relevant variables and corresponding hypotheses to be tested for measuring the influence of atmospheric cues on online impulse buying behavior. Hypotheses 1, 2, and 3 show the direct affects between atmospheric cues and online impulse buying behavior. The figure also shows the possible mediating effect of consumer impulsiveness in hypotheses 4, 5, and 6 and moderating effect of product categories as hypotheses 7a, 7b and 7c in the hypothesized relationships.

2.7 Summary

This research is basically and specifically focusing on the moderating effect of product categories on web-atmospheric cues and online impulse buying behavior along with the mediating effect of consumer impulsiveness. The relevant literature of this chapter has been drawn from an extensive body of knowledge and a mixture of information system (IS), environmental psychology and consumer behavior literature. The intension of this literature review is to provide a strong foundation for developing the hypotheses and a comprehensive research framework so that it can properly address the proposed research questions.

In this study, consumer behavior and environmental psychology literature was used to understand the intension of consumers' impulse buying tendency. It worked as a foundation to understand the impulse buying behavior and the reasons of engaging in it by the individuals. To support the list of factors that enhances impulse buying behavior, this study used the consumer behavior literature. Moreover, the information system (IS) literature supported the extension of S-O-R (stimulus-organism-response) framework that has been used in this study. It also helped to develop the proposed model in the context of online impulse buying behavior.

Specifically, this chapter was able to identify the appropriate stimulus, organism and response factors. The stimulus is represented by three atmospheric cues namely e-store content, e-store design and e-store navigation. The organism presents the mediating effect of consumer impulsiveness and finally the responses represents the relationships between atmospheric cues and online impulse buying behavior. A total of seven hypotheses have been proposed based on this developed research model which have been provided in table 2.4 below. After developing the research framework and specific hypotheses, an empirical examination will be placed. The next chapter will discuss about the thorough version research methodology to test the proposed model including research design, sampling procedures and data analysis.



Figure 2.2: The conceptual research framework

Hypothesis	Specific Hypothesis
H1	E-store content directly affects online impulse buying behavior
H2	E-store design directly affects online impulse buying behavior
H3	E-store navigation directly affects online impulse buying behavior
H4	Consumer impulsiveness has mediating effect in the relationship between e-
	store content and online impulsive buying behavior
H5	Consumer impulsiveness has mediating effect in the relationship between e-
	store design and online impulsive buying behavior
H6	Consumer impulsiveness has mediating effect in the relationship between e-
	store navigation and online impulsive buying behavior
H7a	The influence of e-store content on online impulse buying behavior is
	moderated by product categories
H7b	The influence of e-store design on online impulse buying behavior is
	moderated by product categories
H7c	The influence of e-store navigation on online impulse buying behavior is
	moderated by product categories

Table 2.4: Research hypotheses

Chapter 3: Research Methodology

3.1 Introduction

After developing the research model and hypotheses from the literature review, this chapter focuses on the details of methods and tools used for empirical investigation. Specifically, the chapter provides the details of research design, sampling decision, instrument development and pilot study, data collection, and data analysis. Each of these issues is discussed with relevant justifications.

3.2 Research Design

Research design is a framework or blueprint for conducting the research study (Sharadkumar 2016). More specifically, it is a blueprint or detailed plan to answer some research questions and problems through "operationalizing variables so they can be measured, selecting a sample of interest to study, collecting data to be used as a basis for testing hypotheses, and analysing the results" (Kumar 2019). Therefore, to achieve the principal aim and objective of the study and also adequately answer the research questions, it is very important to identify a suitable research design.

Researchers basically use three types of research designs namely quantitative, qualitative, and mixed methods approaches to obtain their desired information (Creswell and Creswell 2017; Gunnell 2016; Kowalczyk 2016). Researchers from social and human sciences are using the quantitative research for many years to test hypotheses and to make predictions. Since it represents the events with numerical data, this ultimately ensure that the results have a statistical relationship (Creswell and Creswell 2017). Similarly, in case of online impulse buying behavior, prior researchers also used quantitative research approach (Ahmad et al 2019; Zou 2018).

This study has selected quantitative approach for making inferences from the empirical data to be collected using the pre-determined and pre-tested survey instruments. Additionally, this study was designed to study the relationships between one dependent variable (online impulse buying behavior), three independent variables (e.g. e-store content, e-store design, and e-store navigation), one mediating variable (impulsiveness) and one moderating variable (product category).

3.2.1 Nature of research design

There are four main types of quantitative research such as Descriptive, Correlational, Causal-Comparative/Quasi-Experimental, and Experimental Research (Apuke 2017). A quantitative research method that helps to collect computable information which can be used to analyse the population sample statistically is known as descriptive research that includes both cross-sectional and longitudinal design (Bhat 2019). As this tool allows to collect and describe the nature of demographic segment, it is a very popular marketing research tool for the researchers (Bhat 2019). Moreover, according to Malhotra (2019), descriptive research is basically used for describing specific phenomena, testing specific hypotheses and examining specific relationships. In this study, cross-sectional research design was used because this study is characterised by specific research questions and hypotheses (Malhotra 2019).

3.2.2 Time Horizon of Research Design

Descriptive research is a cross-sectional study because under the same group, different sections are being studied by the researcher (Bhat 2019). This study has applied a cross-sectional method because it collects data at a particular point of time (Malhotra 2019). Cross-sectional study also helps to answer the research hypotheses. The data collection was conducted for approximately three weeks from 19 June 2019 to 9 July 2019.

Among the broad types of research design, this study has applied a cross-sectional design of descriptive type as the quantitative approach for making inferences from the empirical data is to be collected using the pre-determined and pre-tested survey instruments. The justification for using cross-sectional design is that this study only collected the data once from the target sample (Malhotra and Birks 2007).

3.3 Data Collection Methods

Data collection is a systematic approach. It helps to gather and measure the information from variety of sources and give a complete and accurate picture of the interested area (Rouse 2016). Wolf (2016) classified data collection method into two categories: Primary Data Collection Methods and Secondary Data Collection Methods.

A self-administered survey questionnaire has been used as instrument for data collection in this study. In the beginning of the questionnaire, the participants were informed

about the academic nature of the study along with the consent form where it clearly stated that this data will be collected with their permission. The survey was structured into three main sections summarized below.

Firstly, the initial questions presented information about the screening questions. The reason is to eliminate unwanted respondents; researchers use screening questions as a preliminary part of a survey (Malhotra and Birks 2007). It also facilitates easier data analysis as unsuitable participants will no longer be able to answer the further questionnaire if they do not meet the actual requirements.

Afterwards, the participants were asked to fill up the questionnaire about online atmospheric cues to measure the consumers'/respondents' behavior. The respondents answered based on their shopping experience.

Next, they were asked to fill up the questionnaire about online impulse buying behavior. These statements contained consumer's product category based online impulse buying experience. In the last section, the questions presented demographic information such as gender, age and city where the respondents live.

3.3.1 Primary Data

Primary data means first-hand data that are original in nature because researchers collect it for the first time from their targeted population (Wolf 2016). Primary data can be collected using methods such as questionnaire, survey, interviews and experiments (Driscoll and Brizee 2017). This study has applied primary data using questionnaire. A self-administered survey questionnaire has been used as instrument for data collection in this study.

3.4 Sampling Design

Sampling is the process of defining the target population, establishing the sampling techniques and selecting the sample size for a proposed research (Malhotra 2019). Kabir (2016, 169) explained that "It is the process of selecting the sample in estimating the population characteristics". When a group of people, objects or items are collected from a larger population, it is known as a sample and it is a representative of a whole population to ensure that the findings from the sample can be generalised to the population (Malhotra 2019).

Sampling design involves the plans and methods used to select the sample from the target population including the estimation of sample statistics (Kabir 2016). There are several stages in the process of sampling design such as defining the population, selecting the sampling method, determining the sample size, specifying the sampling plan and selecting the sampling technique (Kabir 2016). These sampling steps are discussed in the later sections.

3.4.1 Target Population

Malhotra (2019) defined target population as the collection of elements that possess the information which are sought by the researchers to make inferences for their study. Since previous studies focused on students as their target population (Vijay, Prashar and Sahay 2019; Zou 2018; Post et al. 2017), Cheah and Phau (2011) suggested that students and young consumers are reliable in such studies.

The target population of the study is young consumers. Specifically, the target population consists of a combination of Generation-Y and Z. The reason is that this age group is considered as first high-tech generations (Norum 2003) and their dependency on technology is highlighted in several past studies (Hoque 2018a; Rahman 2015; Black 2010). In terms of shopping, they are also perceived as consumption oriented and sophisticated (Jackson, Stoel and Brantley 2011). As this study aims to identify the influence of atmospheric cues on online impulse buying behavior, thus a combination of Generation-Y and Z is the suitable consumers for this study.

In the context of Bangladesh, Gen Y is categorized into two age groups: 18-25 age groups represented by students and from 26-35 age groups represented by working (full-time or part-time) individuals (Rahman 2015). He also characterised Gen Y as "Digital Natives". Likewise, Gen Z is categorized as age group who are less than 25-year-old which indicates basically the undergraduate students (Hoque 2018a).

3.4.2 Sampling Elements

Sampling element means a person, a group, or an organization of a unit of analysis that can be measured (Malhotra 2019). The elements are usually the target respondents (Malhotra 2019). In this study, the target respondents are a combination of Generation-Y and Z consisting

of university students aged between 18 and 25 years (Hoque 2018a; Rahman 2015). The reasons for selecting this sample element are described in the following subsection.

3.4.2.1 Reasons to choose sample elements of a combination of Generation-Y and Z (18 and 25 years)

- A study by e-Commerce Association of Bangladesh (e-CAB 2018) found that 60% online consumers are from Dhaka with the age ranged between 18 and 35 years old, indicating this category (Hoque 2018a; Rahman 2018).
- Karim and Qi (2018) found that the major online shoppers that lead the e-commerce platforms are aged between 18 and 24 years and the percentage were found to be 88%.
- Moslem (2017) reported that students are one of the major groups of online shoppers in Bangladesh.

Studies found that in United States, 78% consumers from age 15 and above are online purchasers (Lissitsa and Kol 2016), because they have extensive presence on social networks in a materialistic society (Parment 2009). From psychographic perspective, Gen-Y and Gen-Z consumers buy their products based on their personality and lifestyle (Lissitsa and Kol 2016). A common feature of the lifestyle of this age group is that they always tend to spend significant amount of time online – the reason why they are also called DotNet generation (Taylor 2012). Hence, this age group is considered as a key target for online shopping perspective as they also spend more money online (Lissitsa and Kol 2016).

In line with the psychographic profile of this age group, scholars suggest that it is important for the online marketers to understand the power of Gen-Y and Gen-Z and their online buying behavior in order to design shopping sites meeting their preferences (Hoque 2018a; Bilgihan 2016; Rahman 2015). Previous studies in online shopping context (Lissitsa and Kol 2016; Legaspi, Galgana and Hormachuelos 2016) as well as in other context such as green consumer behavior (Yadav and Pathak 2016; Muralidharan et al. 2015) used university students as representative of Gen-Y and Gen-Z consumers. In line with this, the current study also used university students as sample element to understand their online impulse buying behavior.

In the context of online impulse buying behavior, prior researchers also targeted their sampling elements as undergraduate students (Zhang et al. 2018; Huang and Benyoucef 2017;

Lim, Sukho and Kim 2017). In line with their research, this study also selected the undergraduate students of Gen-Y and Gen-Z, aged between 18 and 25 years (Hoque 2018a; Rahman 2015) as sampling elements.

3.4.2.2 Reasons to exclude Gen-Y (26 and 35 years)

This study does not select the Gen-Y's working group since the data were collected from current university undergraduate students. More precisely, in Bangladesh, majority working group of Gen-Y (age between 26 and 35 years) have already completed their undergraduate degrees and are no longer related with universities (Rahman 2015). Moreover, in Bangladesh, people aged from 18 and 24 years are not eligible as working group as it is already clearly confirmed by Rahman (2015) in his study. Therefore, this study has only selected university students who are continuing their studies.

3.4.3 Sample Size

Malhotra (2019) defined sample size as the number of elements that can be included in a study. Kumar (2019) clarified that a large sample size can provide more accurate findings. Likewise, he also suggested that if a researcher is conducting a conclusive research (e.g. descriptive surveys), a larger sample will give them accurate results. Although prior researchers have argued on larger sample size when conducting their research (Kumar 2019; Malhotra 2019), there are some controversies for selecting the accurate sample size to conduct the structural equation modeling (SEM) analyses.

According to Wolf et al. (2013), the minimum sample size required is 200 if they are using SEM (Kline 2011). If the sample size is smaller than 200, it might create convergence failure (e.g. the software cannot reach a satisfactory solution), improper solutions (e.g. including negative error variance that estimates measured variables) and lower accuracy regarding parameter estimation (Sulthan 2019).

Kline (2011) provided the ideal sample size-to-parameter ratio which is 20:1, where it explained that if a total model parameter is q=10, then the ideal minimum sample size for statistical estimation requires 20×10 , or N = 200. Moreover, in case of consumer survey research, a minimum of 200 samples are required whereas the typical range is from 300-500 samples (Malhotra 2019). Therefore, this study has aimed to select a sample of 350 potential respondents who have taken part in this study.

Prior studies that are based on online impulse buying behavior also used the sample size with the range of 300-500 respondents. For example, 300 respondents by Ahmad et al. (2019), 355 by Zhang et al. (2018), 342 by Ettis (2017) and 496 by Wu, Chen and Chiu (2016). In view with this, the sample size of 335 respondents are sufficient.

3.4.4 Sampling Location

Hair et al. (2014) defined sample location as a place or an area where the samples are being drawn. Bangladesh is a South Asian developing country with a population of 165.6 million (CEIC 2020). Dhaka is the capital city of Bangladesh and the population is 21 million (World Population Review 2020) which makes it the largest city in the country. In world ranking, Dhaka is also known as one of the most densely populated areas where 23,234 people live in per square kilometre, whereas the total area of Dhaka is 300 square kilometres. A study by Chowdhury and Chowdhury (2017) found that Dhaka is the leading e-commerce city in Bangladesh with 35 percent share. Similar studies were conducted by Ishtiaque, Baten and Sarwar (2017) and Karim and Qi (2018) and results showed that in major cities of Bangladesh, B2C is the popular online platform where Dhaka leads the major e-commerce portion due to the highest traffic of 35%. Another significant study by Moslem (2017) found that approximately 1.5 million people from Dhaka city are using the e-commerce sector in Bangladesh.

Moreover, e-Commerce Association of Bangladesh (e-CAB 2018) found that 60% online consumers are from Dhaka with the age ranged between 18 and 35 years old, indicating the heavy involvement of Gen-Y and Gen Z category (Hoque 2018a; Rahman et al. 2018). Karim and Qi (2018) found that the major online shoppers that leads the e-commerce platforms are aged between 18 and 24 years and the percentage were found 88%. Similarly, Rahman (2015) found that maximum interested online shopping consumers in Bangladesh are from age 20 and 35 years. Moslem (2017) found that students are one of the major groups of e-commerce buyers in Bangladesh.

The above discussions justify that Dhaka (the capital city) holds most of the B2C ecommerce consumers ranging from 18 to 35 years (also known as the combination of Generation Y and Generation Z) that leads the e-commerce platform and these consumers are from different geographical location who live in Dhaka for study and work purpose. Therefore, the current study selected Dhaka city for the sampling location to cover both the Gen-Y and Gen Z group properly.

Five universities have been selected based on the ranking of universities in Bangladesh by the University Grants Commission (UGC) of Bangladesh (UGC 2019). University Grants Commission (UGC) is the statutory apex body in the field of higher education in Bangladesh and their main purpose is to supervise, maintain, promote and coordinate university education (UGC 2019). UGC is also responsible in monitoring whether all the public and private universities in Bangladesh are maintaining proper standard and quality.

In this study, five universities have been selected in Dhaka city. The main reason for selecting the universities only from Dhaka is that many rural students want to complete their higher degrees (undergraduate and postgraduate) from the renowned universities of the capital city and to avail better internet services, which is very challenging in rural areas (Ovi 2016). The more affluent areas in Dhaka city are Gulshan and Dhanmondi (Ishtiaque, Baten and Sarwar 2017). To bear in mind of the areas from previous study, this study has selected five universities in which two universities are belong to the recommended areas. Additionally, the table (see table 3.1) below identifies the number of questionnaires collected from each university. The ranking position and locations of these universities are:

- University of Dhaka (one of top 5 public universities in Bangladesh, located near Dhanmondi)
- BRAC University (one of the top 5 private universities in Bangladesh, located in Gulshan)
- 3. **Bangladesh University of Professionals-BUP** (one middle ranked public university in Bangladesh, position 47th, located in Dhaka Cantonment)
- 4. University of Liberal Arts Bangladesh-ULAB (one middle ranked private university in Bangladesh, position 48th, located in Dhanmondi) and
- 5. **Presidency University** (one of the lower ranked private university in Bangladesh, position 63rd, located in Gulshan-2) (UGC 2019).
| No. | Name of University | Number of
Questionnaires |
|-----|---|-----------------------------|
| 1. | University of Dhaka | 62 |
| 2. | BRAC University | 68 |
| 3. | Bangladesh University of
Professionals-BUP | 58 |
| 4. | University of Liberal Arts
Bangladesh-ULAB | 85 |
| 5. | Presidency University | 62 |

Table 3.1: Number of questionnaires collected from each university

However, this study does not select the Gen-Y of working group since the data were collected from current university undergraduate students. More precisely, in Bangladesh, majority working group individuals of Gen-Y (age between 26 and 35 years) have already completed their undergraduate degrees and are no longer affiliated with universities (Rahman 2015). Therefore, this study only selected university students who are continuing their studies.

3.4.5 Sampling Period

Sampling period designates the time frame when researchers collect the data for a particular study. The sampling period in this study was conducted from 19 June 2019 to 9 July 2019. It took approximately three weeks to complete the process. Previous studies on online impulse buying behavior also suggested two to three weeks as sufficient time (Kim and Park 2019; Vijay, Prashar and Sahay 2019; Zou 2018).

3.4.6 Sampling Frame

Malhotra (2019) defined sampling frame as an element that represents target population of a research project which consists of a list of customer database, a mailing list or appropriate contact details. More precisely, it is a database of potential respondents to whom the researcher will send the invitation to take part in a given research project (Fricker 2012). However, this study does not have any sampling frame as a complete list of consumers who purchase from online stores are not being properly monitored in Bangladesh (a developing country).

3.4.7 Sampling Technique

Sampling technique is a method which outlines how we select members from the sample (Kabir 2016). A researcher chooses a sampling method depending on some aspects such as research objectives, availability of financial resources, time constrains and how the nature of the problem will be investigated (Kabir 2016). There are two types of sampling techniques that are broadly classified as non-probability sampling and probability sampling (Malhotra 2019).

Malhotra (2019) defined that non-probability sampling is based on the personal judgement of a researcher. Whereas, in probability sampling, the sampling units are selected by chance which is known as probability. The most common non-probability sampling method that is used in previous OIBB studies is convenience sampling (Ahmad et al 2019; Zou 2018; Zhang et al. 2018).

Convenience sampling means when the researchers draw a part of population as their sample that are very close at hand (Kabir 2016). The main purpose of using convenience sampling is that researchers can collect information from participants who are easily accessible to them (Etikan, Musa and Alkassim 2016). There are several advantages for selecting the convenience sampling in data collection as they meet certain practical criteria such as easily accessible, geographical proximity, availability at a given time and the willingness to participate (Etikan, Musa and Alkassim 2016).

Convenience sampling has been selected for this current study. According to Hoyle, Harris and Judd (2002), in case of survey approach studies, convenience sampling has been viewed as an acceptable approach. The main reasons for selecting convenience sampling by researchers are due to its characteristics such as fast, inexpensive, easy accessibility, geographical proximity and location convenience (Etikan, Musa and Alkassim 2016). More interestingly, Collier and Bienstock (2007) found that in the high end journals of social and behavioral sciences, convenience sampling is dominating the sample technique for collecting the data as high as 90 percent. They also found the total percentage of using convenience sampling used in empirical studies are: Journal of Marketing, 70%, Journal of Marketing Research, 91% and Journal of the Academy of Marketing Science, 83% (Collier and Bienstock 2007).

As the online impulse buyers are still in an emerging situation in Bangladesh, and there are no reliable sample frames that are currently available for conducting the probability sampling, thus, non-probability sampling has been selected for this study. Moreover, in non-probability sampling technique, source of selection biasness is present (Malhotra 2019). Hence to reduce the biasness and to ensure the maximum composition of students from different social classes, this study has selected five different types of universities (both public and private) based on some criteria such as:

- Top ranked Universities belonging to high income group students
- Middle ranked universities belonging to middle income group students
- Bottom ranked universities belonging to the students from low income group

All of the rank mentioned above were covered in this thesis to reduce the biasness among the participants to get the maximum composition of their social classes. Moreover, previous researchers in OIBB studies also used convenience sampling as their sampling technique (Ahmad et al. 2019; Zou 2018; Shin et al. 2013).

From each university, two course instructors were approached to distribute the survey questionnaire to the students. The selected respondents were required to fill in a consent form in order to participate in the survey which was in the beginning of the questionnaire. Three screening questions relating to online shopping experience were given to the respondents to ensure that all the final respondents have the experience of online impulse shopping.

3.5 Research Instrument

Research instruments are simply some tools that help researchers to obtain information that is relevant to the research by collecting, measuring and analysing the data and achieve their stated objectives during their research journey (Wilkinson and Birmingham 2003). Selecting the suitable research instrument is very important as it will affect the reliability and validity of a study (Malhotra and Peterson 2014). To collect the primary data, this study has chosen questionnaire as its research instruments.

3.5.1 Questionnaire

Malhotra (2019) defined questionnaire as a formalized set of questions that helps to obtain information from the targeted respondents. In quantitative research, a well-known

technique for obtaining data is the survey-based research (Trigueros et al. 2017). It is also widely used in especially descriptive survey studies.

Researchers basically use questionnaires in their studies as they can obtain a large amount of information from a large sample size in a very cheap and efficient manner (McLeod 2018). McLeod (2018) also clarified that through questionnaires, the behaviors, attitudes, preferences, opinions and intentions of a large population can be measured more cheaply and quickly than any other methods. Moreover, primary data can be collected through questionnaires as it is very inexpensive and can be managed simply (Bryman and Bell 2011).

A self-administered survey questionnaire has been used as instrument for data collection in this study. Close-ended or structured questions are easily quantifiable, while easy coding system is very useful when the researcher is proving the statistical significance of a survey result (Malhotra and Birks 2007). There are several reasons for selecting close-ended questionnaire for this study (Sincero 2019):

- It is an easy and quick process for respondents to answer the questionnaire
- The answers are easy to code, interpret and useful to prove statistical significance, and
- Finally, it is the ideal process to collect data for quantitative type of research.

However, there are few criticisms despite the advantages of questionnaire identified by McLeod (2018). First, social desirability bias and attempting to protect privacy can influence the respondents to answer dishonestly. Second, choices for answers are fixed in the questionnaire.

3.5.2 Questionnaire Design

In this study, all questions were structured with limited number of options provided for the participants. The questionnaire was prepared with simple English so that all the respondents can understand the requirement of the question and answer accordingly (Malhotra 2019).

The survey instrument was an eight-page questionnaire including four major sections and contained a total of 50 items to capture the required dependent and independent variable which was proposed in the model. A consent form was added in the beginning of the questionnaire where it clearly stated that this data will be collected with their permission. The participants were also informed that this survey is mainly for the academic purposes of the study.

In the beginning of each section, clear instructions were provided to guide the respondents while they answer the respective sections (Dillman, Smyth and Christian 2014). The questionnaire was categorized into four parts. Section A represents 4 Screening Questions to eliminate unsuitable respondents. Researchers use screening questions as a preliminary part of a survey to avoid unwanted participants so that it can help them to get easier data analysis (Malhotra and Birks 2007). Section B contains a total number of 42 questions about online atmospheric cues to measure the consumers'/respondents' behavior which included e-store content, e-store design and e-store navigation. The respondents answered based on their shopping experience.

In section C, the respondents were asked to fill up 8 questionnaires about online impulse buying behavior. These statements contained consumer's product category based on online impulse buying experience. Finally, Section D presented 3 questions based on demographic information such as gender, age and city where the respondents live. In Table 3.1, the summary of questionnaire design represent how they were used in this study.

Sections	Numbers of Items	Contents
А	4	Screening Questions
		(to eliminate unwanted respondents)
В	42	Questions for Three Independent Variables
		(e-store content, e-store design and e-store navigation)
С	8	Questions for One Dependent Variable (Online Impulse Buying Behavior) and One Mediating Variable (consumer impulsiveness)
D	3	Demographic information of the respondents (gender, age, city or location)

 Table 3.2: Summary of questionnaire design

3.5.3 Pre-Test

According to Hilton (2015), "Pretesting is a method of checking that questions work as intended and are understood by those individuals who are likely to respond to them.". A pretest questionnaire survey can help researchers to ensure the quality of the measurement instrument (Lo et al. 2016). Without pre-testing a survey questionnaire, researchers cannot identify whether the survey faces any technical problems such as unclear questions, unfamiliar words, unclear grammatical arrangements, or lack of an appropriate answer (Perneger et al. 2015). Therefore, the main purpose of pre-testing the questionnaire is to verify whether the targeted respondents have a clear understanding of questions so that the outcome of their answer can be meaningful (Perneger et al. 2015).

In this study, the instrument has been pre-tested by 40 students from four universities (selected for this study) in Dhaka city. Previous researchers did not address the actual sample size for pre-testing the survey (Perneger et al. 2015; DeVellis 2012; Groves et al. 2009). Several researchers addressed several ranges for the sample size such as: 5-15 by Beatty and Willis (2007), 10-15 by Sprangers et al. (1998), 10-30 by Fayers and Machin (2000), 30-40 by Beaton et al. (2000) and as many as possible by Converse and Presser (1986).

Therefore, in line with the previous ranges, this study has chosen 40 respondents as the sample size for pre-testing the questionnaire. 40 sets of questionnaires were collected from the respondents and completed the reliability test using SPSS software. Cronbach's (Alpha) is considered as a good practice to check the reliability of the pre-test questionnaire (Malhotra 2019).

3.6 Constructs Measurement

In measuring attitude, Likert scale is the most widely used method in social science research (McLeod 2018). It helps to depict the complexity of individual's thought, feelings and actions towards an issue in a validated and reliable manner (Joshi et al. 2015). Previous researchers in OIBB also used seven-point Likert scale as their measurement tool (Vijay, Prashar and Sahay 2019; Zhang et al. 2018; Hasan 2016).

Researchers used seven-point Likert scale as it provides wider option than five-point scale so that it can provide an improved reliability and validity (Churchill and Peter 1984) score along with the response rates (Malhotra 1993). Similarly, according to Joshi et al. (2015, 398),

"The 7-point scale provides more variety of options which in turn increase the probability of meeting the objective reality of people."

Hence, a seven-point Likert-type scale has been used in the survey questionnaire as the instrument for data collection corresponds to all the constructs in the proposed research model and hypotheses. The rationale for choosing Likert-type scales is that they take less time for respondents to answer and is easier to understand (Churchill 1979).

All relevant scale items were adapted from previous validated measures to ensure the content validity of the scale (Hair et al. 2006). With necessary modifications in wording, all items were written in simple and concise language, as suggested by Hinkin (1998). The following section will justify the use of adopted scales for each construct.

3.6.1 E-store Content

Measuring e-store content or information is one of the important items in OIBB studies (Vijay, Prashar and Sahay 2019; Wu, Chen and Chiu 2016; Floh and Madlberger 2013). Previous researchers already used the items of measurement scale of e-store content in their studies and ensured that the content of the scale was validated.

Consistent with prior studies in the context of OIBB, this study measures e-store content by adapting 15 items. Out of these 15 items, 3 items were adopted from Floh and Madlberger (2013) 2 items from Ettis (2017), 1 item from Zhang et al. (1999), 1 item from Jiang et al. (2013), 2 items from Park et al. (2012), 2 items from Wu, Chen and Chiu (2016), 2 items from Vijay, Prashar and Sahay (2019), and finally one item from Szymanski and Hise (2000).

Past studies have already demonstrated the acceptable Cronbach Alpha value for all the measurement scales in their studies which is greater than 0.8 (Vijay, Prashar and Sahay 2019; Ettis 2017; Wu, Chen and Chiu 2016). Hence, these measurement scales have been selected for measuring e-store content and slightly modified to make it relevant in this study.

3.6.2 E-store Design

In OIBB and IS studies, e-store design is measured to examine how online retailers are compensating for their lacks (e.g. temperature, odor, texture and customers from physical shop) which are vividly present in traditional retailing (Koo and Ju 2010). To understand and measure how visual appeal works on a computer screen, this study has selected 6 measurement items

for e-store design from several researchers. Among them, 2 items were adopted from Floh and Madlberger (2013), 1 item from Koo and Ju (2010), 1 item from Zhang et al. (1999) 2 items from Jiang et al. (2013). The Cronbach Alpha value of underlying construct for these items was 0.70 and above. These measurement items were also slightly modified to make them relevant for the current study.

3.6.3 E-store Navigation

Navigational quality is a crucial item among other types of online atmospheric cues because previous researchers mentioned several times to keep the access of the website fast and easy (Semeijn et al. 2005; Liljander et al. 2002; Wolfinbarger and Gilly 2001). In line with their suggestions, this study has selected 14 items of e-store navigation from different researchers. Among them, 2 items were collected from Floh and Madlberger (2013), 4 items from Koo and Ju (2010), 1 item from Loiacono et al. (2007), 1 item from Zhang et al. (1999), 1 item from Cao et al. (2005), 1 item from Jiang et al. (2013), 2 items from Srinivasan et al. (2002), and the last item was collected from Szymanski and Hise (2000). The Cronbach Alpha value from all these previous studies (>0.70 shows that all the measurement scales have an acceptable internal consistency.

3.6.4 Impulsiveness

Impulsiveness was measured by the items adapted from a consideration of three authors namely Wu, Chen and Chiu (2016), Floh and Madlberger (2013) and Verhagen and Vandolen (2011). 7 items were selected for this study. Accordingly, 4 items were collected from Floh and Madlberger (2013), 2 items from Wu, Chen and Chiu (2016), and 1 item from Verhagen and Vandolen (2011). The Cronbach Alpha value of underlying construct for these items was abover 0.70, indicating internal consistency.

3.6.5 Online impulse buying behavior

In IS (Information System) research, Beatty and Ferrell's (1998) contribution of designing the measurement items on impulse buying behavior is admirable (Madhavaram and Laveri 2004). Many researchers have used their impulse buying items either directly or indirectly in their research (both traditional and online shopping context) to measure the consumers urge to buy impulsively (Floh and Madlberger 2013; Verhagen and Vandolen 2011). This study also focuses on that subject in online shopping context by selecting 8 items

that are adapted from different literature (Wu, Chen and Chiu 2016; Kachen and Lee 2002). Three items were collected from Verhagen and Vandolen (2011), two items from Kachen and Lee (2002), two items from Wu, Chen and Chiu (2016), and one item was selected from Wells, Parboteeah and Valacich (2011). The Cronbach Alpha value of underlying construct for these items was abover 0.70, indicating internal consistency.

3.7 Ethical Considerations

Apart from the importance of the methodology in obtaining reliable and accurate data, the study considers the ethical concerns related to the methodology adopted. To ensure compliance with the ethical standards set by the National Health and Medical Research Council (NHMRC) in Australia, the researcher completes the research ethics and integrity training at Curtin University. Then, the researcher applies to the Human Research Ethics Committee (HREC) for ethical approval prior to collecting data as human beings will be involved as research subjects. All the necessary documents (e.g. information sheet, questionnaires) have been examined by the HREC and the study is classified as low risk. The research activities commence after obtaining the ethics approval from HREC (approval number is **HRE2019-0041**).

3.8 Data Analysis Technique

Quantitative data analysis can be conducted by using two statistical techniques. Firstly, to analyse the preliminary data, Statistical Package for Social Sciences (SPSS) version 16 will be used and it will also provide a descriptive analysis about the study sample. The descriptive statistics would basically generate the profile of the consumers in the selected sample in terms of different demographics. Moreover, descriptive statistics will also be used to measure the central tendency of the collected data.

Secondly, Structural Equation Modeling (SEM) will be used to analyse the inferential statistics. Under SEM, Confirmatory Factor Analysis (CFA) has been used with AMOS 20 software for testing the reliability and validity of the scale items for each construct in the model. Additionally, structural model has been used to evaluate the relationship among the construct of the research using AMOS 20 software to conduct Maximum Likelihood (ML) analysis.

3.8.1 Preliminary Data Analysis

Before conducting any multivariate analysis, preliminary data analyses is an essential step as it helps as a foundation for a quality outcome from a research finding (Hair et al. 2014). Primary data should not be analysed immediately after data collection as they are not customarily completely perfect for statistical analysis (Gallagher et al. 2012). Data examination is the initial step in any analysis that is often overlooked (Hair et al. 2014).

Hence, it is recommended to spend time in checking the data saved in SPSS data file before linking them to SEM (AMOS) model (Gallagher et al. 2012). In this study, the collected data were examined in SPSS to check for missing data, identify any outlier, and test for the assumptions underlying confirmatory factor analysis and structural equation modeling in AMOS. In chapter 4, each of these procedures of preliminary data analysis are described in detail.

Previous researchers in OIBB studies used SPSS (Statistical Package for the Social Sciences) as an ideal tool to screen the data before the implementation of structural equation modeling (Akram et al 2018; Zou 2018; Wu, Chen and Chiu 2016).

3.8.2 Descriptive Analysis

Descriptive analysis basically used to describe some basic features of the data in a study (Kale 2019). More precisely, it helps to generate the profile of the consumers in the selected sample in terms of different demographics (i.e. gender, age, education level, income) (Hair et al. 2014). In checking the normality of the data or understanding the nature of the techniques that will be applied for analysis, the description of the data analysis is needed (Kale 2019).

To gain the preliminary information (i.e. frequencies, mean and standard deviation) about the sample, this study has conducted descriptive analysis on all items of e-store content, e-store design, e-store navigation, impulsiveness and online impulse buying behavior (Hair et al. 2014).

3.8.3 Structural Equation Modeling (SEM)

Structural Equation Modeling (SEM) is a collection of statistical techniques that can also be summarised as a mixture of factor analysis and path analysis (Gallagher et al. 2012).

Researchers can build, test and confirm complex relationship models using this process. Generally, SEM is visualized through a graphical path diagram (Hox and Bechger 1998).

Two important aspects are conveyed by SEM, such as a series of structural equation that represents the causal process and structural relations that uses pictorial model for making a clear conceptualization of the theory (Byrne 2016). Several reasons described below will interpret why using SEM is more appropriate in this study:

- 1. SEM provides confirmatory approach for the data analysis (Byrne 2016)
- SEM is capable of correcting or assessing the measurement error among the relationships between multiple observed and unobserved variables (Byrne 2016; Astrachan et al. 2014; Hair et al. 2014)
- 3. SEM helps to "extend the possibility of relationships among the latent variables" and is comprised of two components: a measurement model and a structural model (Schreiber et al. 2006, 325). "Measurement Model" helps the researchers to evaluate how an observed variable is representing the unobserved variable while "Structural Model" helps to estimate the strength of the relationship among them (Gallagher 2008, 256).
- 4. SEM assesses the "estimation of multiple and interrelated dependence relationships" (Hair et al. 2014, 547) which means it is not only to analyse the latent variables, but also efficiently estimating other types of analysis such as estimating variance and covariance, testing the hypotheses, conventional linear regression, and confirmatory factor analysis (Goodboy and Kline 2017; Holbert and Stephenson 2008; Shammout 2007).
- 5. SEM is found to be an appropriate technique by the researchers in relationship marketing due to its unique combination of techniques (e.g. factor analysis and multiple regression analysis) for examining their hypothesised models (Hair et al. 2014; Wang et al. 2006; Palmatier et al. 2006; Liang and Wang 2005).
- 6. Besides, SEM provides the best model that fits to the data through testing the overall model fit and individual parameter estimation (Hair et al. 2014)

SEM has two major approaches, namely covariance based structural equation modeling (CB-SEM; Jöreskog 1971) and partial least squares structural equation modeling (PLS-SEM; Wold 1982) (Sarstedt et al. 2014; Sharma and Kim 2013; Shammout 2007). According to Davcik (2014), researchers use CB-SEM to confirm specific theories and accurate parameters

whereas in Variance-based SEM, researchers primarily focus on the predictive power of the hypothesized model. More precisely, Hair et al. (2011) recommended that CB-SEM is used for theory testing, theory confirmation or comparison while PLS-SEM is used for exploratory studies or the extensions of the existence structural theories. As covariance-based SEM (CB-SEM) is widely used by the previous researchers in past OIBB studies (Akram et al 2018; Hasan 2016; Floh and Madlberger 2013), therefore, this study has selected CB-SEM based on the following reasons:

- 1. CB-SEM is a suitable method for larger sample sizes to assess the relationships between all variables (Astrachan et al. 2014).
- CB-SEM helps to eliminate high measurement errors and lower loading items from the proposed model (Hair et al. 2014). It also enables the assessment of acceptable fit of the proposed structural model.
- CB-SEM is more appropriate to establish the theory testing and confirmation than PLS-SEM because PLS-SEM is basically used to measure the early-stage theory development and testing (Astrachan et al. 2014; Ringle et al. 2013).
- CB-SEM mostly allows the examination of the mediating effect of a model (Astrachan et al. 2014). It also helps to assess both direct or indirect effects of full or partial mediation among constructs (Hair et al. 2014; Bagozzi and Yi 2012).
- 5. Furthermore, in examining the moderating effect, CB-SEM approach can also be applied to check how a third variable changes the relationships between two related variables (Hair et al. 2014).

3.9 Assessment of Measurement Model

In measurement model analysis, researchers basically identify how the observed variables (e.g. items) are corresponding towards the underlying theoretical constructs (Arbuckle 2005). Researchers define the latent variables using the measurement model and assign the observed variables accordingly (Parboteeah 2005). The current study has five latent variables, namely e-store content, e-store design, e-store navigation, impulsiveness and online impulse buying behavior. The items that are used for each of the measures are symbolized as observed variable using the rectangle sign.

The paths of the model are drawn from the latent variable towards each of its associated observed variables to represent the factor loading. The reason of drawing the paths from latent

variable to observed variable is because observed variables are considered as reflective in nature (Parboteeah 2005).

The measurement errors are represented by a circle in this study. From the error term, a path is drawn towards the observed variable. Finally, to represent the correlations between the different latent variables, a two-headed arrow is used in the model. When the model is specified, the model estimates were calculated, using AMOS.

3.9.1 Confirmatory Factor Analysis (CFA)

Confirmatory factor analysis is most commonly used in social research as it is a special form of factor analysis (Nazim and Ahmad 2013). It helps researchers to test the understanding of how the measure of a construct is consisted with the researchers' nature of constructs (Ahmad et al. 2016).

In the initial stage of measurement model, confirmatory factor analysis (CFA) are being performed to evaluate and measure each of the latent variables (Byrne 2016). It allows the researcher to test the hypothesis to see the relationship between the observed variables and their underlying constructs (Suhr 2006). These reasons basically justify the use of confirmatory factor analysis in this current study.

The main function of CFA is described by Anderson and Gerbing (1988) in their study where it removes all redundant items from each construct. It contains the assessment of unidimensionality, reliability and validity of the underlying constructs which will be covered in the following section.

3.9.1.1 Unidimensionality

In testing the scores or describing the items in many publications, the term which is extensively used is "unidimensionality" (Ziegler and Hagemann 2015, 231). Hair et al. (1995, 641) defined unidimensionality as "an assumption underlying the calculation of reliability and is demonstrated when the indicators of a construct have acceptable fit on a single-factor (one dimensional) model".

An item will be considered as unidimensional "if the systematic differences within the item variance are only due to one variance source, that is, one latent variable" (Ziegler and Hagemann 2015, 232). The threshold level of the factor loading of unidimensionality should

be 0.6 and above (Zainudin 2012). However, the items which will be considered as highly correlated to each other should be deleted to achieve the unidimensionality (Shau 2017; Nazim and Ahmad 2013).

3.9.1.2 Reliability

Reliability for a measurement model that can be assessed through three criteria, namely internal reliability, Construct Reliability (CR) and Average Variance Extracted (AVE) (Ahmad et al. 2016). Internal consistency is measured through Cronbach alpha, which has been used most popularly in OIBB studies to measure internal consistency (Akram et al 2018; Handayani et al. 2018; Ettis 2017). The acceptable range of Cronbach's Alpha value is 0.70 to 0.95 (Tavakol and Dennick 2011).

Construct reliability is "the measure of reliability and internal consistency of the measured variables representing a latent construct" (Ahmad et al. 2016, 3). A value of $CR \ge 0.6$ is required to achieve the construct reliability (Ahmad et al. 2016). "Average Variance Extracted (AVE) is the average percentage of variation explained by the items in a construct" (Ahmad et al. 2016, 3). A value of ≥ 0.5 is required to achieve an AVE (Ahmad et al. 2016).

3.9.1.3 Validity

According to Said et al. (2011, 1099), "validity is the measure of the accuracy of an instrument used in a study". Generally, there are three types of validity that are required to measure each measurement model such as: convergent validity, construct validity and discriminant validity (Ahmad et al. 2016). Convergent validity is also known as a sub-type of construct validity which actually helps to measure a particular construct (Carlson and Herdman 2012). Ahmad et al. (2016) suggested that a convergent validity is only possible to be achieved in a measurement model when all the items are proven to be statistically significant. Besides, researchers also used several ways to measure convergent validity of the items as follows:

- a) Factor loading- (a significant loading could still be fairly weak in strength, a good rule of thumb is that standardized loading estimates should be 0.5 or higher, and ideally 0.7 or higher) (Hair et al. 2014)
- b) Average variance extracted (AVE) (an AVE of 0.5 or higher is a good rule of thumb suggesting adequate convergence) (Hair et al. 2014) and
- c) Construct reliability (CR) value 0.7 or higher suggests good reliability (Hair et al. 2014)

According to Sekaran and Bougie (2010, 222), "Construct validity testifies to how well the results obtained from the use of the measure fit the theories around which the test is designed." So construct validity is basically dealing with the accuracy of measurement (Hair et al. 2014). When the fitness indexes are able to achieve the level of acceptance, then the construct validity of a study will be achieved (Ahmad et al. 2016).

When the measurement model is free from redundant items, the discriminant validity can be achieved (Hair et al. 2014). One of the most popular approach to confirm discriminant validity is known as Fornell-Larcker criterion, suggesting that the square root of average variance extracted (AVE) for the construct should be higher than the correlation between the respective constructs (Fornell and Larcker 1981).

3.10 Assessment of Structural Model

Structural theory can be defined as a conceptual representation of a structural relationships between the constructs (Hair et al. 2014). It can be represented with a visual diagram of a structural model with a set of structural equations (Hair et al. 2014). Structural model helps the researchers to define the relationship between the latent variables that are used in the model (Gefen and Straub 2003).

Specifying a relationship generally means that we either specify that a relationship exists or that it does not exist. If it exists, an arrow is drawn; if no relationship is expected, then no arrow is drawn (Hair et al. 2014). Thus, the structural model allows hypothesis testing by assessing the hypothesized relationships between the independent and dependent variables. In the structural model, the measurement error for each latent variable is also determined. In a CFA analysis, when the measurement model is already examined and validated, the SEM will focus on testing the structural relationships.

3.11 Fitness of the Models

When the model has the ability to reproduce the data, it can be assessed as a fit model. A good-fitting model represents that the data will be consistent and does not require respecification (Kenny 2015). There are several methods available for assessing the model fit recommended by previous researchers including: 2χ to degrees of freedom ratio, goodness of fit (GFI) index, adjusted goodness of fit (AGFI) index, and the normed fit index (NFI). However, Byrne (2016) claimed that RMSEA is the most contemporary fit statistic.

To determine the adequacy of model fit, the current study is following the fit indices recommended by Kline (2011) and Hooper et al. (2008) for confirmatory factor analysis in their previous studies in analysing the data. The fit indices following are the Chi-Squared test (χ 2), Relative/Normed Chi-Square (χ 2/df), Comparative Fit Index (CFI), Goodness-of-Fit Index (GFI), The Adjusted Goodness-of-Fit Index (AGFI), Root Mean Square Error of Approximation (RMSEA) and finally Standardised Root Mean Square Residual (SRMR). The following table will show the values of fit indices which are recommended by the previous researchers in comparing purposes.

3.12 Summary

The justification of proposed research methodology and description of the study was provided in this chapter to test the proposed hypotheses. A self-administered survey questionnaire method was considered as the most appropriate technique for this research.

The following step will encompass analysing the data to ensure either the data supports or does not support the hypotheses. The next chapter will provide the systematic statistical techniques to test the hypotheses and will provide the results based on the analysis.

Name of Index/ Measure	Recommended Value/ Threshold	Recommended By
Chi-Square (χ2)	$p \ge 0.05$	Barrett 2007; Hooper et al. 2008
Relative/Normed Chi- Square (χ 2/df) (cmin/df)	<3 good; <5sometimes permissible	Schijin 2015
Comparative Fit Index (CFI)	≥ 0.95 great; ≥ 0.90 traditional; >.80 sometimes permissible	Hu and Bentler 1999; Hooper et al. 2008; Schijin 2015
Goodness-of-Fit Index (GFI)	>/= 0.85	Anderson and Gerbig 1982
The Adjusted Goodness- of-Fit Index (AGFI)	>/= 0.85	Anderson and Gerbig 1982
Root Mean Square Error of Approximation (RMSEA)	Between .050 and <.080 [some recommended stricter cutoffs of <0.05 (Bryne 2010)	Hu and Bentler 1999; Schermelleh-Engel et al. 2003
Standardised Root Mean Square Residual (SRMR)	Between .050 and <.080	Hu and Bentler 1999; Schermelleh -Engel et al. 2003
Normed Fit Index (NFI)	0.90 is generic, but 0.95 is desirable	Hu and Bentler 1999
Tucker-Lewis-Index (TLI)	0.90 is generic, but 0.95 is desirable	Hu and Bentler 1999
Parsimony Normed Fit Index (PNFI)	0.50 is acceptable where other GOFs is 0.90	Mulaik et al. 1989

Table 3.3: Model fit indices and recommended values

Chapter 4: Analysis and Results

4.1 Introduction

This chapter will represent the results of the data analysis of this current study. First, the data preparation will be briefly discussed. Then the preliminary data will be examined using Statistical Package for the Social Sciences (SPSS). Then, the descriptive analysis of the respondents will the discussed using mean and standard deviation. After that, the results of Confirmatory Factor Analysis (CFA) will be reported to ensure overall data quality. Finally, the results of Structural Equation Modeling (SEM) using AMOS 20 will be illustrated along with the evaluation of the hypothesized structural model. Lastly, overall findings from this study will be discussed.

4.2 Data Preparation

After collecting the primary data, they are usually not ready for analysis; rather, data needs to be prepared according to standard criteria before conducting any statistical analysis. In fact, data preparation refers to the process of manipulating and organizing data before the analysis (Abdallah et al. 2017).

Data preparation involves a number of tasks that includes inputting the data into the computer; checking data for consistency and accuracy; transforming data if required; and preparing and documenting a database integrating different measures (Trochim 2019).

Data can be input in different ways. For example, in case of paper-based survey, collected data are usually entered into computer from collected completed questionnaire manually. In case of online survey, the data are usually saved automatically into spreadsheet once the respondents complete and submit the survey. This study is conducted using paper-based face-to-face survey. Hence, the collected data are entered manually into SPSS.

4.3 Examining the Data

As mentioned earlier, primary data should not be analysed immediately after data collection as they are not customarily completely perfect for statistical analysis (Gallagher 2008). Data examination is the initial step in any analysis that is often overlooked (Hair et al. 2014). Hence, it is recommended to spend time in checking the data saved in SPSS data file

before linking them to SEM (AMOS) model (Gallagher 2008). In this study, the collected data are examined in SPSS to check for missing data, recode reverse coded items, identify any outlier, and test for the assumptions underlying confirmatory factor analysis and structural equation modeling in AMOS.

4.3.1 Missing Data and Reverse Coded Items

In line with other multivariate techniques, structural equation modeling (SEM) also requires a full data set without any missing value. When the respondents fail to answer one or more survey questions, the missing data arises. Tabachnick and Fidell (2019) recommended two ways to evaluate missing data:

- To evaluate the amount of missing data
- To evaluate what data are missing (the pattern).

In this study, among 350 respondents, 15 missing data were identified as those respondents failed to answer all the questions. Those missing data are removed from the current study. Therefore, the total number of completed questionnaires in the sample is 335. The reverse coded items (negative statements) are treated using "Recode" tool in SPSS by reversing the values from 1 to 7 into 7 to 1.

4.3.2 Outlier

An outlier means an extreme or unexpected values of a data set (Reis 2020). When the participants randomly selected their answers in the questionnaire, an outlier occurs (Reis 2020). According to Tabachnick and Fidell (2019), there are several reasons that create outliers:

- Incorrect data entry can create incorrect values (e.g. if the researcher accidentally typed a value of 22 instead of 2)
- When the researchers fail to specify missing value codes for the data
- When the population is irrelevant for our analysis (e.g. outside the targeted population)
- Finally, when the variable has more extreme values than expected in a normal distribution

However, in this study, no outliers are found.

4.3.3 Power Analysis for Sample Adequacy

A post-hoc power analysis was conducted for determining the adequacy of sample on the basis of effect size (ρ =0.3), significance level (α =0.05), and the final sample size (n=335) (Marcoulides and Saunders 2006). The analysis was performed using the statistical software G*Power (Faul et al. 2007; Hair et al. 2017). The calculated power value was 0.99 which exceeds the minimum requirement of 0.80 recommended by Cohen (1988). Hence, the adequacy of the sample size was statistically confirmed.

4.3.4 Common method bias

Chang, Witteloostuijn and Eden (2010) described common method bias as a measurement error which is compounded by the sociability of respondents when they want to provide positive answers. It generates variations in responses that are caused by the instrument and the results are contaminated by the noise stemming from the biased instruments (Podsakoff et al. 2012). Among many other methods used to test CMB, the most common and simplest way is Harman's single factor (Podsakoff et al. 2012). Researchers use Harman's single factor only when their studies are related with AMOS and SEM (Podsakoff et al. 2003). With Harman's single factor, all measuring latent variables are loaded into one common factor and if the total variance for a single factor is less than 50%, then CMB will not affect the results of the data set (Djajadikerta, Roni and Trireksani 2015).

4.3.4.1 Harman's Single Factor

Based on the Harman Single-Factor Test (HSFT) in Table 4.1, this study found that the contribution of the largest factor is only 23.13% of the total variance. It means that CMB (Common Method Bias) will not affect the results of the data set as the total variance of the single factor is less than 50%, which is suggested by Podsakoff et al. (2012). The above mentioned result suggests that this data was unbiased. Therefore, further analysis can be conducted by the researcher.

Factors	Eigenvalue	Percentage of variability		
		Component	Cumulative	
1	11.568	23.136	23.136	
2	6.017	12.033	35.170	
3	3.514	7.029	42.198	
4	2.577	5.153	47.352	
5	1.750	3.499	50.851	
6	1.376	2.753	53.604	
7	1.201	2.402	56.006	
8	1.154	2.308	58.314	
9	1.127	2.253	60.567	
10	1.014	2.028	62.594	
11	.936	1.872	64.466	
12	.915	1.830	66.296	
13	.875	1.750	68.046	
14	.812	1.624	69.670	
15	.797	1.594	71.264	
16	.730	1.459	72.724	
17	.727	1.454	74.178	
18	.677	1.354	75.532	
19	.641	1.283	76.815	
20	.629	1.258	78.073	
21	.608	1.216	79.288	
22	.597	1.194	80.482	
23	.555	1.110	81.591	
24	.542	1.084	82.676	
25	.519	1.038	83.713	
26	.508	1.016	84.729	
27	.488	.977	85.706	
28	.483	.966	86.672	
29	.445	.891	87.562	
30	.441	.882	88.444	
31	.426	.852	89.296	
32	.404	.807	90.104	
33	.395	.791	90.894	
34	.380	.760	91.655	
35	.369	.739	92.394	
36	.357	.713	93.107	
37	.324	.649	93.756	
38	.305	.609	94.365	
39	.288	.576	94.941	
40	.287	.574	95.515	
41	.276	.551	96.066	
42	.271	.541	96.607	
43	.255	.509	97.117	
44	.244	.488	97.604	

Table:	4.1	Harman ³	's	single	factor	ana	lys	is
							•	

45	.237	.475	98.079
46	.225	.451	98.530
47	.209	.418	98.948
48	.184	.368	99.317
49	.179	.358	99.674
50	.163	.326	100.000

4.3.5 Normality test

The shape of the distribution of a particular data set is an important aspect for a researcher to know whether it is normally distributed (Kale 2019). It is also important while describing a variable as it measures the frequency of values from different range of variables (Kale 2019). Thus normality test is a significant and necessary step to measure the sample data in CB-SEM analysis (Byrne 2016). Normality test means the graphical assessment of normality to determine that the sample data has been drawn from a normally distributed population (Ghasemi and Zahediasl 2012). According to Tabachnick and Fidell (2019), it is an assumption where each variable and all linear combinations of the variables are normally distributed.

Some well-known normality test methods are Shapiro-Wilk test, Kolmogorov-Smirnov test and Z-score that used to test normality. According to Kim (2013), if the sample size is small to medium (e.g. n < 300) then these tests are reliable but it might be unreliable for larger samples (e.g. n > 300) and could be too sensitive. Since, the sample size of this study is more than 300, thus, skewness and kurtosis can be a validated method. Skewness indicates the balance of the distribution which means a variable whose mean is not in the center of the distribution (Tabachnick and Fidell 2019). Two types of skewness can be observed: positive skewness and negative skewness (Hair et al. 2014). When the distribution is shifted to the left side from the normal curve, it is known as positive skewness. Meanwhile, when the distribution moves to the right side, it indicates negative skewness (Hair et al. 2014). In contrast, Kurtosis indicates the "peakedness" of the distribution means either the distribution is too picked or too flat (Tabachnick and Fidell 2019).

According to Hair et al. (2010), the accepted range of skewness is +/-2, and kurtosis is +/-7. Byrne (2016) also recommended the similar value of skewness (+/-2) and kurtosis (+/-7). Besides, a study by Kim (2013) suggested that if the sample size is > 300, the value of absolute skewness could be larger than 2 and absolute kurtosis could be larger than 7. This could be used as reference values for determining substantial non-normality. The result of this

study showed that some of the values of skewness's are greater than (+/-3) and kurtosis is (+/-2). Chou and Bentler (1995) and Kim (2013) suggested that the range of skewness ± 3 and kurtosis ± 7 can be acceptable for larger sample (n > 300). Thus, the data of the current study is considered somewhat close to a normal distribution (Garson 2012).

4.3.6 Homoscedasticity

Hair et al. (2014, 72) defined homoscedasticity as "the assumption that dependent variable(s) exhibit equal levels of variance across the range of predictor variable(s)." More precisely, in a bivariate scatterplot, the width between two variables are roughly the same except in the middle point where some bulging dots can be noticed (Tabachnick and Fidell 2019). Homoscedasticity is tested using a scatterplot of dependent variable and independent variable (Hair et al. 2014). The scatter plot of this study shows that the dots are evenly distributed with a straight line which confirms the homoscedasticity assumption.

4.3.7 Linearity test

Linearity represents that there is a "straight-line relationship" between independent variable and dependent variable (Tabachnick and Fidell 2013, 83). Linearity test is important for a researcher because pearson's r only represents the linear relationships among variables but nonlinear effects are ignored here (Tabachnick and Fidell 2019). The most common way to assess linearity assumption is using scatterplots which can be easily identified by the nonlinear patterns in the data set (Hair et al. 2014). Another reason to use scatterplot is that it shows the straight line which helps the researcher to identify any nonlinear appearances in the data set (Hair et al. 2014).

4.3.8 Multicollinearity Test

Multicollinearity denotes "when any single independent variable is highly correlated with a set of other independent variables" (Hair et al. 2014, 152). For example, singularity can be clarified as an extreme case of multicollinearity because one independent variable can perfectly be predicted by three or more (i.e., a correlation of ± 1.0) independent variables (Hair et al. 2014). The impact of multicollinearity can lead to skewed or misleading results and make the statistical inferences less reliable (Kenton 2019).

4.4 Descriptive Analysis of Respondents

Descriptive statistics help the researcher to describe and understand the features of a specific data in a short summary (Kenton 2019). It also detects the sample characteristics which can influence the conclusion (Thompson 2014). To determine the normality of distribution, description of the data is needed (Kale 2019). It also provides an insight of the respondents' demographic profiles including the mean, standard deviation, skewness and kurtosis.

4.4.1 Descriptive statistics of Instruments (Mean and Standard Deviation)

Different types of descriptive statistics are done in research papers for analysing and drawing the calculation of the data (Kale 2019). This study measures the following statistical tools, such as the central tendencies (mean, median and mode), measures of variability (standard deviation) and measures of divergence from normality (Skewness, Kurtosis) as descriptive statistics for computing further statistical testings.

In this study, descriptive statistics are calculated using SPSS version 17.0 for mean and standard deviation. In questionnaire, the respondents are asked to express their perceptions to each item using the seven point Likert scale (ranging from 1=strongly disagree to 7=strongly agree) which is already noted in chapter 3. If the mean score is higher, it indicates that respondents have a positive perception of the variables. The following table will show the mean score of the variables below where: e-store content (4.84), e-store design (5.09), e-store navigation (4.75), online impulsiveness (4.15) and online impulse buying behavior (4.64). As the midpoint of the mean values that are above 2.50, it indicates that the respondents have a positive perception about the variables that are used in the context of online impulse buying behavior in this study.

Standard deviation was defined by Rumsey (2020) as "it measures how concentrated the data are around the mean; the more concentrated, the smaller the standard deviation." Similar definition was provided by Niles (2020) as "it is a statistic that tells you how tightly all the various examples are clustered around the mean in a set of data." If the examples are tight together and create a steep bell shape, the SD values will be small but if the examples are spread thus, making the bell shape flat, then the SD values will be larger (Niles 2020). The formula of the standard deviation is calculated as the square root of the variance (Hair et al. 2014). The following table shows the small standard deviation across the variables including: e-store

content (1.2682), e-store design (1.0281), e-store navigation (1.451), impulsiveness (1.521), and online impulse buying behavior (1.3131).

As the standard deviation values of variables in this study range from 1.0281 to 1.521, this indicate that the scores are close to the average mean. Therefore, to explain more precisely, the majority of consumers held positive attitudes toward the online impulse buying behavior.

Item code	Description	Mean	SD
E-Store con	ntent	4.840	1.268
EC1	The shopping site provides detailed	5.131	1.196
	information that I need.		
EC2	The shopping site shows visual product	5.134	1.295
	information of good quality.		
EC3	The shopping site adequately meets my	4.811	1.337
	information needs.		
EC4	The shopping site is a good source of	4.994	1.278
	product information.		
EC5	The shopping site is informative about the	4.952	1.332
	company's products.		
EC6	The information presented in the	4.970	1.235
	shopping site are logically organized.		
EC10	Product information on shopping site is	4.931	1.330
	clear.		
EC11	Product information on shopping site is	5.149	1.265
	understandable.		
EC12	Shopping site is like a real expert in	4.537	1.376
	assessing product information.		
EC13	I find the information on the online	4.665	1.367
	shopping site to be accurate.		
EC14	The information on the online shopping	4.686	1.392
	site is complete.		
EC15	The product and its features are correctly	4.952	1.303
	presented in the shopping site.		
E-Store des	ign	5.090	1.028
ED1	Overall, the shopping site was visually	5.017	1.181
	stimulating to me.		
ED2	Different colours used in the shopping	5.143	1.303
	site were visually appealing to me.		
ED3	The graphics such as picture, animation	5.089	1.337
	in the shopping site were engaging me.		
E-Store nav	vigation	4.750	1.451
EN1	The navigation on the shopping site was	5.176	1.081
	easy for me to go from one section/page		
	to another section/page.		1.0.52
EN2	Learning to operate this shopping site was	5.364	1.063
	easy for me.		

 Table 4.2: Mean and standard deviation of measurement items

EN3	The shopping site presents buttons to help customers find products/ services.	5.268	1.157
EN4	The shopping site shows shortcut paths to	5.134	1.182
	make customers find out products they		
	already know.		
EN8	The directions for using the shopping site	5.209	1.175
	were simple to me.		
EN9	The directions for using the shopping site	5.247	1.135
	were clear to me.		
EN10	The structure of the shopping site is	5.167	1.184
	logical to me.		
EN11	The product classifications displayed in	5.206	1.111
	the shopping site were easy to follow.		
EN12	A first-time buyer can make a purchase	5.116	1.204
	from this shopping site without much		
	help.		
EN13	It takes a long time to shop at this	2.406	.945
	shopping site.*	7 0 2 0	1 1 10
EN14	The contents are easily found in the	5.038	1.140
T 1 •	shopping site.	4 1 50	1 501
Impulsiven		4.150	1.521
IMPI	When I go shopping, I buy things that I	4.382	1.626
	had not intended to purchase.	4 225	1 (07
IMP2	I often buy things without considering the	4.325	1.08/
	When Leas compating that really interests	1 721	1 575
IIVIF 5	me I simply buy it	4.734	1.373
	It is fun for me to buy spontaneously	/ 188	1 710
IMP5	When shopping online. I often buy things	4.182	1.710
IIVII 5	according to how I feel at the moment		1.057
IMP6	When shopping online I often buy things	3 713	1 825
	without thinking.	01/10	1.020
Online Impu	Ise Shopping Behavior	4.640	1.313
SBC1	When I go online, I buy	4.364	1.533
	clothing/cosmetics/electronics that I had		
	not planned to buy.		
SBC2	When I see any clothing online that	4.743	1.484
	interests me, I buy without considering		
	the consequences.		
SBC3	My purchase of clothing online was	4.904	1.231
	spontaneous.		
SBC5	Most of the time I could not resist to buy	4.450	1.507
	clothing from some online shopping sites.		
SBC6	While browsing online shopping site, I	4.543	1.330
	had the inclination to buy		
	clothing/cosmetics/electronics items		
	outside my specific shopping goal.		

SBC7	When shopping clothing online, I often have the idea "buy now, think about it later."	4.316	1.536
SBC8	When shopping clothing/ cosmetics/ electronics online, I often buy things according to how I feel at the moment.	5.059	1.385

4.5 Measurement model analysis and result

This study applied Structural Equation Modeling (SEM) integrating both measurement model and structural model for assessing reliability and validity of the constructs and testing the hypotheses. AMOS (Analysis of Moment Structure) software package (version 21.0) is used to assess the models. The study model integrates three independent variables, one dependent variable and one mediating variable, consisting a total of **50** measurement items. The list of all variables with the breakdown of the number of corresponding measurement items is presented in Table 4.3.

No.	Label	Constructs	No. of items
1	EC	E-store Content	15
2	ED	E-store Design	6
3	EN	E-store Navigation	14
4	IMP	Impulsiveness	7
5	SBC	Online Impulse Buying Behavior	8

Table 4.3: Constructs and number of indicator variables

This study performed measurement model analysis in two stages. First, the measurement model for each construct is performed separately to test the unidimentionality. This is followed by assessing overall measurement model integrating all study constructs together. Unidimensionality of each of the construct is reported in the following section.

4.5.1 Measurement Model for E-store Content

The initial measurement model for E-store Content consisting of 15 measurement items is presented in Figure 4.1. The model fit summary of the initial measurement model is presented in Table 4.4. As shown in the table, the all model fit indices are not within the acceptable range. Accordingly, three items such as EC7 = .580, EC8 = .477 and EC9 = .535 with relatively poor factor loadings are removed from the analysis.



Figure 4.1: Initial measurement model for e-store content

Table 4.4: Model fit summary of initial measurement model for e-store content

χ ² (DF)	χ^2/DF	GFI	CFI	RMSEA	SRMR
429.482(90)	4.772	.848	.867	.106	.059

The modified measurement model appeared in Figure 4.2 with corresponding factor loading values in it. The resulting model fit summary is presented in Table 4.5. As it can be seen in Table 4.5, the model fit indices of the modified measurement model have been improved to meet or closely meet the required threshold value mentioned in Table 3.3.



Figure 4.2: Modified measurement model for e-store content

Table 4.5: Model fit summary of modified measurement model for e-store content

χ ² (DF)	χ²/DF	GFI	CFI	RMSEA	SRMR
258.896(54)	4.794	.883	.903	.107	.050

4.5.2 Measurement Model for E-store Design

The initial measurement model for E-store Design consists of 6 measurement items which is presented in Figure 4.3. The model fit summary of the initial measurement model is presented in Table 4.6. As shown in the table, some of the model fit indices do not meet the minimum requirement of acceptable range. Accordingly, two items (ED6= .555 and ED5 = .544) with relatively poor factor loadings are removed from the analysis.



Figure 4.3: Initial measurement model for e-store design

Table 4.6: Model fit summary of initial measurement model for e-store design

χ^2 (DF)	χ^2/DF	GFI	CFI	RMSEA	SRMR
77.825(9)	8.647	.920	.880	.151	.071

The modified measurement model is appeared in Figure 4.4 with corresponding factor loading values in it. The resulting model fit summary is presented in Table 4.7. As it can be seen in Table 4.7, the model fit indices of the modified measurement model have been improved to meet or closely meet the required threshold value mentioned in Table 3.3.

Figure 4.4: Modified measurement model for e-store design



Table 4.7: Model fit summary of modified measurement model for e-store design

χ ² (DF)	χ²/DF	GFI	CFI	RMSEA	SRMR
1.021	(2)	.511	.998	1.00	.000	.009

4.5.3 Measurement Model for E-store Navigation

The initial measurement model for E-store Navigation consists of 14 measurement items which is presented in Figure 4.5. The model fit summary of the initial measurement model is presented in Table 4.8. As shown in the table, the all model fit indices are not within the acceptable range. Accordingly, three items (EN5= .585, EN6= .463 and EN7 = .546) with relatively poor factor loadings are removed from the analysis.



Figure 4.5: Initial measurement model for e-store navigation

Table 4.8: Model fit summary of initial measurement model for e-store navigation

χ ² (DF)	χ ² /DF	GFI	CFI	RMSEA	SRMR
180.589(77)	2.345	.923	.948	.063	.041

The modified measurement model appears in Figure 4.6 with corresponding factor loading values in it. The resulting model fit summary is presented in Table 4.9. As it can be seen in Table 4.9, the model fit indices of the modified measurement model have been improved to meet or closely meet the required threshold value mentioned in Table 3.3.



Figure 4.6: Modified measurement model for e-store navigation

Table 4.9: Model fit summary of modified measurement model for e-store navigation

$\chi^2(DF)$	χ ² /DF	GFI	CFI	RMSEA	SRMR
100.843(44)	2.292	.944	.966	.062	.035

4.5.4 Measurement Model for Impulsiveness

The initial measurement model for Impulsiveness consists of 7 measurement items which is presented in Figure 4.7. The model fit summary of the initial measurement model is presented in Table 4.10. As shown in the table, the all model fit indices are not within the acceptable range. Among 7 items, only 1 item (IMP7=.472) with relatively poor factor loading is removed from the analysis.



Figure 4.7: Initial measurement model for impulsiveness

Table 4.10: Model fit summary of initial measurement model for impulsiveness

χ ² (DF)	χ²/DF	GFI	CFI	RMSEA	SRMR
62.464(14)	4.462	.951	.941	.102	.043

The modified measurement model appears in Figure 4.8 with corresponding factor loading values in it. The resulting model fit summary is presented in Table 4.11. As it can be seen in Table 4.11, the model fit indices of the modified measurement model have been improved to meet or closely meet the required threshold value mentioned in Table 3.3.

Figure 4.8: Modified measurement model for impulsiveness



Table 4.11: Model fit summary of modified measurement model for impulsiveness

χ ² (DF)	χ²/DF	GFI	CFI	RMSEA	SRMR
56.838 ₍₉₎	6.315	.948	.937	.126	.047

4.5.5 Measurement Model for Online Impulse Buying Behavior

The initial measurement model for Online Impulse Buying Behavior consists of 8 measurement items which is presented in Figure 4.9. The model fit summary of the initial measurement model is presented in Table 4.12. As shown in the table, all the model fit indices are within acceptable range in this model. Therefore, the measurement model needs not to modified here.



Figure 4.9: The measurement model for online impulse buying behavior

 Table 4.12: Model fit summary of measurement model for online impulse buying behavior

$\chi^2(DF)$	χ ² /DF	GFI	CFI	RMSEA	SRMR
82.204(20)	4.110	.941	.925	.096	.049

4.6 Confirmatory Factor Analysis for Overall Measurement Model

At this stage, a confirmatory factor analysis (CFA) is conducted as an overall measurement model integrating all constructs under the study. Each of the constructs in overall CFA model integrates the measurement items that are confirmed at the unidimensional measurement model stage. This CFA is used to test the internal reliability, convergent validity and discriminant validity of the constructs. AMOS graphics of the CFA for overall measurement is the model presented in Figure 4.10 followed by selected AMOS output presented in Table 4.13. First, each of the selected fit indices is explained along with the interpretation of the results generated from the initial overall CFA model.



Figure 4.10: Overall measurement model (CFA with standardized factor loading)

]	Model fit summ	nary		
		CMIN			
Model	NPAR	CMIN	DF	Р	CMIN/DF
Default model	90	1467.142	730	.000	2.010
Saturated model	820	.000	0		
Independence model	40	7021.084	780	.000	9.001
		RMR, GFI			
Model	RMR	GFI	AGFI	PGFI	
Default model	.112	.818	.796	.728	
Saturated model	.000	1.000			
Independence	.460	.263	.225	.250	
model				0	
	Ba	seline Compa	risons		
	NFI	RFI	IFI	TLI	~
Model	Delta1	rho1	Delta2	rho2	CFI
Default model	.791	.777	.883	.874	.882
Saturated model	1.000		1.000		1.000
Independence	.000	.000	.000	.000	.000
model					
		RMSEA			
Model	RMSEA	LO 90	HI 90	PCLOSE	
Default model	.055	.051	.059	.023	
Independence	.155	.151	.158	.000	
model					

Table 4.13: Selected AMOS output of overall measurement model: goodness-of-fit statistics

In SEM, here χ^2 is not taken as a basis for acceptance or rejection due its limitation such as sensitivity to sample size and hence, some new fit indices are recommended (Hu and Bentler 1999; Gerbing and Anderson 1993; Tanaka 1993; Marsh and Yeung 1988). An alternative statistics in addressing this issue is to use χ^2 /degrees of freedom ratio (Wheaton et al. 1977), which is indicated as *CMIN/DF* in AMOS output. A recommended accepted value for this fit indices is 2 or 3. The estimated value for this initial overall CFA is within this range (2.01 in Table 4.13).

The next AMOS output includes fit statistics of RMR (Root Mean Square Residual), GFI (Goodness-of-Fit-Indices) and PGFI (Parsimony Goodness-of-Fit Index). Both GFI and
AGFI indicate the relative variance and covariance in sample data jointly explained by the study model (Byrne 2016). These two fit indices are known as 'absolute fit indices' because these indices do not compare the study model with any other models (Hu and Bentler 1995). The values for both GFI and AGFI range from 0 to 1.0 where higher value indicates better fit (Byrne 2016). The resulting values GFI and AGFI for the initial overall CFA model are 0.818 and 0.796 respectively, which are below the acceptable range of >= 0.85 (Anderson and Gerbig 1988). This requires the model to be re-specified for improvement. The PGFI assesses the model integrating the complexity of the model in terms of the number of parameters included in the model. Generally, if other fit indices are within the acceptable range, PGFI value of 0.50 is considered to be acceptable (Mulaik et al. 1989). Although the PGFI value of the initial CFA model is 0.728 (Table 4.13), this is not consistent with other fit indices. We also need to calculate the value of SRMR (Standardized Root Mean Square Residual) indicating the average residual value obtained from the variance-covariance matrix for the hypothesized model to the variance-covariance matrix of sample data (Byrne 2016). The calculated SRMR value for the initial CFA model is 0.061 which is within the acceptable range (Schermelleh-Engel et al. 2003; Hu and Bentler 1999).

As the title indicates, model fit under 'baseline comparisons' compares the study model with the standard baseline model and hence it is also called 'comparative' or 'incremental' model fit indices (Marsh and Yeung 1988; Hu and Bentler 1995). The most commonly accepted comparative fit indices is CFI (Comparative Fit Index) for which a value of >0.90 is considered acceptable (Bentler 1992). The value of CFI for our initial CFA model is 0.882 (Table 4.13) which is below the minimum acceptance level.

RMSEA (Root Mean Square Error of Approximation) is considered as a strong explanatory criterion in assessing the covariance structure modeling (Byrne 2010, 80). RMSEA basically evaluates the model by looking at "how well would the model, with unknown but optimally chosen parameter values, fit the population covariance matrix if it was available?" (Browne and Cudeck 1993, 137-138). For this model fit index, a value of less than 0.05 is considered as very good fit, but values up to 0.08 are acceptable (Browne and Cudeck 1993). The value of RMSEA for this initial CFA is within this limit (Table 4.13), although the model needs to be respecified on other criteria as mentioned earlier.

4.6.1 Respecification of Overall Measurement Model

In respecifying the overall measurement model, the first criteria to be used is the factor loading. As it can be seen in the initial measurement model, all factor loading values are more than 0.60, except one item in e-store design construct (ED4=0.55) which will be removed in respecified model (Hair et al. 2014). In addition, the error covariance of selected items is also considered at this stage. Specifically, the error covariance between items EC1 and EC3 (e39 and e41) are incorporated to improve the model. This essentially indicates that making EC1 and EC3 (e39 and e41) free should result in parameter estimated value of approximately 0.25 (see Table 4.14). The most likely reason for this covariance is due to the content overlap in the selected items where EC1 states "The shopping site provides detailed information that I need" and EC3 states "The shopping site adequately meets my information needs".

		M.I.	Par Change
e39 <>	e41	32.551	.247
e38 <>	e40	16.869	.214
e37 <>	e38	18.707	.231
e29 <>	e30	18.721	.436
e11 <>	e12	19.628	.218
e8 <>	e42	17.983	194
e8 <>	e27	16.208	273
e8 <>	e10	17.757	.224
e7 <>	e9	18.855	.204

Table 4.14: Modification indices before incorporating covariance between e39 and e41

The same applies to EC10 and EC11 (e11 and e12). Incorporating covariance between these errors should result in parameter estimated value of approximately 0.22 (see Table 4.15). EC10 states "Product information on shopping site is clear" and EC11 states "Product information on shopping site is understandable". Clearly, a certain extent of content overlap is present. Hence, incorporation of error covariance related to these items is justified (Jöreskog 1993). Although these items have similar contents, they are used to check the consistency of the respondents in their responses. The covariances are incorporated one after another, and not simultaneously.

			M.I.	Par Change
e38	<>	e40	18.403	.226
e37	<>	e38	17.919	.226
e29	<>	e30	18.625	.435
e11	<>	e12	19.129	.215
e8	<>	e42	19.015	199
e8	<>	e27	16.984	279
e8	<>	e10	15.263	.205
e7	<>	e9	17.032	.193

 Table 4.15: Modification indices before incorporating covariance between e11 and e12

The AMOS graphics for the respecified measurement model is presented in Figure 4.11 followed by scale items with standardized factor loading in Table 4.16.



Figure 4.11: Respecified measurement model (CFA with standardized factor loading)

Table 4.16: Measurement items with standardized factor loading of the final CFA model

Item	Description	Standardized	S.E	<i>p</i> -value
code	L	factor loading		1
E-Store	e content	·		
EC1	The shopping site provides detailed	.721	.062	0.000
	information that I need.			
EC2	The shopping site shows visual product	.641	.068	0.000
	information of good quality.			
EC3	The shopping site adequately meets my	.709	.069	0.000
	information needs.			
EC4	The shopping site is a good source of	.714	.066	0.000
	product information.			
EC5	The shopping site is informative about the	.657	.070	0.000
FGC	company's products.	<0 7	0.55	0.000
EC6	The information presented in the shopping	.605	.066	0.000
E C10	site is logically organized.		0.00	0.000
ECIO	Product information on snopping site is	.708	.069	0.000
EC11	Clear.		066	0.000
ECH	understandable	.676	.000	0.000
EC12	Shopping site is like a real expert in		071	0.000
LC12	assessing product information	.716	.071	0.000
FC13	I find the information on online shopping		071	0.000
Leis	site to be accurate	.725	.071	0.000
EC14	The information on the online shopping		.071	0.000
2011	site is complete.	.757	1011	01000
EC15	The product and its features are correctly	770	.071	0.000
	presented in the shopping site.	.//8		
E-Store	e design	·		
ED1	Overall, the shopping site was visually	702	.071	0.000
	stimulating to me.	.125		
ED2	Different colours used in the shopping site	666	.098	0.000
	were visually appealing to me.	.000		
ED3	The graphics such as picture, animation in	803	.111	0.000
	the shopping site was engaging me.	.005		
E-Store	e navigation	1		
EN1	The navigation on the shopping site was	.705	.099	0.000
	easy for me to go from one section/page to			
EN 10	another section/page.		000	0.000
EN2	Learning to operate this shopping site was	.775	.099	0.000
EN/2	easy for me.	<u>(95</u>	105	0.000
EIN3	austomore find products/ services	.080	.105	0.000
EN/	The shopping site shows shortent paths to	702	100	0.000
LCIN4	make customers find out products they	.702	.100	0.000
	already know			
1		1		1

EN8	The directions for using the shopping site	.703	.107	0.000
ENO	were simple to me.	750	105	0.000
EN9	The directions for using the shopping site were clear to me.	.753	.105	0.000
EN10	The structure of the shopping site is logical	649	106	0.000
LITTO	to me.	.019	.100	0.000
EN11	The product classifications displayed in	.747	.103	0.000
	the shopping site were easy to follow.			
EN12	A first-time buyer can make a purchase	.637	.108	0.000
	from this shopping site without much help.			
EN13	It takes a long time to shop at this	.608	.084	0.000
	shopping site.*			
EN14	The contents are easily found in the	.625	.108	0.000
	shopping site.			
Impuls	iveness			
IMP1	When I go shopping, I buy things that I	704	.099	0.000
	had not intended to purchase.	.704		
IMP2	I often buy things without considering the	704	.091	0.000
	consequences.	.794		
IMP3	When I see something that really interests	())	.083	0.000
	me, I simply buy it.	.022		
IMP4	It is fun for me to buy spontaneously.	721	.091	0.000
		.721		
IMP5	When shopping online, I often buy things	680	.087	0.000
	according to how I feel at the moment.	.000		
IMP6	When shopping online, I often buy things	654	.097	0.000
	without thinking.			
Online	Impulse Shopping Behavior			
ISB1	When I go online, I buy		.099	0.000
	clothing/cosmetics/electronics that I had	.647		
	not planned to buy.			0.000
ISB2	When I see any clothing online that	<i></i>	.098	0.000
	interests me, I buy without considering the	.663		
ICDO	consequences.		000	0.000
ISB3	My purchase of clothing online was	.678	.082	0.000
ICDC	spontaneous.		000	0.000
1282	Most of the time I could not resist to buy	.626	.099	0.000
ICDC	Vibile browsing online shopping site.		097	0.000
1280	while browsing online snopping site, I had		.087	0.000
	alothing/accomption/aloctronics items	.607		
	outside my specific shopping goal			
ISR7	When shopping clothing online Loften		102	0.000
1507	have the idea "buy now think about it	670	.102	0.000
	later "	.070		
ISB8	When shopping clothing/cosmetics/		092	0.000
1910	electronics online I often buy things	663	.072	0.000
	according to how I feel at the moment	.005		
S.E.=st	andard error		1	

*Darran		
*Rever		Eastan
Items d	roppea:	Factor
		loading
EC7	The shopping site provides sufficient information to identify different	.579
	products online.	
EC8	The shopping site carries products in various colors.	.484
EC9	The shopping site provides a variety of sizes of the product.	.539
ED4	Eye catching image(s) or title on the homepage made me want to	.555
	continue exploring the shopping site.	
ED5	The use of text of product information made my purchasing decision	.521
	convenient.	
ED6	The use of graphics of product information made my purchasing	.590
	decision convenient.	
EN5	The shopping site makes it possible to find out what customers want	582
	within three clicks from the first	.502
EN6	The shopping site provides convenient links to move into the sub	163
LINU	sites	.405
EN7	Siles.	551
EN/	when I use the snopping site there is very little waiting time between	.554
	my actions and the Web site's response.	
IMP7	Before visiting the shopping site, I did not have the intention to do this	.477
	purchase.	
ISB4	Before visiting the shopping site, I did not have the intention to buy	.562
	many clothing/cosmetics/electronics items.	

4.6.1.1 Assessment of Overall Final Measurement Model

As shown in Table 4.16, all standardized factor loadings of finally selected measurement items are above 0.60. The removed items are presented at the bottom of the table. Selected AMOS output of the final measurement model (CFA) with goodness-of-fit indices is presented in the following table (Table 4.17).

Model fit summary CMIN						
Model Default model	NPAR 90	CMIN 1356.750	DF 690	P .000	CMIN/DF 1.966	
Saturated model	780	.000	0			
Independence model	39	6870.281	741	.000	9.272	
		RMR, GFI				
Model	RMR	GFI	AGFI	PGFI		
Default model	.111	.826	.803	.731		
Saturated model	.000	1.000				
Independence model	.464	.265	.227	.252		
	Ba	seline Compa	risons			
Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI	
Default model	.803	.788	.892	.883	.891	
Saturated model	1.000		1.000		1.000	
Independence model	.000	.000	.000	.000	.000	
		RMSEA				
Model	RMSEA	LO 90	HI 90	PCLOSE		
Default model	.054	.050	.058	.070		
Independence model	.157	.154	.161	.000		

Table 4.17 Selected AMOS output of respecified measurement model: goodness-of-fit statistics

In assessing the respecified model, it is visible that there is statistically significant improvement in the model fit indices, compared to the initial overall measurement model (see Table 4.17). The difference in χ^2 (CMIN) value between the initial model ($\chi^2_{(730)}$ = 1467.142, p = 0.000) and the respecified model ($\chi^2_{(690)}$ = 1356.750, p = 0.000) is 110.392. The value of CMIN/DF is 1.966 which is within the acceptable range (Jöreskog and Sörbom 1996; Schermelleh-Engel et al. 2003). The computed SRMR value (using AMOS plugin function) is

0.060, indicating that the model explains the correlations to within an average error of 0.060 which is within the acceptable range (Hu and Bentler 1995). Other fitness indices (GFI and AGFI) within this category are slightly below the threshold value, probably due to sample (Fan et al. 1999). Other model fit indices are within the acceptable threshold values. Specifically, the value of PGFI is 0.731 which is consistent with other fit indices (Mulaik et al. 1989) and the comparative fit index (CFI) is 0.891 which is deemed to be within the acceptable range (Schijin 2015; Hooper et al. 2008; Hu and Bentler 1999). Lastly, the value for RMSEA of the respecified model is 0.054 which indicates a good model fit (Schermelleh-Engel et al. 2003; Hu and Bentler 1999). To be more specific, the RMSEA value of our model ranges from 0.050 to 0.058 with 90 percent confidence interval, signifying that one can be 90 percent confident that the true RMSEA value in the population will fall within this range, indicating good degree of precision (Hu and Bentler 1999; Browne and Cudeck 1993).

Factor C	Estimate		
E-store content	<>	E-store design	.192
E-store content	<>	E-store navigation	.361
E-store content	<>	Impulsiveness	.047
E-store design	<>	E-store navigation	.467
E-store design	<>	Impulsiveness	.200
E-store navigation	<>	Impulsiveness	.277
Online impulse buying	<>	E-store content	.096
Online impulse buying	<>	E-store design	.499
Online impulse buying	<>	E-store navigation	.380
Online impulse buying	<>	Impulsiveness	.511

Table 4.18 Factor correlations

Table 4.18 above presents the factor correlation among all the constructs. All values are less than 1.0 indicating that there is no possibility of multicollinearity among the factors in the model (Byrne 2010, 168-169). Multicollinearity occurs when there are high correlations among the variables that indicate the same underlying construct (Byrne 2010, 168).

4.6.1.2 Reliability and Validity Assessment of Constructs

The reliability and validity assessment criteria presented in Table 4.19 indicate that the values for both Cronbach's alpha and composite reliability exceed the required minimum threshold value of 0.70 for confirmatory analysis (Nunnally and Bernstein 1994). The estimated value of average variance extracted (AVE) represents the extent of shared

representation of measurement items of each construct (Hair et al. 2014). A construct's convergent validity is said to be confirmed when the AVE value is 0.50 or above. However, Fornell and Larcker (1981) suggested that when the value of composite reliability is more than 0.60, an AVE value of 0.40 and above is deemed to be acceptable for convergent validity. The value of composite reliability of all constructs in the current study is more than 0.75, where AVE values of some constructs are less than 0.50 but more than 0.40 (Table 4.19). On these criteria, the convergent validity of the constructs is confirmed.

Construct	Cronbach's alpha	Composite reliability (CR)	Average variance extracted AVE)
E-store content	.92	.92	.49
E-store navigation	.91	.91	.48
E-store design	.77	.78	.54
Impulsiveness	.85	.85	.49
Online impulse buying behavior	.84	.84	.42

Table 4.19 Reliability and validity assessment

	E-store	E-store	E-store	Impulsiveness	Online impulse
	content	navigation	design		buying
		_			behavior
E-store content	.702				
E-store	.361	.692			
navigation					
E-store design	.192	.467	.733		
Impulsiveness	.047	.277	.200	.698	
Online impulse	.096	.380	.499	.511	.651
buying behavior					

Table 4.20 Discriminant validity using Fornell and Larcker's (1981) criteria

Note: Bolded diagonal values represent squared root of AVE values, and off-diagonal values represent the correlations of each construct with other constructs.

Finally, the discriminant validity is assessed using Fornell-Larcker criterion, which is one of the conservative approaches (Fornell and Larcker 1981). This criterion assesses the discriminant validity by comparing the square root of AVE values of each construct with the correlations of other constructs (Hair et al. 2014). In order to confirm the discriminant validity, the square root of each construct's AVE should be greater than its highest correlation with any other construct (Hair et al. 2014). On this criteria, the discriminant validity of all constructs in the current study is confirmed (see Table 4.20).

4.7 Hypothesis Testing Results

There are total seven main hypotheses that include three independent variables, one mediating variable, one moderating variable and one dependent variable. The independent variables are e-store content, e-store navigation and e-store design; mediating variable is consumer impulsiveness; moderating variable is product categories including clothing, cosmetics and electronics; and dependent variable is online impulse buying behavior.

All hypothesized relationships were tested using structural equation modeling in AMOS (version 20.0) software package. The model fit indices of the overall structural model for direct relationships appear to be good fit: $\chi 2_{(487)} = 917.173.606$, p = .000, GFI = .856, CFI = .916, RMSEA = .051, SRMR = .056. The squared multiple correlations (SMC) of the dependent and mediating variables indicate that the model explained 28% of the variance in online impulse buying behavior and 11% in consumer impulsiveness. The AMOS graphics with standardized estimates are displayed in Figure 4.12 followed by hypothesis testing results of direct and mediating relationships presented in Table 4.21 and 4.22 respectively. Each of the hypotheses and the interpretations of the results are discussed below.

Figure 4.12 AMOS graphics of structural model for direct and mediating relationships



Hypothesis	Effect	Standardized path coefficient	S.E	<i>P</i> -value	Hypothesis supported (Yes/No)	
H1	Direct effect of EC on OIBB	059	.060	.333	No	
H2	Direct effect of ED on OIBB	.414	.093	.000	Yes	
H3	Direct effect of EN on OIBB	.207	.102	.005	Yes	
Note Desig	Note: EC=E-store Content; OIBB=Online Impulse Buying Behavior; ED=E-store Design; EN=E-store Navigation; S.E=Standard Error					

Table 4.21 Hypotheses testing: structural model for direct effects

4.7.1 Results of Direct Effects

Hypothesis 1 states that e-store content has direct influence on online impulse buying behavior. The results suggest that this hypothesis is not supported ($\beta = -.059$, p = .333). This indicates that e-store content has negative direct influence on online impulse buying behavior. However, this influence is not statistically significant.

Hypothesis 2 proposes that e-store design has direct influence on online impulse buying behavior. The results of the structural model indicates that this hypothesis is supported with statistical significance ($\beta = .414$, p = .000). This implies that e-store design positively and significantly influences both the Gen-Y and Gen Z's impulsive buying behavior in the context of online shopping.

Hypothesis 3 suggests that e-store navigation has direct influence on online impulse buying behavior. The results of the structural model confirms that this hypothesis is supported with statistical significance ($\beta = .207$, p = .005). Thus, this result implies that both the Gen-Y and Gen Z's online impulse buying behavior is directly and positively influenced by the navigation of the e-store.

4.7.2 Results of Indirect/Mediating Effects

To begin with, an indirect effect refers to a causal hypothesis where an independent variable influences a mediating variable which, in turn, influences a dependent variable (Sobel 1990). The hypotheses relating to proposed mediating effects were tested using 95% bias-

corrected bootstrap confidence intervals from 500 bootstrap samples (MacKinnon, Lockwood and Williams 2004), where bootstrap is a resampling method. The rationale for using bootstrap sample is that this method provides more accurate confidence limits, thus bias-corrected bootstrap is the best method (MacKinnon, Lockwood and Williams 2004). According to this method, the significance of the mediation effect is determined on the basis of the values of confidence intervals. When the values of confidence interval are non-zero, the mediating effect is considered to be significant (MacKinnon, Lockwood and Williams 2004).

Hypothesis	Effect	Indirect effects	CIs 95% (LB/UB)	P-value	Hypothesis supported (Yes/No)
H4	Indirect effect of EC on OIBB via Impulsiveness	034	.110/.028	.242	No
Н5	Indirect effect of ED on OIBB via impulsiveness	.066	.015/167	.135	Yes
H6	Indirect effect of EN on OIBB via impulsiveness	.139	.054/.248	.003	Yes
Note: EN=E	EC=E-store Content; OIBB=C E-store Navigation; CI=Confide	Online Impulse ence Interval; L	Buying Behav B=Lower Bou	vior; ED=E- and; UB=U	store Design; pper Bound

 Table 4.22 Hypotheses testing: structural model for mediating effects

Hypothesis 4 states that e-store content has significant indirect effect on online impulse buying behavior via consumer impulsiveness. This hypothesis is not supported because the coefficient value is negative (-.034). It is also important to note that the hypothesis relating to the direct effect of e-store content on online impulsive buying behavior is also not significant and is not supported. When the direct effect is insignificant, the indirect effect becomes less important (Kenny 2013).

Hypothesis 5 suggests that e-store design has significant indirect effect on online impulse buying behavior via consumer impulsiveness. The results presented in Table 4.22 suggest that the hypothesis is supported, because the coefficient value is positive (.066) and the values of the bias-corrected confidence intervals are non-aero (lower bound = .015, upper bound = .167). This result implies that consumer impulsiveness has mediating effect in the relationship between e-store design and online impulse buying behavior.

Hypothesis 6 proposes that e-store navigation has significant indirect effect on online impulse buying behavior via consumer impulsiveness. The results suggest that this hypothesis is supported, because the coefficient value is positive (.139) and the values of the bias-corrected confidence intervals are non-aero (lower bound = .054, upper bound = .248) (see Table 4.22). This result implies that consumer impulsiveness has mediating effect in the relationship between e-store navigation and online impulse buying behavior.

4.7.3 Results of Moderating Effects

Structural model in SEM for testing the causal relationships implies that independent variables directly influence dependent variables without any systematic effect of other variables. This assumption may not work in all cases. That is why researchers sometimes need to test whether the structural relationships vary across different groups. Avoiding the examination of possible heterogeneity among groups may sometimes challenge the validity of the conclusions drawn from structural model (Becker et al. 2013). In this study, we are interested to see whether the influences of independent variables on dependent variable vary across different product categories. Specifically, we want to examine whether the influence of atmospheric cues on online impulse buying behavior varies across three different product categories: clothing, cosmetics and electronics. This relationship will be tested using multigroup moderation invariance analysis.

Multigroup invariant analysis (Hair et al. 2014) is a form of moderation analysis where the data set in a sample is divided into groups based on the moderating (categorical) variable to test the model with each data set. In this study, the hypothesized moderating effect of product categories is tested using multigroup invariant analysis (Hair et al. 2014). Accordingly, the sample is divided into three groups based on product categories: clothing (n=101); cosmetics (n=129); and electronics (n=105).

Another important issue for testing the multigroup moderation among different groups is to determine the statistical significance of the difference. From statistical point of view, regression coefficients or path coefficients of the hypothesized relationships based on different samples are usually likely to be different (Hair et al. 2014). The determining factor is to know whether the difference is statistically significant or not.

The multigroup moderation analysis for this study is conducted using AMOS (20.0) software package. Statistical significance of the differences is tested using the p-value of the

chi-square difference between unconstrained and fully constrained model computed in Stats Tools Package (Gaskin 2012). The first step of multigroup moderation analysis is to find any insignificant path coefficients across all the groups under study and remove that accordingly (Gaskin 2012). The results of the first multigroup analysis show that the path between e-store content and online impulse buying behavior (EC --- > OIBB) is insignificant across three product categories (see Table 4.23). Accordingly, this path is removed and multigroup analysis is conducted with the other significant paths.

Structural (regression)path	Product category	Standardized path coefficient	<i>p</i> -value
EC > OIBB	Clothing	028	.727
	Cosmetics	.122	.299
	Electronics	015	.894
ED > OIBB	Clothing	.723	.000
	Cosmetics	.407	.013
	Electronics	.001	.992
EN > OIBB	Clothing	.233	.017
	Cosmetics	.396	.004
	Electronics	.286	.058
Clothing: n=101; Cos	smetics: n=129; Elec	etronics: n=105	

 Table 4.23 Significance of multigroup path coefficients

The results second phase of multigroup analysis is presented in Table 4.24 followed by significance test of chi-square difference among three groups in Table 4.25.

H7: The influence of EC on OIBB varies across product categories							
Structural (regression)path	Product category	Standardized path coefficient	S.E.	C.R.	<i>p</i> -value		
ED > OIBB	Clothing	.734	.137	4.713	.000		
	Cosmetics	.490	.115	3.114	.002		
	Electronics	001	.176	.006	.996		
EN > OIBB	Clothing	.224	.081	2.405	.016		
	Cosmetics	.409	.142	2.892	.004		
	Electronics	.284	.265	1.891	.059		
Clothing: n=101; Cosmetics: n=129; Electronics: n=105							

Table 4.24 Final results of multigroup moderation analysis

 Table 4.25 Significance of chi-square difference of multigroup analysis

Comparative Groups	Chi-square Difference	<i>p</i> -value	Result of Group Difference
Product categories: clothing, cosmetics and electronics	10.027	0.040	Different

The results presented in Table 4.25 indicate that there is significant difference in the structural direct relationships between independent and dependent variables based on product categories. Specifically the influence of e-store design on impulse buying behavior is significant for clothing ($\beta = .734$, p < 0.05) and cosmetics ($\beta = .490$, p < 0.05). However, the influence of e-store design on impulse buying behavior for electronics is not significant ($\beta = .001$, p > 0.05) (see Table 4.23). The influence of e-store navigation on online impulse buying behavior is significant for clothing and cosmetics, where it is slightly higher than accepted significance level (p=0.059) for electronics (see Table 4.23). A summary of all hypotheses and the results are presented in Table 4.26.

4.8 Summary

A detailed description of the data analysis technique was provided in this chapter. This data analysis technique was used to test the proposed hypotheses and the results. In this chapter the hypotheses were tested. Hypotheses H1, H2 and H3 represented the direct effect where it confirmed that e-store design (H2) and e-store navigation (H3) have a direct effect on online impulse buying behavior and not e-store content (H1). Hypotheses H4, H5, H6 represented the indirect/ mediating effect where e-store design (H5) and e-store navigation (H6) were mediated between atmospheric cues and online impulse buying behavior. However, e-store content (H4) was not supported the mediating effect. Hypotheses H7a, H7b and H7c represented the moderating effect but H7b was not supported. From the abovementioned discussions, it clarifies that e-store content did not support any of the hypotheses.

The next step is to interpret the results of the hypotheses in detailed. The logical explanations are provided for better understanding. In addition, the possible explanations are given about the unsupported hypotheses accompanied by the limitations, future research and the conclusion of this study.

No	Hypothesis	Results
110	Hypothesis	(supported/not
		(supported/not
		supported)
H1	E-store content directly affects online impulse buying behavior	Not supported
H2	E-store design directly affects online impulse buying behavior	Supported
H3	E-store navigation directly affects online impulse buying	Supported
	behavior	
H4	Consumer impulsiveness has mediating effect in the relationship	Not supported
	between e-store content and online impulsive buying behavior	
H5	Consumer impulsiveness has mediating effect in the relationship	Supported
	between e-store design and online impulsive buying behavior	
H6	Consumer impulsiveness has mediating effect in the relationship	Supported
	between e-store navigation and online impulsive buying	
	behavior	
H7a	The influence of e-store content on online impulse buying	Not supported
	behavior is moderated by product categories	
H7b	The influence of e-store design on online impulse buying	Supported
	behavior is moderated by product categories	-
H7c	The influence of e-store navigation on online impulse buying	Supported
	behavior is moderated by product categories	

Table 4.26 Summary of hypotheses results

Chapter 5: Findings, Discussion and Implications

5.1 Introduction

The findings of this study are discussed in line with the research questions and research objectives. As outlined in chapter 1, this study posits a total of five research questions and three major research objectives addressing those research questions. Research questions and research objectives will be discussed in groups for the convenience of discussion.

5.2 Findings of the Study

This section will discuss all the research objectives and questions briefly under three subsections which are outlined below followed by the discussion of the findings.

5.2.1 Discussion of First Research Objective and Questions

As outlined in chapter 1, first research objective addresses first three research questions below:

RQ 1: Does e-store content as an atmospheric cue influence online impulse buying behavior?

RQ 2: Does e-store design as an atmospheric cue influence online impulse buying behavior?

RQ 3: Does e-store navigation as an atmospheric cue influence online impulse buying behavior?

To address these three research questions, the following research objective is set:

RO 1: To examine the influence of atmospheric cues on online impulse buying behavior

To address these three research questions, three hypotheses (H1, H2 and H3) are tested. In line with first research objective, these three hypotheses include three different atmospheric cues: e-store content, e-store design and e-store navigation. The findings suggest that two of the three hypotheses are supported (see Table 4.11). The result of H1 suggests that e-store content does not have any significant and direct positive influence on online impulse buying behavior. This is specifically applicable for millennial online shoppers. E-store content mainly involves accuracy, adequacy and availability of relevant information in order for the shoppers to make buying decision. Although past studies suggested that availability and accessibility of relevant information can positively affect customers' purchasing decision (Hasan 2016; Lin 2007) which is very likely in the context of planned buying behavior, this might not be applicable in the context of online impulse buying. The possible reason is that, in impulse shopping, consumers make decisions quickly without spending much time on information content (Floh and Madlberger 2013).

The result of H2 suggests that e-store design has significant and direct positive influence on online impulse buying behavior. As discussed in chapter 2, e-store design is basically the degree to which the e-store is aesthetically appealing to the online shopper. In general, the result of this hypothesis reinforces the importance of visual cues in purchasing decision, because visual aspect of design generates more gratification (Liu, Li and Hu 2013). More specifically, in the context of online impulse buying behavior, e-store design features (e.g., image, colour) are more important because these stimuli make the shoppers more impulsive (Cyr 2013; Floh and Madlberger 2013; Cheng et al 2009; Madhavaram and Laverie 2004).

The result of H3 suggests that e-store navigation has significant and direct positive effect on online impulse buying behavior. Essentially e-store navigation is the overall organization and hierarchical layout that may include different tools like directions, menus, buttons, frames, site maps, subject trees and so on. In the context of online shopping, e-store navigation is considered as a virtual walk through for the shoppers to look for product related information (Floh and Madlberger 2013). Regardless of shopping context (planned shopping or impulse shopping), online shoppers usually expect easy navigation to save time and effort in their online shopping journey (Hasan 2016). However, in the context of online impulse shopping where consumers make very quick decision (Hasan 2016), a slow and/or complex navigation may directly deter the shoppers from impulse shopping. Hence, this justifies the result of H3 suggesting that e-store navigation has direct positive influence on impulse buying behavior.

5.2.2 Discussion of Second Research Objective and Question

The second objective of the study addresses research question 4, which is outlined below followed by the research objective:

RQ 4: Does the degree of consumer impulsiveness mediate the relationship between estore content, e-store design, e-store navigation and online impulse buying behavior?

RO 2: To test the mediating effect of consumer impulsiveness in the relationship between atmospheric cues and online impulse buying behavior

This research question is addressed by testing three hypotheses: H4, H5 and H6. These three hypotheses examined whether the influence of e-store content (H4), e-store design (H5) and e-store navigation (H6) on impulse buying behavior is mediated by the level of consumers' impulsiveness. The result of H4 suggests that the influence of e-store content on online impulse buying behavior is not mediated by consumers' impulsiveness. The justification for this result is that when the direct effect of a variable is not significant, the indirect effect (mediating) becomes less important (Kenny 2013). In this case, the direct effect of e-store content on impulse buying is also not significant, and hence the mediating effect of consumer impulsiveness in the relationship between e-store content and online impulse buying behavior is not expected.

The other two hypotheses relating to mediating effect (H5 and H6) are supported. This indicates that the influence of e-store design and e-store navigation on online impulse buying behavior is mediated by consumer impulsiveness. This makes interesting sense because impulsive consumers, by nature, expect to get immediate gratification (Floh and Madlberger 2013; Kacen and Lee 2002). In line with this, past studies suggested that e-store design generates more gratification (Liu, Li and Hu 2013) and hence, the influence of e-store design on online impulse buying is mediated by consumer impulsiveness. Similarly, unclear and confusing e-store navigation design may interrupt immediate attention (Hasan 2016) of impulse shoppers who want immediate gratification. This justifies the results of these two hypotheses suggesting that the influence of e-store design and e-store navigation on online impulse buying behavior depends on the degree of consumer impulsiveness.

5.2.3 Discussion of Third Research Objective and Questions

The third objective of the study addresses research question 5 which is outlined below followed by the research objective:

RQ 5: Does the product category moderate the influence of e-store content, e-store design and e-store navigation on online impulse buying behavior?

The following research objective is set to address the above research question relating to moderating effect of product categories on hypothesized relationships.

RO 3: To determine whether the influence of different atmospheric cues on online impulse buying behavior varies across product categories

The above research question was addressed by testing H7a, H7b and H7c. The multigroup moderation analysis suggests that H7a indicating the path between e-store content and online impulse buying behavior (EC --- > OIBB) is insignificant across all three product categories. Hence this hypothesis is voided for further analysis. The results of H7b and H7c suggest that product category has moderating effect in the relationship between e-store design, e-store navigation and online impulse buying behavior. That is, the influence of e-store design and e-store navigation on online impulse buying behavior varies across three product categories: clothing, cosmetics and electronics.

First, the influence of e-store design on impulse buying behavior is significant for clothing and cosmetics, but insignificant for electronics. The influence of e-store design on online shopping in general as well as on online impulse shopping behavior is examined in many past studies. For example, some studies reported that when consumers purchase specific products such as clothing, jewelry, or accessories, they often want to know information related to sensory attributes, such as colour, design, fabric, and fit (Kim and Knight 2007; Bei, Chen and Widdows 2004; Watchravesringkan and Shim 2003; Park and Stoel 2002). However, whether the influence of e-store design varies across different product categories is not examined. Some studies, though, looked at the differences across genders. For example, Rowley (2002) identified that female consumers first identify the colour and style of clothing and confirm making purchases. However, other product categories are not included to see

whether there is any difference across product categories. This is the first study that examined and found that e-store design has different influence on online impulse buying behavior for different products. This has significant theoretical and managerial implications which are discussed in the next section under implications of the study.

Second, e-store navigation has influence on impulse buying behavior across all three product categories, though it is marginally insignificant for electronics. The main justification of the importance of e-store navigation across all three product categories is that generally, online shoppers prefer easy-to-follow and direct navigation design that helps them to save time and effort in searching for information and completing online purchase transactions (Hasan 2016) regardless of specific product categories or specific shopping context. Essentially, navigation does not only include the overall organization or layout and direction of the information content of e-store; rather, it also includes other tools. For example, one visitor navigates from one page to another page, the page loading time is very vital that may even redirect the visitor to other browser if it loads slowly (Cao et al. 2005; Weinberg 2000). This is again more important for impulse shopping behavior compared to planned shopping simply because impulse shopping decision is made very quickly (Khawaja 2018; Zou 2018; Wu, Chen and Chiu 2016; Xiang et al. 2016; Floh and Madlberger 2013) where page loading (one aspect of navigation) may become a determining factor. Clearly, there is significant managerial implications across different product categories for this finding which will be discussed in managerial implications section.

5.2.4 Summary of Key Findings

As it was predicted, e-store design has significant and direct positive influence on online impulse buying behavior, which is also mediated by consumer impulsiveness. This suggests that e-store design is an important atmospheric cue in inducing online impulse buying. Although e-store design on impulse buying behavior is significant for clothing and cosmetics, but insignificant for electronics, because before purchasing electronics, consumers do not notice only the colours or the designs, they also look for relevant information provided by the marketers.

Similarly, e-store navigation has significant and direct positive effect on online impulse buying behavior, which is also mediated by consumer impulsiveness. These findings imply that appropriate e-store navigation can stimulate online impulse buying across all three product categories, although marginally insignificant for electronics. This is because generally online shoppers prefer easy-to-follow and direct navigation design that helps them save time and effort in searching for information and completing online purchase transactions (Hasan 2016) regardless of specific product categories or specific shopping context.

Contrary to some past studies, e-store content does not appear to have any significant and direct positive influence over Gen-Y and Gen-Z online impulse shoppers. The possible main reason is that, information content is considered to be more important for planned buying behavior compared to impulse buying. That is to say, the accuracy, adequacy and availability of relevant information are very important to make planned buying decisions. However, this might not be applicable in the context of online impulse buying because impulse buyers make quick decisions before spending much time on availability, quality and the amount of information (Floh and Madlberger 2013). The influence of e-store content on online impulse buying behavior is also not mediated by consumers' impulsiveness because when the direct effect of a variable is not significant, the indirect effect (mediating) becomes less important (Kenny 2013).

5.3 Implications of the Study

Based on the hypotheses results reported in chapter 4, this section will describe the theoretical and managerial implication of the study.

5.3.1 Theoretical Contribution

One of the key theoretical contributions of the study relates to the discovery of differences in online impulse buying behavior across different product categories. As discussed in the literature review section, past studies have focused and argued the strategic importance of impulsive buying in e-commerce (Lim, Sukho and Kim 2017; Floh and Madlberger 2013; Liu et al. 2013). While some of those past studies acknowledged the importance of different design features of shopping websites on impulse shopping, the context of product categories is overlooked in the investigation. Some very recent studies have examined the moderating effect of consumer demographics (gender, age and education) on impulse buying behavior (Boutsouki 2019) and segmented the impulse shoppers based on consumer motives (Prashar, Parsad and Vijay 2017). To the best of the author's knowledge, this is first study that proposes that millennial online shoppers in the context of impulse shopping can be segmented on the

basis of the influence of different atmospheric cues on impulse buying behavior across different product categories. Theoretically in line with the findings of current study, product categories should be integrated as moderating variable in understanding online impulse buying behavior in other contexts.

Another important theoretical implication of the current study relates to the examination of both direct and indirect effect of predictor variables on dependent variable in S-O-R framework. The current study used S-O-R as the theoretical framework to statistically investigate the hypothesized relationships. In line with the original S-O-R framework, the study examined the influence of different atmospheric cues such as e-store content, e-store design and e-store navigation as stimulus (S) via consumer impulsiveness (O) on online impulse buying behavior (R). Accordingly, the study confirmed that e-store design and e-store navigation have indirect influence on online impulse buying behavior via consumer impulsiveness. Adding to the original S-O-R, the study also examined the direct effect of three atmospheric cues on online impulse buying behavior under the same framework. As a result, the study found that e-store design and e-store navigation also have direct influence on online impulse buying behavior. In line with a recent study conducted in India using S-O-R framework (Prashar, Vijay and Parsad 2017), the current study offers a perspective in online marketing literature that the external stimuli (S) such as e-store design and e-store navigation may influence online impulse buying behavior directly regardless of the degree of impulsiveness which is used as mediating variable under S-O-R framework. In addition, consumer impulsiveness can play an intervention role in the relationship between external stimuli (atmospheric cues) and behavioral outcome (online impulse buying behavior).

Another theoretical implication is that, past studies emphasized on the importance of e-store content suggesting that information content may have direct influence on consumers' online shopping behavior (Aldás-Manzano et al. 2011; Chen, Su and Widjaja 2016; DeLone and McLean 2003). However, the current study found that the influence of e-store content on impulse buying behavior is not significant. This suggests that e-store content (information) may significantly influence on planned buying behavior where customers need information in evaluating and selecting the product (Cyr 2013; Cao et al. 2005), whereas in impulse buying, the visual cues (design, navigation) are more important (Floh and Madlberger 2013) than information content.

5.3.2 Managerial Implications

This study reveals that influences of atmospheric cues on online impulse buying behavior are different for different product categories which have clear strategic implications in tailoring atmospheric cues across different product categories to induce online impulse buying. Study results suggest that in case of online impulse buying behavior, the e-store content is not a determining factor, regardless of the product category. This is specifically applicable in the context of millennial online shoppers in emerging markets like Bangladesh. This has significant managerial implications for the online retailers, suggesting e-store content may not stimulate millennial to shop impulsively online. This is to be noted that e-store content may definitely have significant influence on planned shopping behavior (Cyr 2013; Floh and Madlberger 2013; Korgaonkar and Wolin 1999) where the quality, quantity and accessibility of information content play important roles in order for the customer to make the purchasing decision. On the contrary, online marketers of all three product categories need to take into consideration that they need to focus on other cues other than quantity, quality or accessibility of information in inducing online impulse shopping because impulsive consumers have a tendency to put less cognitive effort while they evaluate their purchasing decisions because emotionally they feel attracted to the product (Kacen and Lee 2002). The other cues may include visual aspects as well as navigation system.

For all product categories (e.g., clothing, cosmetics, electronics), e-store navigation plays important role in inducing impulse shopping. This is important because past studies suggested that an efficient navigation design can help its users to navigate easily and to pass through the site (Hasan 2016; Zahedi and Song 2009; Shergill and Chen 2005). Similar with the brick-and-mortar's shelf management system, hyperlink is working the same thing in the context of online websites (Liang and Lai 2002). Therefore, online stores must possess a clear navigational guide (e.g. a clear and step-by-step hierarchical navigation) as they sell a variety of products in one platform (Lo et al. 2016; Park and Gretzel 2010; Liang and Lai 2002). In case of clothing and cosmetics, e-store design is the most influencing factor for inducing impulse buying. This makes sense because by its very nature, shoppers take impulse buying decision very quickly (Zhang et al. 2018), therefore they may not have time to look at the content or quality of information. Instead, attractive design may appeal to the shoppers and quickly influencing them to buy impulsively. In the context of brick-and-mortar store, past studies suggested that atmospheric cues of a retail environment which is also known as marketing mix (e.g. point-of purchase displays, promotions, and advertisements, visual encounter, promotional incentives) affect different product categories in the retail store and trigger their consumers to buy impulsively (Haridasan and Fernando 2019; Dawson and Kim 2010; Dholakia 2000). However, this is not examined before in the context of online impulse buying behavior. As the result of the moderation analysis, it is suggested that e-store navigation significantly influences online impulse shopping in all product categories (Haridasan and Fernando 2019; Cyr 2013).

There are also significant marketing implications regarding to the mediating influence of consumer impulsiveness on online impulse buying behavior. The current study suggests that the influence of e-store design and e-store navigation is mediated by consumer impulsiveness. It has been argued in many past studies that high impulsive consumers have less self-control than those of low level of impulsiveness (Zhang et al. 2018; Naderi and Steenburg 2018). This is because low impulsive consumers can easily control their stimuli when experiencing it (Naderi and Steenburg 2018) whereas high impulsive consumers are more sensitive to environmental stimuli or cues (Parboteeah, Valacich and Wells 2009). This, however, may not mean that high impulsive consumers will respond to all stimuli (Rook and Fisher 1995) and hence the managerial challenge is to know what stimuli can induce the impulsive consumers to respond to the stimuli. The findings of current study have significant relevance to address this managerial challenge. As the results suggest that e-store design and e-store navigation have significant influence on those high impulsive consumers, the online marketers should tailor the e-store design with vibrant design features that would lure the high impulsive consumers fast, and this may include usage of pictures, images, colours, or any other visual tools. The same also applies to the design of navigation that will help impulsive buyers to navigate across the shopping site quickly and flawlessly enabling the shoppers to decide quickly.

From the above discussion about the managerial implications, policy makers should take into consideration the requirements of Gen-Y and Gen-Z (aged between 18-25 years) consumers while developing their shopping sites, and the findings are summarized below:

• Gen-Y (aged between 18-25 years) and Gen-Z (aged below 25 years) consumers, especially in Bangladesh are not convinced by e-store content or information while purchasing impulsively online. Thus, the marketers can use the information sparingly without much effort.

- Gen-Y and Gen-Z consumers in Bangladesh like to browse websites that have easy navigation system where they can easily browse their required products from the menu bars and hyperlink. As past studies suggested that e-store hyperlink is equivalent to brick-and-mortar's shelf management system (Liang and Lai 2002), the marketers should ensure that their websites have descriptive, concise navigation with short labels, mega drop down menus and step-by-step navigation (Patel 2020).
- Gen-Y and Gen-Z consumers in Bangladesh are mostly influenced by online store design while shopping for clothing and cosmetics impulsively. E-store design basically helps attract to their consumers through different colours, fonts, images, shapes, animations, and overall layout (Cyr and Bonanni 2005; Li and Yeh 2010; Hasan 2016). Therefore, the online retailers need to make their shopping site visually appealing so that consumers get more satisfaction while buying items while helping them to take a quick decision towards impulse shopping,
- Overall in line with the findings of this study, the policy makers of online retailing should recognize that the importance of different atmospheric cues should not be generalized for all product categories. As the results of the current study suggest, for example, both e-store design and navigation features have strong positive influence in inducing young consumers to buy apparels impulsively online. On the other hand, for instance, only navigation plays significant role in influencing young consumers to buy electronics online. Thus, marketers can work on this finding and implement changes in their online retailing strategies, where this would bring pleasant experience for online shopping community at large.

5.4 Limitation of the Study

Similar with all empirical studies, this study also has some limitations. Although several noteworthy findings are found, these limitations can be examined and investigated in future studies. Firstly, the study has selected only one city for data collection, that is Dhaka (the capital of Bangladesh) where the total population of Bangladesh is around 160 million (Farhana, Khan and Noor 2017) and the access of technology and internet is available (Rahman 2015). Hence, this study may not be generalized for other geographic regions of Bangladesh.

Secondly, the respondents of the study are representing only a half portion of Gen-Y (university students) and Gen-Z consumers (Rahman 2015). Most importantly, the Gen-Y

group does not represent the majority of the population and hence the study findings are confined with one segment of the target market. Due to the access of adequate financial capability, these respondents are basically medium to high academic achievers who can avail to the latest technologies (Hoque 2018a; Rahman 2015). Therefore, if the study would be conducted in a different demographic background, it could adjust some of the findings.

Moreover, due to the unavailability resources of sampling frame, the study has selected convenience sampling which is statistically not strong sampling technique to generalize the findings. The respondents of this study are undergraduate students. However, several other age groups are also present in the country which not covered in the sample but they might have different contributions in the online impulse buying behavior (e.g. age group from 26-above, postgraduates or job holders) (Hayder 2017).

Another point is, this study has selected only three product categories, namely apparel, cosmetics and electronics to see whether the influence of different atmospheric cues varies across different product categories as a moderating effect on online impulse buying behavior. There are several categories also enlisted by the previous researchers in the context of online shopping such as travel ticketing, books, groceries, CD or DVD's or home decor products (Farhana, Khan and Noor 2017).

5.5 Future Research Directions

Future research related to this study can replicate the current study by adding more product categories to test the moderating effect more viably such as travel ticketing, books, groceries, CD or DVD's or home decor products. To the best knowledge of the researcher, past studies do not include any research work concerning online impulse buying behavior in Bangladeshi context. Thus, it can be a good opportunity for future researchers to investigate on this issue.

Moreover, the current study has obtained the data from only 335 valid consumers of Gen-Y and Gen-Z group in Dhaka city. Future researches could test these hypotheses using a larger sample, geographic area or to select other professions except the undergraduate students to make the study more generalized.

Additionally, this study has selected some common online websites to examine the impulsiveness of the consumers. However, several researchers (Chowdhury and Chowdhury 2017; Chen, Su and Widjaja 2016; Liu et al. 2016; Xiang et al. 2016) revealed that nowadays, consumers also pay attention to social media shopping sites or pages and buy products impulsively based on the reviews (e.g. Word of mouth) provided in the social pages or groups (Chowdhury and Chowdhury 2017; Erkan and Evance 2016; Xiang et al. 2016; Wang et al. 2011). Therefore, future researchers can test the effect of social media on online impulse buying behavior in the context of Bangladesh.

5.6 Concluding Remarks

The unique purpose of this research is to examine whether the influence of different atmospheric cues on online impulse buying varies across different product categories along with the measurement of the degree of consumers' impulsiveness as a mediating factor. From the empirical findings, this study reveals that the influence of atmospheric cues on online impulse buying behavior performs differently for different product categories. This study also found that the influence of two out of three atmospheric cues namely e-store design and e-store navigation on online impulsive buying behavior are also mediated by consumer impulsiveness.

Broadly, there are three main objectives of this study that raised seven research questions. The research model is tested with the data from Bangladesh and the findings of this study demonstrate that e-store design and e-store navigation have significant and direct positive influence on online impulse buying behavior. It was also discovered that these two atmospheric cues are mediated by consumer impulsiveness on online impulse buying behavior.

However, this study also proved that the importance of e-store content might have a significant influence on planned buying behavior where consumers are looking for utilitarian values and they need information in evaluating and selecting the product (Cyr 2013; Floh and Madlberger 2013; Brown et al. 2003). But, it does not have any direct or indirect influence on online impulse buying behavior because in this case, consumers' preference indicates that visual cues (design, navigation) are more important (Floh and Madlberger 2013) than information content.

Theoretically, the study findings add to the existing literature of online retailing that product category should be considered as an important dimension when examining the influence of atmospheric cues on online impulse buying behavior. This is specifically found in the context of young online consumers across three different product categories. From practical point of view, the study suggests that online retailers should take into consideration the product category along with the level of consumers' impulsiveness while designing different atmospheric cues in their shopping site to induce impulse shopping. Overall, the result of this study is expected to be helpful for the business owners as well as consumers as this study provides important theoretical and managerial implications along with future research opportunities for the academicians.

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Appendix A: Ethics Approval Letter



Recearch Office at Curtin

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31-Jan-2019

Name: Goi Chai Lee Goi Department/School: CBS International Email: ChaiLee.Goi@cbs.curtin.edu.au

Dear Goi Chai Lee Goi

RE: Ethics Office approval Approval number: HRE2019-0041

Thank you for submitting your application to the Human Research Ethics Office for the project The Influence of Atmospheric Cues on Online Impulse Buying across Product Categories: The Mediating Role of Consumer Impulsiveness.

Your application was reviewed through the Curtin University Negligible risk review process.

The review outcome is: Approved.

Your proposal meets the requirements described in the National Health and Medical Research Council's (NHMRC) National Statement on Ethical Conduct in Human Research (2007).

Approval is granted for a period of one year from 31-Jan-2019 to 30-Jan-2020. Continuation of approval will be granted on an annual basis following submission of an annual report.

Personnel authorised to work on this project:

Nzme	Role
Sarah, Farah Hasan	Student
Goi, Goi Chai Lee	CI
Chieng, Fayrene	Co-Int

Approved documents: Document

Standard conditions of approval

1. Research must be conducted according to the approved proposal

2. Report in a timely manner anything that might warrant review of ethical approval of the project including:

- · proposed changes to the approved proposal or conduct of the study
- · unanticipated problems that might affect continued ethical acceptability of the project
- · major deviations from the approved proposal and/or regulatory guidelines
- serious adverse events
- 3. Amendments to the proposal must be approved by the Human Research Ethics Office before they are implemented (except where an amendment is undertaken to eliminate an immediate risk to participants)
- 4. An annual progress report must be submitted to the Human Research Éthics Office on or before the anniversary of approval and a completion report submitted on completion of the project
- 5. Personnel working on this project must be adequately qualified by education, training and experience for their role, or supervised
- 6. Personnel must disclose any actual or potential conflicts of interest, including any financial or other interest or affiliation, that bears on this project
- 7. Changes to personnel working on this project must be reported to the Human Research Ethics Office
- 8. Data and primary materials must be retained and stored in accordance with the Western Australian University Sector Disposal Authority (WAUSDA) and the <u>Curtin University Research Data and Primary Materials policy</u> 9. Where practicable, results of the research should be made available to the research participants in a timely and clear manner
- 10. Unless prohibited by contractual obligations, results of the research should be disseminated in a manner that will allow public scrutiny; the Human Research Ethics Office must be informed of any constraints on publication
- 11. Approval is dependent upon ongoing compliance of the research with the Australian Code for the Responsible Conduct of Research, the National Statement on Ethical Conduct in Human Research, applicable legal requirements, and with Curtin University policies, procedures and governance requirements
- 12. The Human Research Ethics Office may conduct audits on a portion of approved projects.

Special Conditions of Approval

Nil

This letter constitutes low risk/negligible risk approval only. This project may not proceed until you have met all of the Curtin University research governance requirements.

Should you have any queries regarding consideration of your project, please contact the Ethics Support Officer for your faculty or the Ethics Office at hrec@curtin.edu.au or on 9266 2784.

Yours sincerely

Amy Bowater Ethics, Team Lead

Appendix B: Participant Information Sheet

A SURVEY ON YOUNG CONSUMERS' ONLINE IMPULSE BUYING BEHAVIOR

Dear Respondent:

The study aims to understand the influence of different atmospheric cues on online impulse buying behavior among young consumers in the context of Bangladesh.

Your responses will be extremely valuable for the successful completion of the research. The survey will take about 15 minutes to complete. The information provided by you will be treated as confidential and will be used in summary solely for academic purposes.

Your cooperation and support are highly appreciated. Thank you!

I have received information regarding this research and had an opportunity to ask questions. I believe I understand the purpose, extent and possible risks of my involvement in this project and I voluntarily consent to take part.

OPTIONAL CONSENT

"What am I being asked to do?" Kindly put the Tick mark (✓) into the following table:

I do	I do not	consent to you using any data I provided before withdrawing from the study, if relevant
I do	I do not	consent to be contacted about future research projects that are related to this project
I do	I do not	consent to the storage and use of my information in future ethically-approved research projects related to this (project/disease)

CONSENT FORM

HREC Project Number:	HRE2019-0041
Project Title:	The Influence of Atmospheric Cues on Online Impulse Buying across Product Categories: The Mediating Role of Consumer Impulsiveness
Chief Investigator:	Dr. Goi Chai Lee , Associate Professor, Department of Marketing, Faculty of Business, Curtin University, Malaysia. Contact Number: +60 85 443939 ext. 5085
Student researcher:	Farah Hasan Sarah , MPhil Candidate, Faculty of Business, Curtin University, Malaysia. Email: sarah@postgrad.curtin.edu.my
Version Number:	2
Version Date:	01/AUG/2014

- I have read the information statement version listed above and I understand its contents.
- I believe I understand the purpose, extent and possible risks of my involvement in this thesis.
- I voluntarily consent to take part in this research.
- I have had an opportunity to ask questions and I am satisfied with the answers I have received.
- I understand that this research has been approved by Curtin University Human Research Ethics Committee and will be carried out in line with the National Statement on Ethical Conduct in Human Research.
- I understand I will receive a copy of this Information Statement and Consent Form.

Participant Name	
Participant Signature	
Date	

Declaration by the researcher: I have supplied an Information Letter and Consent Form to the participant who has signed above, and believe that they understand the purpose, extent and possible risks of their involvement in this thesis.

Researcher Name	
Researcher Signature	
Date	

Appendix C: Questionnaire

Section A: Screening Questions:

- Do you have any experience of buying product from online? [SQ1]
 Yes
 No [survey would end]
- If yes, have you ever purchased any product online without any pre-plan? [SQ2]
 Yes
 No [survey would end]
- 3. If yes, which of the product category have you purchased in last 6 months? [SQ3]
 Apparels/Clothing [please name the specific clothing item(s) you purchased______].
 Cosmetics [please name the specific cosmetic item(s) you purchased______].
 Electronics [please name the specific electronic item(s) you purchased______].
 None [survey would end]
- 4. Please mention the shopping site from where you made your most recent purchase:
 - [SQ4]
 - □ The Mall Bd.com
 - QuickMartBd.com
 - □ Shop.shajgoj.com
 - Daraz.com
 - □ Kikinben.com
 - □ Banglashoppers.com- Cosmetics and Fragrances
 - Aarong.com- Fashion, Home Living Products
 - Bagdoom.com Fashion, Watches, Electronics
 - □ PriyoShop.com
 - □ Ajkerdeal.com
 - Branoo.com
 - □ Shadmart.com
 - □ BdShop.com electronics and gadget
 - Pickaboo.com Mobiles and Electronics
 - □ Kiksha.com
 - □ ShoppersBD.com- Fashion and Electronics Online Shop in BD
 - □ Blush in a Rush- www.facebook.com/Blush-In-A-Rush
 - □ Others please mention_

Section B: Questions on Different Online Atmospheric Cues:

The following sets of statements indicate various aspects of atmospheric cues in the context of online shopping. Most of statements are related to your behavior as a consumer. You should answer the questions based on your shopping experience at the shopping site you mentioned in question number 4 above.

Please choose the box that closely describes your answer.

(1 = STRONGLY DISAGREE; 7 = STRONGLY AGREE):

*Marked questions are reverse coded (negative statement)

		DISAGREE				AGREE				
	E-Store content	Stron	gly		İ		str	ongly		
		1	2	3	4	5	6	7		
EC1	The shopping site provides detailed information that I need.									
EC2	The shopping site shows visual product information of good quality.									
EC3	The shopping site adequately meets my information needs.									
EC4	The shopping site is a good source of product information.									
EC5	The shopping site is informative about the company's products.									
EC6	The information presented in the shopping site are logically organized.									
EC7	The shopping site provides sufficient information to identify different products online.									
EC8	The shopping site carries products in various colors.									
EC9	The shopping site provides a variety of sizes of the product.									
EC10	Product information on shopping site is clear.									
EC11	Product information on shopping site is understandable.									
EC12	Shopping site is like a real expert in assessing product information.									
EC13	I find the information on the online shopping site to be accurate.									
EC14	The information on the online shopping site is complete.									
EC15	The product and its features are correctly presented in the shopping site.									
		<u> </u>			,		<u> </u>			
	E-Store design	DISAGREE strongly					AC str	GREE ongly		
	······································	1	2	3	4	5	6	7		

ED1	Overall, the shopping site was visually stimulating to me.								
ED2	Different colours used in the shopping								
ED3	The graphics such as picture, animation in the shopping site were engaging me.								
ED4	Eye catching image(s) or title on the homepage made me want to continue exploring the shopping site.								
ED5	The use of text of product information made my purchasing decision convenient.								
ED6	The use of graphics of product information made my purchasing decision convenient.								
	E-Store navigation	DISA stron	GREE gly	I		J	AGREE strongly		
	+	1	2	3	4	5	6	7	
EN1	The navigation on the shopping site was easy for me to go from one section/page								
EN2	Learning to operate this shopping site was easy for me.								
EN3	The shopping site presents buttons to help customers find products/ services.								
EN4	The shopping site shows shortcut paths to make customers find out products they already know.								
EN5	The shopping site makes it possible to find out what customers want within three clicks from the first.								
EN6	The shopping site provides convenient links to move into the sub-sites.								
EN7	When I use the shopping site there is very little waiting time between my actions and the Web site's response.								
EN8	The directions for using the shopping site were simple to me.								
EN9	The directions for using the shopping site were clear to me.								
EN10	The structure of the shopping site is logical to me.								
EN11	The product classifications displayed in the shopping site were easy to follow.								
EN12	A first-time buyer can make a purchase from this shopping site without much help.								

EN13	It takes a long time to shop at this shopping site.*								
EN14	The contents are easily found in the shopping site.								
		DISA	GREE				AGREE		
	Impulsiveness	Stron	gly				strongly		
		1	2	3	4	5	6	7	
IMP1	When I go shopping, I buy things that I had not intended to purchase.								
IMP2	I often buy things without considering the consequences.								
IMP3	When I see something that really interests me, I simply buy it.								
IMP4	It is fun for me to buy spontaneously.								
IMP5	When shopping online, I often buy things according to how I feel at the moment.								
IMP6	When shopping online, I often buy things without thinking.								
IMP7	Before visiting the shopping site, I did not have the intention to do this purchase.								

Section C: Questions on Online Impulse Shopping Behavior:

This section contains statements about your online buying behavior for three different product categories. Please answer the questions for **ONLY ONE product category** that you've selected in question number 3 in Section-A. You DO NOT need to answer for all product categories.

Please choose the box that closely describes your answer.

(1 = STRONGLY DISAGREE; 7 = STRONGLY AGREE):

*Marked questions are reverse coded (negative statement)

	CLOTHING	DISAGREE				AGREE					
		Strongly				str					
		1	2	3	4	5	6	7			
SBC1	When I go online, I buy clothing that I had not planned to buy.										
SBC2	When I see any clothing online that interests me, I buy without considering the consequences.										
SBC3	My purchase of clothing online was spontaneous.										
SBC4	Before visiting the shopping site, I did not have the intention to buy many clothing items.										
SBC5	Most of the time I could not resist to buy clothing from some online shopping site.										
SBC6	While browsing online shopping site, I had the inclination to buy clothing items outside my specific shopping goal.										
SBC7	When shopping clothing online, I often have the idea "buy now, think about it later."										
SBC8	When shopping clothing online, I often buy things according to how I feel at the moment.										
	COSMETICS	DISA Stron	SAGREE congly		[AGRE strong					
		1	2	3	4	5	6	7			
SBS1	When I go online, I buy cosmetics that I had not planned to buy.										
SBS2	When I see any cosmetics online that interests me, I buy without considering the consequences.										
SBS3	My purchase of cosmetics online was spontaneous.										
SBS4	Before visiting the shopping site, I did not have the intention to buy many cosmetics items.										
SBS5	Most of the time I could not resist to buy cosmetics from some online shopping site.										
SBS6	While browsing online shopping site, I had the inclination to buy cosmetics										

	items outside my specific shopping	T						
SBS7	When shopping cosmetics online, I often have the idea "buy now, think about it later."							
SBS8	When shopping cosmetics online, I often buy things according to how I feel at the moment.							
	ELECTRONICS	DISA Stron	GREE gly			<u> </u>	A(str	GREE ongly
		1	2	3	4	5	6	7
SBE1	When I go online, I buy electronics that I had not planned to buy.							
SBE2	When I see any electronics online that interests me, I buy without considering the consequences.							
SBE3	My purchase of electronics online was spontaneous.							
SBE4	Before visiting the shopping site, I did not have the intention to buy many electronics items.							
SBE5	Most of the time I could not resist to buy electronics from some online shopping site.							
SBE6	While browsing online shopping site, I had the inclination to buy electronics items outside my specific shopping goal.							
SBE7	When shopping electronics online, I often have the idea "buy now, think about it later."							
SBE8	When shopping electronics online, I often buy things according to how I feel at the moment.							

Section D: Demographic Data: Please place an " $\sqrt{}$ " in the box that most closely describes you.

- Your gender
 □ Female
 □ Male
- 2. Your age
 □18-24 Years
 □25-30 Years
 □31-36 Years
 □37-42 Years
- 3. Your city (division)

Dhaka
Chittagong
Barishal
Sylhet
Rajshahi
Khulna
Mymensing
Rangpur

That you very much for your participation. Have a good day ahead!