



# The Influence of e-Servicescape on Consumer Emotions and Attitudes

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**The Influence of e-Servicescape on Consumer Emotions and  
Attitudes**

**(消費者の感情と態度に対する e-Servicescape の影響)**

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## **ABSTRACT**

The purpose of this study is to examine the relationship between e-servicescape, emotions, and attitudes on music websites based on Environmental Psychology theory and the Stimulus-Organism-Response framework.

We designed this study in a series of different tests to obtain a complete and holistic picture of the e-Servicescape relationship (Ambient; Spatial Layout and Functionality; Signs, Symbols, and Artifacts, Financial Security, and Interactivity), Emotions (Pleasure and Arousal), and Attitudes; including manipulation checks, factorial experiment with analysis of variance (ANOVA) test, quasi experiment with multigroup analysis (MGA) test, and structural equation modeling (SEM) test.

The results indicated that Ambient, Spatial Layout and Functionality, and Interactivity has a significant effect on Pleasure and Arousal; also, Financial Security has a significant effect on the Pleasure and no significant on Arousal; while Signs, Symbols, and Artifacts have no significant effect on those emotions. This study also found that Pleasure mediates significantly among Ambient, Spatial Layout and Functionality, Financial Security and Interactivity to Attitude; while Arousal mediates significantly from Interactivity to Attitude.

This study focuses on e-servicescape that relates to emotions and attitudes of consumer and sheds light on the influence of e-servicescape on consumer behavior in global, framing in the context of generic consumer behavior.

Keywords: e-Servicescape, Pleasure, Arousal, Attitudes, Environmental Psychology, the S-O-R framework.

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# CHAPTER 1

## INTRODUCTION

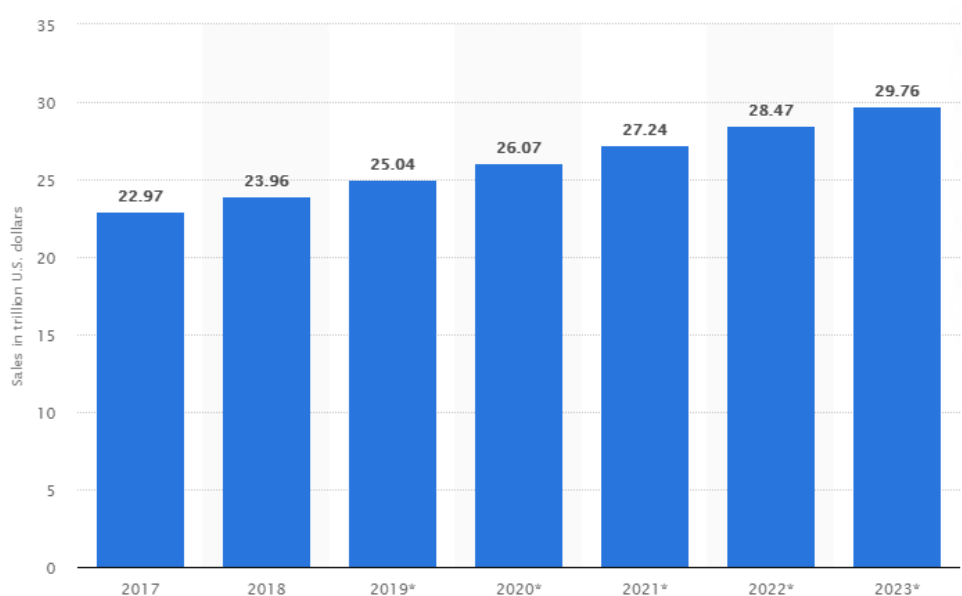
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### 1.1. Introduction

Global retail sales are expected to surpass \$25 trillion USD in 2019, an increase of 10% over 2015. By 2022, it is expected to reach close to \$29 trillion USD. Retail e-commerce sales, which include all online transactions, are expected to exceed 12% of total retail spending in 2019. In 2019, the e-commerce channel is expected to increase at a rate of twenty-four percent (Statista, 2020). As a consequence, e-commerce retail sales are expected to exceed \$4 trillion by 2020, creating significant prospects.

**Figure 1.**

*Total of Global Retail Sales*



Source: Statista (2020)

Over the years, the physical retail service environment has been modified, which was only feasible by concentrating on the client and the paths they made while entering the physical service area. Service environments are designed to enhance the retail customer shopping experience and are a vital element of the services marketing mix and value proposition. The physical surrounds and other features of service delivery sites that are visible to customers are referred to as service environments.

According to Lovelock et al. (2008), the service environment serves four primary functions: 1) to influence customer experiences and behaviors; 2) for image, positioning, and distinction; 3) as part of the value offer; and 4) to streamline the service contact and

increase productivity. We need to examine how many physical retailers have evolved in terms of shop design and service operations throughout time. For instance, fast food shops converted their lengthy waits to self-serve through giant displays; it demonstrates their commitment to provide the greatest possible experience for their consumers. Customers want convenience, and self-serve alternatives streamline the fast-food experience and increase consumer happiness. It occurred at McDonald's, where they installed new kiosks that essentially allow us to bypass the counter and wait together, allowing us to place our orders with little fuss.

**Figure 2.**

*Illustration of Self-Service Kiosks at McDonald*



Source: Peskett (2016)

Service providers have adopted the notion of the Servicescape as a way of guiding and managing service quality. The term "Servicescape" refers to a concept that emphasizes the importance of the physical environment in which a service operation occurs (Booms and Bitner, 1981). The physical environment plays a critical role in conveying the actual physical characteristics of the services being supplied. Signage, textures, color, music, and temperature are all examples of physical components of the servicescape. All of these factors contribute to the service landscape as a whole. Physical evidence, especially the servicescape, has a huge effect on client perceptions and experiences (Bitner, 1992).

In our search, the importance of the study of the e-servicescape emerged in several previous studies. Lariviere and Kandampully (2019), in particular, discuss the servicescape and e-servicescape in an editorial review published in the *Journal of Service Management* titled "moving forward and making an impact in service research: from research priorities to research methodologies". Service problems have a strong reputation and have a significant

effect on marketing and management, according to the authors. This is due to the fact that services have exceeded the dominance of "physical commodities" and have made their way into the worlds of academics and business, with one example being the problem of servicescape/e-servicescape, which is discussed. This subject motivates not only academics, but also the business sector, as it brings to light the fact that service is at the heart of consumer satisfaction and retention. It inspires not only academia, but also the practical world with the realization that the center of customer success lies in service. Including problem solving about collaboration between academic and practical in identifying, analyzing, designing, and solving problems with service issues. Such actions will answer the challenges in the world of marketing where customers are a priority in business.

Lariviere and Kandampully (2019) express their interest in the technique employed by researchers for future research efforts, which is believed important. Many useful and prioritized methods include evaluating survey data (for example, construct and measurement validity, regression and structural equation modeling), experimental data (for example, analysis of variance), and previous quantitative research results (meta-analysis). We believe that this is in line with the findings of the research we did, and we believe the approach we used will be in synchronize with the problems that are presently emerging.

Moreover, the Journal of Service Management, in an article by Keiningham et al. (2019) revealed that servicescape is included in the dimension of innovativeness when changes occur in physical (physics) and intangible (electronics) aspects of the product or service. They refer to it as a component of the interaction space, in which customers will get the look of the physical and virtual surroundings, as well as the elicitation of certain customer feelings and reactions, in addition to the other components of the technology innovation. On top of that, in the Journal of Service Research, Girard et al. (2019) publish the same issue in which experimentally evaluate the impact of stimuli on customer behavior in the short and long term.

As a result, we believe that studying the e-servicescape and consumer behavior is still related to the current conditions, where organizations are trying their best to make consumers the center of attention for practical business. From an academic point of view, this will certainly help create another perspective on how to manage the issue by enforcing a different and in-depth set of tests.

Furthermore, the manner that a large number of customers globally shop is rapidly changing. The transition from offline shopping (visiting a store and buying stuff) to online

shopping (browsing virtual catalogues and making purchases) has prompted many merchants to adjust or adapt their business models.

Consumers are increasingly turning to the internet and online businesses to enhance their shopping experience. While this tremendous boom in the ecommerce business has driven many offline merchants to shift online, many have blended the two and utilize online storefronts to complement their physical ones, and vice versa. Williams and Dargel (2004, p. 310) further stated that the online environment provides “the intangible benefits” of website engagement. One may argue that e-commerce, regardless of the service supplied, has a number of service characteristics. As is the case with servicescape, atmospherics on the internet enhance client experiences and shape perceptions of the service provider (Mummalaneni, 2005).

The classic servicescape notion is reviewed critically in light of the developing digital area for new types of marketing. Ballantyne and Nilsson (2017) demonstrate how the introduction of new social media is reshaping the corporate market into a virtual one. Williams and Dargel (2004, p. 311) revealed that online consumers may have minimal direct or past physical contact with the organization, since the internet enables businesses to function without a physical location or at a large distance from the customer. Lee and Jeong (2012, p. 48-49) stated that the online environment is not identical to the traditional physical world, which can accommodate all five human senses, instead it provides additional benefits, such as time and location flexibility, that are not available in the conventional context. This kind of adaptability is not possible in a typical physical context. For instance, a cooking school website may showcase a cook course and kitchen via the use of eye-catching, colorful photographs.

**Figure 3.**

*Cooking Class Illustration*



Source: [gordonramsayrestaurants.com](https://gordonramsayrestaurants.com) (2021)

It is crucial, since service providers must build attractive backdrops and user-friendly website designs, as these factors strongly influence a customer's opinion. This is accomplished by developing a thorough grasp of the cognitive and emotional reactions of consumers to the aforementioned 'environment.' (Bitner, 1992; Lee and Jeong, 2012; Williams and Dargel, 2004).

Due to the Internet's profound effect on the way business is conducted in e-commerce, websites have developed into a lucrative source of revenue. With the Internet's expansion and its significant influence on the e-commerce sector, practically every business now has a website. As a result, the virtual servicescape, or e-servicescape, is seen as a critical source of revenue for e-commerce businesses. According to a number of studies, understanding how the design of e-commerce and e-service platforms impacts the reactions of customers is crucial (Thompson, 2002; Kim and Lee, 2002; Rahul et al., 2003; Iqbal et al., 2003; Santos, 2003; Cao and Zhao, 2004; Mummalaneni, 2005; Vilnai-Yavet and Rafaeli, 2006).

Consumers and merchants alike have benefited from the transformation in the retail scene brought about by e-commerce. Consumers benefit from more convenience and tailored products, while merchants benefit from increased consumer reach and connection. Due to the increasing rise of e-commerce, several research have examined the servicescape in online shopping settings, and it has been shown that the e-servicescape has a significant impact on online consumer behaviors (King et al., 2016). E-servicescape, in its current form, is a successful effort to contextualize and adapt conventional retailer features (and long-established keys to traditional retailing success) into modern online store surroundings.

Harris and Goode (2010) re-contextualized the servicescape concept from physical to e-commerce establishments by generating new e-servicescape scale items. Harris and Goode (2010, p. 234) stated that the scale development process included the creation of survey instruments containing many measurements of different aspects of the servicescape. Similarly, numerous researchers have proposed online servicescape variables such as website design (Zhou et al., 2009), online store atmosphere (Cheng et al., 2009), and financial security (Miyazaki and Fernandez, 2001) in order to discuss the possible effects of these variables on online shopping behaviors (King et al., 2016). Academicians responded to the aforementioned expanding trends and possibilities, which have subsequently grown in scale. As a result, the idea of a servicescape evolving into an online e-servicescape made sense. The shift from a physical servicescape to an e-servicescape is worth investigating further. Even though several research have been undertaken in the area of e-servicescape,

the links between e-servicescape and emotions and attitudes have been lacking due to a lack of exposure. Consumer emotions are an important subject and process in retail consumer behavior research (Bagozzi et al., 1999; Schofer and Diamantopoulos, 2008). Emotions, defined as customers' emotional reactions, have gained significant attention from retailing academics during the last three decades (Chebat and Michon, 2003) and almost five decades nowadays. The consumer behavior literature is replete with research demonstrating the importance of emotions in motivating certain attitudes and actions. Loyalty and loyal behaviors are the most often examined attitudes and behavioral orientations (e.g., Donavan and Rossiter, 1982; Baker et al., 1992; Bagozzi et al., 1999; Walsh et al., 2010).

As with bricks-and-mortar service settings, the dimensions of the e-servicescape are likely to vary in importance depending on the type of the online service delivered. Eroglu et al. (2001, p. 178) revealed that certain ambient characteristics of the online store have an effect on the shopper's emotive and cognitive internal states, interfering with the approach (avoidance) reactions to the online shopping experience.; as well as cognitive and emotional responses (Bitner, 1992; Lee and Jeong, 2012; Williams and Dargel, 2004), as well as specific shopping behaviors in terms of approach and avoidance outcomes. The most important component of the model for retailers is that it aids in the understanding of how various stimuli impact customer reaction. Most shops naturally seek to enhance consumers' approach habits. Thus, it is critical to understand what characteristics in the environment stimulate pleasure and arousal in targeted customers, since establishments, both offline and online, that elicit pleasurable sentiments are likely to be places where people want to spend their time and money.

Moreover, it is important for us to explain that e-servicescape affects attitudes mediated by emotions (pleasure and arousal). Based on the theory of environmental psychology, the literature that we use shows that the scope of the e-servicescape is closely related to the M-R theory. This theoretical approach views that consumers will react and respond to the environment through their thoughts, emotions, and attitudes towards the service environment (e-servicescape) offered by the company. Moreover, research on the online environment does not explicitly refer to attitudes, but rather to intentions and engagement. We feel that previous studies missed attitudes when they examined consumer intentions, decision making, satisfaction, and loyalty. That is why in our research, we tried to connect e-servicescape with attitudes. The selection of emotions as a mediator was based

on the lack of empirical research and exploration of these variables. In addition, emotions also play an important role in shaping consumer attitudes towards the stimuli.

Referring to the M-R theory (Mehrabian and Russell, 1974a) as a theoretical foundation, it is stated that consumer emotions arising from stimulation of the shopping environment can be in the form of three things, namely pleasure, arousal, and dominance (PAD). Furthermore, we choose pleasure and arousal to synchronize the concepts in theory, with previous empirical research that discusses the relationship between environmental psychology and pleasure and arousal. In brief, it is important for us to highlight and provide bold lines on the relationship between environmental psychology, the M-R approach (Mehrabian and Russell, 1974a), and servicescape (Bitner, 1992) in our study. Thus, the consequences of our research will be limited to the theoretical foundations, including the selection of Pleasure and Arousal as other forms of Emotions.

## **1.2. Research Phenomena**

Today, the increasing use of the internet and social media can be felt in cyberspace. The media is widely used by people to exchange information, communicate, transactions, service quality improvement, and form opinions and perceptions. In the context of shopping, the availability of a virtual environment reduces the need for consumers to come and visit the store, or reduce physical contact (Yüncü, 2015). These phenomena are translated in an academic context by Lariviere and Kandampully (2019), Keiningham et al. (2019), and Girard et al. (2019) as an e-servicescape; a picture in which consumer behavior is influenced, changed, and formed in a non-physical environment. As previous academics have termed this condition with cyberspace (Williams and Dargel, 2004), virtual servicescapes (Vilnai-Yavet and Rafaeli, 2006), virtual worlds (Jung and Pawlowski, 2014), or digital service space (Ballantyne and Nilsson, 2017).

The combination of phenomena that occur in the world of marketing and technology often occurs repeatedly, along with the development of each of these subjects. According to some experts, these phenomena cannot be separated from innovation and technological developments. The phenomena where the development and prevalence of marketing and technology is also followed by an increase in consumer interaction in the virtual environment, as stated by Nilsson and Ballantyne (2014) and Lee et al. (2016). Recognizing these phenomena, companies continue to develop online retailing because of the promising growth potential (Doherty and Ellis-Chadwick, 2010). Data released by Statista (2020)

shows that by 2022, it is expected to reach close to \$29 trillion USD of global retail sales; where the total transaction value is expected to exceed 12% of total retail spending in 2019.

As researchers, we need to look at the above conditions in a broader framework. It means, not only talking about media and technology, but also opening up a space for discussion on consumer behavior arising from changes in their environment. Clearly, the phenomena of consumer behavior in utilizing the service environment are also responded by companies as service providers; where they are trying to visualize their service environment through the website (Lee and Jeong, 2012). Furthermore, customers' interactions with companies' online environmental settings influence emotional responses as well as behavioral responses to the company (i.e. attitude).

Increasing and active consumers who use e-servicescape as a means of shopping, there has been more discussion about consumer perceptions such as service quality (Hooper et al., 2013), customer attitudes (Chiou et al., 2008), and emotional responses (Lin and Worthley, 2012). It is interaction between consumers and technology (i.e. e-servicescape) that Hosseinpour and Terlutter (2019) and Muntaner-Mas et al. (2019) describes it as a form of effort to shape consumer behavior, emotions, and attitudes. In our study, attitude will capture consumer's global evaluation of a service, as Bolton and Drew (1991) stated as the overall excellence or superiority of the offered service.

Moreover, in order to fully appreciate the discrete between physical and virtual settings, it is necessary to recognize that study outcomes might vary from one another. In order to explain the distinction, Kim (2021) revealed that the key driver of behavioral intentions in the physical environment is contentment, but the virtual environment stresses a user's attitude toward a particular website (Cheng et al., 2020; Cobelli and Chiarini, 2020). This is consistent with the study's objective of analyzing the psychological processes that occur in customers. Rather of focusing just on behavioral intentions, happiness, loyalty, or customer involvement, it is critical to put consumer attitudes first. Thus, research on the relationship between e-servicescape and attitude is an early study in responding to the current phenomena and consumer behavior.

If we refer to the phenomena where consumers are spending more both expenditure and time on e-commerce, the previous e-servicescape research did not cover this phenomenon clearly, consequently, it has not been able to answer how consumers have attitudes towards a website and how the psychological processes that occur in consumers'

activity. This is certainly related to how each researcher captures broad phenomena, thus using rational research. For example, some of these studies are as follows:

1. The phenomenon of emerging effective website design. Hopkins et al. (2009, p. 23) stated that with rising competition in the e-commerce space, concerns about effective website design have persisted. Moreover, Garaus (2018, p. 477) stated that the creation of an attractive website that entices consumers to remain and browse is one of the primary issues facing online businesses. Responding those phenomena researched by Hopkins et al. (2009) focuses on the relationship between e-Servicescape and service provider evaluation, and intentions; and attitude as a mediator. Then, Garaus (2018) in his study highlights online store design, online shopper confusion, and shopping cart abandonment. Still on the same phenomenon, Kühn and Petzer (2018) examined the understanding of how purchase intentions can be fostered through effective website design.
2. The phenomenon of “customer's surfing experiences” researched by Jeon and Jeong (2009, p. 2) with a focus on the relationship between e-servicescape and intention to use a website; Lee and Jeong (2012) who linked e-servicescape with flow experience, emotion, satisfaction, and behaviors. Lee and Jeong (2012, p. 47) revealed that numerous businesses devote extra attention to developing their websites in order to improve customers' total online experience with the firm, since interactions with the online environmental settings of businesses influence emotional reactions as well as behaviors.
3. The phenomenon of increasing internet consumption of consumers; investigated by Teng et al. (2018). Teng et al. (2018, p. 333) revealed that according to various surveys, heavy users are the primary consumers. Understanding the consumption habits of heavy users is critical for increasing firm earnings. Additionally, “a few studies have examined a similar concept to the e-servicescape, called website attractiveness...and detailed its effects on purchase intention, but they have not addressed the complete concept of the e-servicescape” (p. 334). By those argument, Teng et al. (2018) focus on study of linking e-servicescape with purchasing intention.
4. The phenomenon of using the network as a channel to disseminate information and to cover the market researched by Tankovic and Benazic (2018) which connects virtual servicescape with perceived value and loyalty. Moreover, Tankovic and Benazic (2018,

p. 1124-1125) stated that the network acts as a conduit for information dissemination and for covering untapped markets.

5. The phenomenon of "retail therapy" where there is an increase in the online search for therapeutic effects by consumers. Lee and Lee (2019, p. 464-465) stated that retail therapy, in particular, which involves relieving stress via shopping, is gaining popularity due to its accessibility in daily life. Lee and Lee (2019) responded through research by linking aesthetics values with positive/negative mood and attitude.
6. The phenomenon where consumers perceive organizations transmitting viral messages as friends or foes due to differences in trust levels. Tran and Strutton (2020, p. 1) stated that the use of social media and social media-based marketing tactics has exploded in popularity because the technology that enables each activity capitalizes on consumers' naturally occurring. Likewise, Tran and Strutton (2020) conducted a study with a focus on e-Servicescape with trust, e-WOM intentions, and customer loyalty.

Based on the sorting above, what we want to convey is that as researchers, each researcher may have limitations and rational in responding to phenomena with the research carried out. Consequently, if we want to focus on the phenomenon of consumer attitudes towards a website and how consumer psychology processes occur, then we try to answer it by examining the relationship between e-servicescape and attitudes.

### **1.3. Research Gap**

In previous studies, most of retailers use virtual environment stimuli as things that trigger consumers to shop. The latest research defines e-servicescape as an incomplete service environment. Several studies that have been conducted by Wu et al. (2017), Tankovic and Benazic (2018), Kühn and Petzer (2018), Teng et al. (2018), and Lee and Lee (2019) only provide a small space in the application of e-servicescape. Wu et al. (2017) and Tankovic and Benazic (2018, p. 1124-1127) in their research interpret e-Servicescape as a factor of “aesthetic appeal, layout & functionality, and financial security”; where Teng et al. (2018) added an interactivity factor in its development. Furthermore, Kühn and Petzer (2018) emphasize the visual appeal and perceived usability factors; and different from what Lee and Lee (2019) did on aesthetics and model attractiveness. We are aware that the development and implementation of e-servicescape has various versions, but no one has fully implemented it (Gap 1). Consequently, we see that there is a gap; and we try to understand e-servicescape in a broader context. This is what underlies us using e-

servicescape stimuli such as ambient factor, layout and function factor, sign and symbols factor, financial factor, or even interactivity factor. However, many of those were not address the concept of servicescape as an attribute of an e-commerce, failing to identify aspects of e-servicescape in the internet shopping context.

Moreover, there is a vacuum in the marketing literature, as well as studies into the e-servicescape, which is a new development. There has been research into online servicescape (Hopkins et al., 2009; Harris and Goode, 2010), microblogs and the e-servicescape (Tran et al., 2012), and online servicescape and flow (Lee and Jeong, 2012), but there has been no investigation into how e-servicescape is associated with emotions and attitudes. Several previous studies have not used attitudes in research on the online environment; as seen in the study of Hopkins et al. (2009), Sahoo and Pillai (2017), Wu et al. (2017), and Lee and Lee (2019). However, this research does not lead to attitude, but rather purchase intentions and e-WOM intentions Hopkins et al. (2009), Wu et al. (2017); and customer engagement (Sahoo and Pillai, 2017). Although it may be related to attitudes (Lee and Lee, 2019), this study does not include e-servicescape in its main variable (Gap 2). It is the goal of this research to fill the knowledge gap by improving the current knowledge and increasing the overall grasp of the e-servicescape. In the marketing service sector, this method contributes by studying consumer behavior as a responsive and multidimensional construct that advances the understanding of consumers' emotions about a website and attitudes toward e-servicescapes from a marketing service perspective.

Furthermore, environmental psychologists believe that people respond to environment in one of two broad, and diametrically opposed ways: by approaching it or by avoiding it (Mehrabian and Russell, 1974a). Approach behaviors encompass any and all positive actions that are oriented toward a certain location, such as a desire to remain, explore, work, or associate with that location. Staying away, exploring, working, and being affiliated are all examples of avoidance actions that represent the inverse of this urge. Generally, marketing literature shows that the effects of e-servicescape toward variables such as approach and avoidance (Williams and Dargel, 2004), flow experience (Lee and Jeong, 2012; Kühn and Petzer, 2018), e-satisfaction (Szymanski and Hise, 2000; Ballantine, 2005; Lee and Jeong, 2012), shopping behavior (Menon and Kahn, 2002), pleasure (Eroglu et al., 2003), trust (Papadopoulou et al., 2001), trust and purchase intentions (Harris and Goode, 2010), and trust and word-of-mouth (WOM) (Tran and Strutton, 2016). From the various studies, it is difficult to conclude a current stream of research will go (Gap 3). This is because

the topics of science and research still need deep exploration. However, what we need to pay attention to is reasoning our research from previous research, and linking it to the current conditions on the object of research. By doing this, we can close the gap of previous research with the research we are going to do.

Accordingly, after conducting a literature review, the use of emotions and attitudes variables in the e-servicescape is based on the lack of empirical research and exploration of these variables. In further development, this study means to be a basic foundation in the development of other research with issues related to Theory of Reasoned Action (TRA) (Fishbein, 1980) and Theory of Planned Behavior (TPB) (Ajzen, 1985).

The trend of empirical research using Stimulus-Organism-Response (S-O-R) as a theoretical framework has indeed increased. For example, research conducted by Islam and Rahman (2017), Sahoo and Pillai (2017), Kamboj et al. (2018), Kühn and Petzer (2018), Lee and Lee (2019); but still, few combine it with e-servicescape. Although the research conducted by Kawaf and Tagg (2012) and Kühn and Petzer (2018) examined the relationship between the online shopping environment and consumers, they did not specifically call it an e-servicescape (Gap 4). The combination of theory between e-servicescape and the S-O-R framework becomes important because it is as the basic framework in understanding how environmental factors function as stimuli and consumer reactions that arise from the condition of shopping environment. Following this conclusion, we propose that using the S-O-R framework to conceptualize an online service environment as a theoretical framework will help to bridge a gap between the theoretical and practical difficulties of understanding how environments elicit different types of emotional states in individuals, which in turn elicit attitudinal responses from those individuals. Researchers have transitioned from studying the physical features of the servicescape to exploring the e-servicescape, as shown by a comparison of current and previous studies.

#### **1.4. Research Question**

Numerous researches using the Mehrabian and Russell (1974a) model of stimuli, organism, and responses have been conducted to better understand how e-servicescape stimuli may influence customers' emotions and attitudes in a retail environment (the S-O-R framework). Many researchers have investigated the question of which atmospheric cues affect the emotional states of consumers and how subsequent purchasing behavior is affected over the past five decades, both for traditional offline stores (Baker et al., 1994; Donovan et

al., 1994; Sherman et al., 1997) and for online stores (Eroglu et al., 2003; Koo and Lee, 2011). The validity of the S-O-R framework has been shown by these researches. There is, however, still space for development in this area. Previous research has revealed that, in the same way that the instrumental qualities of online shopping, such as ease of use, convenience and usefulness, have emerged as important predictors of shopping attitudes and behavior. Academicians studying retail stores have discovered that particular aspects of the online environment have an effect on attitudes about and plans to utilize online purchasing (Eroglu et al., 2001, p. 182; Eroglu et al., 2003, p. 139).

The theory of environmental psychology and the S-O-R framework serve as the foundation for this investigation. This concept explains how the environment serves as a stimulus for the creature, causing it to react. The organism then reacts with an attitudinal approach or avoidance response, depending on the situation. For the purposes of this study, the stimulus is the e-servicescape, the internal reaction of the organism is emotions, and the customer responses are attitudes about the website or application. In particular, this paper aims to address the following research questions:

1. In what extent consumers will be stimulated?
2. In what extent e-servicescape will affect pleasure and arousal of consumers?
3. In what extent e-servicescape mediated by emotions will affect attitudes of consumers?

### **1.5. Aim and Objectives**

The purpose of this study is to develop and test a model explaining the influence of e-servicescape on attitudes, with the mediation of emotions. As such, we aim to several point as follows:

1. To develop and extend existing knowledge to enhance the understanding of e-servicescape
2. To improve the existing knowledge to enhance the understanding of e-servicescape affect the consumers' psychological process and attitudes.
3. To extend M-R approach by investigating the impact of consumers emotional states on attitudes.

Our study also has some objectives, as follows:

1. This study will discuss the interrelationship between e-Servicescape and Emotions (Pleasure and Arousal)
2. This study will discuss the interrelationship between e-servicescape and Attitudes mediated by Emotions (Pleasure and Arousal).

### **1.6. Focus of Study**

We divided our focus of study into three stages:

1. The first stage, assuring the implementation of e-Servicescape. In this stage, we observe the multi-factors of e-servicescape stimuli such as ambient, spatial layout and functionality, signs, symbols, and artifacts, financial security, interactivity, which may influence the consumer emotions toward the sample site. The problem to be solved in this stage is to find out whether consumers can feel the difference in the environment and the stimuli provided by the company to them. The actions we take in this stage are:
  - a. Create two websites with a pleasant and neutral approach to determine consumer tendencies in choosing one of these websites.
  - b. After choosing 1 of the 2 websites, we decided on the website to observe consumer emotions towards e-servicescape stimuli.
2. The second stage, the interrelationship among e-Servicescape, pleasure, and arousal. The problem to be solved in this stage is to prove whether the multi-factors of e-servicescape stimuli in two different groups are strongly related to pleasure and arousal. The actions we take in this stage are:
  - a. Making e-servicescape stimuli an observable variable, thus we know which variables will have a large or small effect on pleasure and arousal.
  - b. Proving the hypothesis that e-servicescape stimuli have an influence on consumers' emotions (pleasure and arousal).
  - c. Experimental Survey: 2x2 Factorial Design Experiment and Quasi-experiment.
3. The third stage, the interrelationship e-Servicescape and attitudes, mediated by emotions. The problem to be solved in this stage is to prove how the consumer attitude process is formed visiting the website and whether emotions have a significant influence on the formation of attitude. We expect to achieve the following: revealing how consumers react and value in response to the e-servicescape stimuli after a

website visit, and exploring the interrelationships of e-servicescape stimuli, emotions, and attitudes.

We divided our focus of the study into three stages because we want to give an illustration that each study, we did have an interrelationship with one another, creating firm judgement and support; thus, giving the impression of strengthening and supporting complete research.

### **1.7. Originality**

Given the lack of an existing conceptualization of online service environment, this research tries to presents a framework of e-servicescape. This model would view e-servicescape as a platform of how researchers' study about emotional, and how e-tailers have a picture to generate attitudinal behavior of consumers. The reasons for this judgement are based on following:

- 1) *First*, our research highlights the manipulation of factors in the e-servicescape and see how consumers are stimulated. In general context, we will see how consumers response toward the online environment which are already quasi-manipulated.
- 2) *Second*, this study highlights the role of e-servicescape in influencing consumer pleasure and arousal. We will test how factor in e-servicescape may influence consumer's emotions in different levels and groups.
- 3) *Third*, this study highlights how emotions processing has a key role in the influence of e-servicescape on attitudes in consumer behavior. For almost the last two decades, research on e-servicescape and stimulation tends to focus on cognition, where this research takes the position of emotion processing as a strong argumentation, the opposite of cognition information processing.

### **1.8. Methodological Approach**

This paper uses the quantitative approaches. This approach is distinguished by quantitative data collection and analysis. This research initial phase covered 85 respondents; while the complete research covered 390 global respondents. Data distribution held by Prolific, an online survey distributor company. Methodologically, in data collection and processing, we carry out a series of activities as follows:

1. Create two websites with a pleasant and neutral approach for consumers. To find out which website was chosen as their preference, respondents were asked to fill out a

questionnaire that we had created. This act is used to provide a strong argument and justification that consumers have more interest in a pleasant website than a neutral website. From this process, the procedures we take are:

- a. Manipulation checks to ensure that the manipulations made on the website work properly.
  - b. The next step is to test the hypothesis that websites with a pleasant approach have better scores than websites with a neutral approach.
  - c. Hypothesis testing is using paired t-test; it means that testing on 1 respondent with 2 different conditions.
2. Next, we tried to re-examine the effect of e-servicescape on emotions through a series of experimental tests, including:
- a. A 2x2 factorial design experiment. This is done to find the best combination of conditions accepted by consumers that can increase their positive emotions. This stage of testing uses Analysis of Variance (ANOVA).
  - b. Experiments on two groups, with two different approaches to conditions. We formed two groups, where group 1 was given a neutral website impression experiment and group 2 was given a pleasant website impression experiment. By dividing the respondents into these two groups, we will test:
    - How is the consumer's emotional response (pleasure) to the given e-servicescape stimuli? The test of the two groups of respondents on emotion (pleasure) used the Multi Group Analysis test.
    - How is the consumer's emotional response (arousal) to the given e-servicescape stimuli? Testing the two groups of respondents on emotion (arousal) using the Multigroup Analysis (MGA) test.
3. Next, we expanded the study with the observation variables of e-servicescape, emotions, and attitudes factors. We have asked at least 390 consumers to fill out the questionnaire that we have created. We processed the respondent's data using SmartPLS. The usage of partial least squares - standard equation model (PLS-SEM) to detect indirect relationships between variables.

## **1.9. Dissertation Structure**

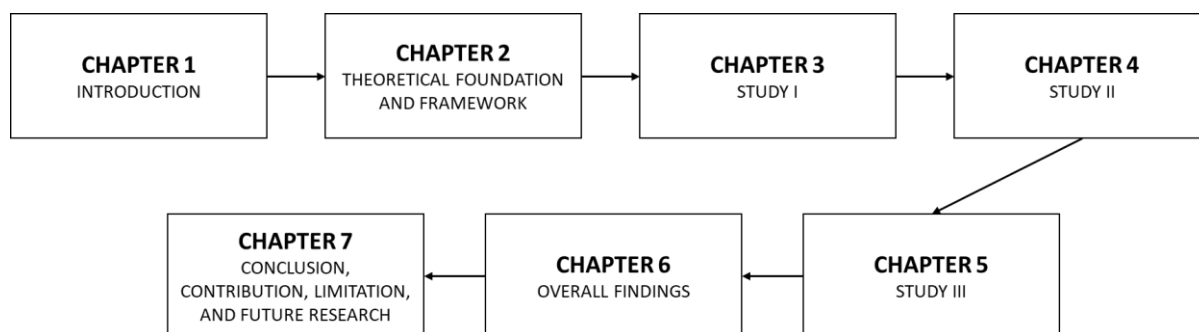
This dissertation contains eight chapters:

1. Chapter 1 lays background of the study, research problem and research question.

2. Chapter 2 provides explanation about theoretical foundation and framework used in this study. This part gives detail explanation about servicescape, e-servicescape, emotions, and attitudes. This part enlightens about relationship between stimulation and response; and how psychological process happens in consumers due to environmental stimulation.
3. Chapter 3 provides explanation about study part I about manipulation checks where we explain in details about how it has a context of study and several tests necessary taken.
4. Chapter 4 introduces study II where we explain about two different experimental studies to check and assure some hypothesis related to e-servicescape and emotions. We are using analysis of variance (ANOVA) and multigroup analysis (MGA) to assess our hypothesis.
5. Chapter 5 explains about whole model and hypothesis development. It introduces thesis framework, in addition to the hypothesized relationship between, the different constructs that comprise the framework. Also, the purpose of this chapter is to examine dissertation research technique, which will aid in assuring the rigor of data collection and analysis, and, as a result, the quality of the findings. These topics are covered in this chapter: the researcher's philosophical position, methodology that informs procedure design and data collection and analysis methods, as well as criteria for determining research findings quality. The chapter concludes with the operationalization of the variables that have been chosen for use in the study and a discussion of future research. This chapter covers the quantitative approach. It employs a survey as the main means to collect data and test for this dissertation hypothesis. It starts by checking the data screening process, then launches the first stage of analysis using PLS-SEM.
6. Chapter 6 provides overall findings and describes theoretical contribution of our research.
7. Chapter 7 provides conclusion, contribution, limitation, and future research. This chapter is designed to have a brief picture of research, and discuss implication, limitation, and contribution of the dissertation.

**Figure 4.**

*Dissertation Report Structure*



Source: Author (2021)

### **1.10. Summary**

In general, our studies respond to the existence of research phenomena and opportunities to fill the puzzle in the research gaps that we have identified. Obviously, each researcher has own specialty in understanding the condition of the phenomenon according to interest and capacity to research the problem. What we need to underline in this chapter is to systematically explain the basic foundations of our study thus the readers can understand it. Our study at least mentions several things, such as: 1) the phenomenon of the relationship between the virtual world and marketing; 2) consumer behavior when in an online service environment; 3) how the e-servicescape acts as a stimulus that can stimulate consumers; 4) emotions such as pleasure and arousal that arise due to environmental stimuli; and 5) attitudes that arise due to stimuli or emotions in consumers. Definitely, the use of theoretical foundations and frameworks in research will affect it, such as e-servicescape; psychological processes; and the S-O-R framework.

## **CHAPTER 2**

### **THEORETICAL FOUNDATION AND FRAMEWORK**

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#### **2.1. Introduction**

In this chapter, we will specifically discuss the theoretical foundations and frameworks used in the research. Since the emergence of the term servicescape by Bitner (1992) many researchers have begun to realize that the situation or condition of the shopping environment in the retail context plays an important role. In fact, this phenomenon occurred in the early 1980s when Donovan and Rossiter (1982) became pioneers of research on the occurrence of environmental psychology in the retail context; although at this time research does not use the term “servicescape”. Additionally, Donovan and Rossiter (1982) acknowledge and absorb the thoughts of Mehrabian and Russell (1974a) who are environmental psychologists with research linking environmental, emotions, and behaviors. Understanding the relationship between Mehrabian and Russell (1974a), Donovan and Rossiter (1982), and Bitner (1992) became crucial with the emergence of the internet and online shopping in the mid-1990s and early 2000s. in the virtual world in a variety of perspectives. This chapter will discuss these relationships and try to explain them in simple language.

#### **2.2. Servicescape**

Various definitions of servicescape have been proposed over the years. Kotler (1973, p. 50) stated that the interior artifacts on exhibit create awareness for consumers about the qualities of the service provider and create purchasing settings that elicit particular emotional responses in the consumers. Moreover, Bitner (1992, p. 65) defined servicescape as the objective physical characteristics that a business may influence in order to improve staff and consumer behavior; while Bitner and Zeithaml (2003) defined it as any tangible component that facilitates performance or communicates the service. Among other things, servicescape elements are those that have an influence on the performance, delivery, and consumption of market offerings (Zeithaml et al., 2009). Individuals' views of the servicescape influence their behavior in terms of approach and avoidance. The servicescape is concerned with the surroundings in which a service is consumed or given, as well as with the points of interaction between company and customer.

The Servicescape notion implies that both consumers and employees are aware of a variety of objective environmental characteristics and that both groups may respond intellectually, emotionally, and physically to their surroundings (Bitner, 1992). Tombs and McColl-Kennedy (2003, p. 450) stated that Bitner's (1992) servicescapes is one of the most commonly cited typologies of the service encounter and its repercussions for those who find themselves therein.

The servicescape is a complicated web of external features that influence interior responses and behaviors. Customers' actions are impacted by a range of physical characteristics that the firm may control to enhance (or restrict) their physical environment experiences. Numerous aspects to consider include “lighting, color, signage, textures, material quality, style of furniture, layout, wall décor, and temperature” (Bitner, 1992, pp. 65-66).

The three dimensions that comprise the servicescape of brick-and-mortar businesses are “ambient conditions, spatial layout and functionality, and signs, symbols, and artifacts” (Bitner 1992, pp. 65-67). Three composite dimensions have been identified as being particularly relevant to this research after a review of a number of literatures. Due to the fact that study findings are context-specific and hence cannot be generalized, it is difficult to forecast the influence of a single component on consumers and employees in a particular circumstance. However, by identifying and studying these dimensions, significant components of the servicescape may be isolated and broad patterns explored. The physical environment of a retail store contains a number of stimuli. Ambient conditions, spatial layout and functionality, Signs, Symbols, and Artifacts are only a few of the servicescape qualities that are often used (Bitner, 1992, p. 60).

### **2.3. e-Servicescape**

The term "e-servicescape" refers to the online ambient variables that influence a marketer's website (Harris and Goode 2010). Additionally, the term e-servicescape may be used to refer to an online servicescape, an online environment, or a virtual service environment. This is mostly related to how the behavior of consumers shop in different mediums; from physical to virtual. Deloitte (2013) underlines that online shopping continues to grow in popularity. In light of the growing popularity of online shopping, e-tailers must value their consumers' opinions about websites and work to continually improve functionality and service offerings. The online purchasing environment, colloquially

referred to as the e-servicescape, has developed (see, for example, Häubl and Trifts, 2000; Eroglu et al., 2001; Éthier et al., 2006; Demangeot and Broderick, 2007; Chang and Chen, 2008; Birchall, 2010; Harris and Goode, 2010; Darley et al., 2010; Koo and Ju, 2010). According to Eroglu et al. (2001), there is a need to develop a comprehensive taxonomy of online atmospheric signals and to identify primary dimensions in a way similar to what has been done in the traditional retail store context. Eroglu et al. (2001, p. 179) revealed that the current categories for conventional shop atmospherics do not fully apply to the online retailing environment, and it seems essential to propose a new taxonomy. Later studies gained a greater understanding of the internet's general environment, as well as consumer responses and behavior in the online world.

Bitner's (1992) believed that model plays an important role in providing a view of the servicescape. In their opinion, Harris and Goode (2010) stated that adopting the dimensions in the e-servicescape refers to the rules and frameworks that have been pioneered by Bitner and are adapted to current virtual, electronic, and internet conditions. Specifically, Harris and Goode (2010, p. 231) stated that e-servicescape draws on the original work of Bitner (1992), where financial security replaces signs, symbols, and artifacts during online exchange. Harris and Goode (2010, p. 237) revealed that e-servicescape builds on existing internet knowledge. Consequently, it is not surprising that in subsequent e-servicescape research, the research of Harris and Goode (2010) is widely referenced by researchers. However, this research is inseparable from criticism by suggesting another dimension by basing it on emerging markets and technology.

Numerous prior studies (Eroglu et al., 2001; Harris and Goode, 2010) identified the e-servicescape using a range of stimuli; nevertheless, there have been few thorough studies of the e-servicescape or its components. For instance, Harris and Goode's (2010) study highlighted e-servicescape qualities such as aesthetic attractiveness, layout, and financial security as factors affecting consumers' trust in web sites and, therefore, their purchase intentions. Additionally, Eroglu et al. (2001, 2003) categorized the e-servicescape into two groups based on the media richness theory: high task relevance and low task relevance. Additional subjects include e-servicescapes and e-satisfaction (Szymanski and Hise, 2000; Ballantine, 2005), subsequent purchasing behavior (Menon and Kahn, 2002), pleasure (Eroglu et al., 2003), and customer reviews (Chatterjee, 2001; Chen and Jinhong, 2004; Berger et al., 2010). Major academicians believed that two primer study heading toward Bitner (1992) and Harris and Goode (2004, 2010) after a thorough examination.

Online environmental stimuli are very close to Bitner's concept (1992) with some adjustment in names and variables. These stimuli are summarized from literature review and comprised of ambient factors (Mummalaneni, 2005; Williams and Dargel, 2004; Hopkins et al., 2009; Jeon and Jeong, 2009; Lee and Jeong, 2012), design factors (Éthier, et al., 2006; Kim et al., 2006; Koo and Ju, 2010), space and function factor (Williams and Dargel, 2004; Hopkins et al., 2009; Jeon and Jeong, 2009), signs, symbols and artefacts factor (Jeon and Jeong, 2009); Hopkins et al., 2009); and other factors out of Bitner's concept (1992) like financial security factor (Harris and Goode, 2010; Sahoo and Pillai, 2017; Tankovic and Benazic, 2018; Teng et al., 2018), and interactivity, social network, and virtual community factor (Ku, 2011; Lee and Jeong, 2012; Teng et al., 2018). Other online environmental stimuli mainly include product presentation (visual and verbal) factors (Kim and Lennon, 2008) and links and menus on the website (Koo and Ju, 2010).

### **2.3.1. Ambient**

According to a number of authors, ambient circumstances are a factor that affects how humans perceive and respond to immediate surroundings (Baker, 1987; Baker et al. 1988). Bitner (1992) defined ambient circumstances as a component of a physical service that impacts behavior via "the five senses" (p. 66) and influences the behavior of others. In the virtual environment, the ambient conditions on a website are intended to trigger positive sentiments in website users.

The ambient state is obtained straight from the servicescape component for brick-and-mortar stores in the e-servicescape or Harris and Goode (2010, p. 232) stated it as a "mirror". The researchers used a variety of terms to describe this factor, including ambient conditions (Williams and Dargel, 2004; Hopkins et al., 2009; Jeon and Jeong, 2009; Lee and Jeong, 2012), aesthetics and professionalism (Vilnai-Yavetz and Rafaeli, 2006), aesthetic appeal (Harris and Goode, 2010; Sahoo and Pillai, 2017; Tankovic and Benazic, 2018; Teng et al., 2018; Lee and Lee, 2019), visual appeal (Kühn and Petzer, 2018), model attractiveness (Lee and Lee, 2019). For e-commerce businesses, sight and sound are the senses used to attract individuals. Some researchers like Harris and Goodie (2010), Tran et al. (2012), Teng et al. (2018) and Tran and Strutton (2020) judge that the ambient factor consists of visual appeal, originality of design, and entertainment value; while other researchers focus on other factor such as sight sense, and interesting graphics, fonts, and quality photographs (Kim and

Lennon, 2008; Lin, 2007). Furthermore, other factors also come up with website's design, color, style and freshness (Éthier, et al., 2006; Kim, and Lennon, 2006; Koo and Ju, 2010).

Hakim and Deswindi (2015, p. 232) revealed that utilizing suitable colors is critical, since an unclear website might project an unfavorable image to clients. While specific colors can help create a sense of coziness and attractiveness for customers in the traditional servicescape (Countryman and Jang, 2006). Meanwhile, colors may play a key role in the e-servicescape as well, with many experts advocating that hue use be controlled (Flanders, 1996), with different colors being used for varied reasons. Using eye-catching colors on a website makes users feel more at ease when exploring. Madu and Madu (2002) examined that a website's appearance or virtual attractiveness is determined by its appearance or virtual attractiveness. Consumers may profit from this in order to create a virtual environment with a modern design aesthetic and to improve online shopping experience (Fusaro et al., 2002).

Consumers anticipate discovering an aesthetically good design in a service location and are more satisfied when the servicescape is appealing rather than repulsive, regardless matter whether the site is physical or virtual (Hall and Hanna, 2004; Vilnai-Yavet and Rafaeli, 2006). According to the present study, a number of studies have shown that aesthetic appeal and design features of websites are critical components of e-servicescapes (e.g. Zeithaml et al., 2002; Grewal et al., 2003; Montoya-Weiss et al., 2003, Tankovic and Benazic, 2018). Thus, researchers like Mummalaeni (2005), Williams and Dargel (2004), Hopkins et al. (2009), Jeon and Jeong (2009), Lee and Jeong (2012) focus on general term which is identical than another ambient factor studied. But, the idea to create such factor is to entice consumers to spend more time viewing the website.

### **2.3.2. Spatial Layout and Functionality**

Bitner (1992, p. 66) believed that spatial layout and functionality relate to the arrangement of machinery, equipment, and furniture, size and form, and the spatial connections between them. Moreover, Tankovic and Benazic (2018, p. 1127) stated that while improvements have been made in conceptualizing physical servicescapes, the online context has been largely ignored, due to a lack of research and surveys into the online purchasing environment to remain current of the internet's expanding relevance as a sales channel for multiple shops. Thus, some researchers have rationale interpretations, but still refer to the opinion conveyed by Bitner (1992). In the e-servicescape, spatial layout and functionality are transformed into design aspects, which are defined as the overall structures,

space usage, navigational functions on web pages (Jeon and Jeong, 2009, p. 5). According to Geissler's (2001) study, the design of a website has a direct effect on the process by which a site visitor becomes a paying client. This research examined the factors that contribute to the creation and maintenance of effective websites from the perspective of website designers. Meanwhile, Harris and Goode (2010, p. 232) stated that the term "online layout" refers to the way in which websites are organized, structured, and adaptable, while "functionality" refers to the degree to which such objects enable service objectives (a view of layout and functionality).

The term spatial layout and functionality comes with different perspective of word used such as space and function (Williams and Dargel, 2004; Hopkins et al., 2009), functional aspects (Jeon and Jeong, 2009), layout and functionality (Harris and Goode, 2010; Sahoo and Pillai, 2017; Tankovic and Benazic, 2018), layout design (Lee and Jeong, 2012; Teng et al., 2018), perceived useability (Kühn and Petzer, 2018) which are inspired by Bitner (1992). Generally, layout and function are related to how a company arranging and laying-outing space of website to make it more interesting.

Additionally, it is critical to build a website that captures and holds a consumer's interest. According to Kuo and Chen (2011), customers' behavior is definitely influenced when they explore an e-commerce site owing to the site's design quality. According to Jeon and Jeong (2009, p. 5) a high-quality website should be clean, clear, and generally uncomplicated, avoiding a crowded appearance. In contrast, poorly designed websites will not help retain customers, but rather drive them away (Madu and Madu, 2002; Wolfinbarger and Gilly, 2003). Clearly, a business's website should be organized in an intuitive way that is simple to comprehend and browse.

Similarly, the website design must be functional, and this is an influential attribute of user evaluations and behaviors (Donnelly, 2001; Mandel and Johnson, 2002; Menon and Kahn, 2002). Several sub-components of layout and functions include usability (Evans and King, 1999; Hoque and Lohse, 1999; Donnelly, 2000); relevance information (Bauer et al., 2002; Zeithaml et al., 2002; Montoya-Weiss et al., 2003; Griffin, 2007); and customization or personalization (Parsons et al., 1998)

Because of these findings, Donnelly (2001) asserts that usability is the most important aspect in assessing whether a website is worth visiting; a statement bolstered in part by Srinivasan et al (2002). Similarly, research indicates that relevance of information is a critical aspect in website evaluations (e.g. Bauer et al., 2002; Zeithaml et al., 2002). As a

consequence, Montoya-Weiss et al. (2003) stated that consumers evaluate websites based on their unique information needs, while Donnelly (2001) asserted that users evaluate websites based on their unique information requirements.

Jeon and Jeong (2009, p. 7) believed that the more engaged and at ease users feel with a website, the more likely they are to remain and make an online purchase. Along with web page design, administrative issues, and overall site design, information content is recognized as a critical factor influencing a consumer's perception and evaluation of a website (Hanna and Millar 1997; Spiliopoulou, 2000). The accessibility of a varied variety of information and the breadth of its coverage are often recognized as the most critical indicators of information adequacy (Jeong and Lambert, 2001; Yang et al., 2005; Ho and Lee, 2006).

### **2.3.3. Signs, Symbols, and Artifacts**

It is impossible to exaggerate the relevance of artifacts in physical surroundings. Signs, Symbols, and Artifacts are necessary environmental things that communicate with consumers less overtly than signage do, conveying implicit messages about the location's overall image to customers. Additionally, Jeon and Jeong (2009, p. 6) stated that the interior artifacts on exhibit enable consumers about the qualities of the service provider, who caters to certain customer groups. According the opinion of some scholars that this element should not be allowed to exist in the online world. This element is based on the idea developed by Bitner (1992), and as such, it is a significant influence in the retail environment. Harris and Goode (2010, p. 231) stated that signs, symbols, and artifacts is no longer to used in online environment contact because it is more important to deploy financial security. Researches such as Harris and Goode (2010), Lee and Jeong (2012), Tran et al. (2012), Sahoo and Pillai (2017), Tankovic and Benazic (2018), Teng et al. (2018), Tran and Strutton (2020), and Williams and Dargel (2004) no longer use this factor in their online shopping studies, whereas researchers such as Hopkins et al. (2009) believed that the online environment can be used to communicate with customers, both “explicitly and implicitly” (p. 29), such as the company name, logo, or symbols that can raise customer awareness; and search aids for specific information or keywords and slogans of websites and advertisements on websites (Geissler, 2001). Jeon and Jeong (2009, p. 6) revealed that by using meta-tags, users may easily identify a website through the pop-up approach; and by typing of keywords on a website undoubtedly aids clients in locating the particular content they want (Hakim and

Deswindi, 2015, p. 232). The use of search aids for internal purposes in order to assist customers in seeking some information or products within an online service environment.

#### **2.3.4. Financial Security**

This issue has developed as a result of the increase in the number of customers who do online transactions while purchasing. Harris and Goode (2010, p. 233) stated that the term "online financial security" refers to the degree to which customers see a website's payment operations and general policies as secure or safe. Financial security may serve as a possible deal breaker, preventing online transactions from being completed or at least slowing them down. Tran and Strutton (2020, p. 3) believed that financial security may operate as a deal breaker, preventing or delaying the execution of online transactions. In the same context, Tran and Strutton (2020, p. 3) continues his explanation by arguing that financial security online refers to the way consumers perceive the website's security, safety precautions, payment procedures, and convenience of payment for consumers. There is a lot of discussion on the virtual world in existing research (e.g. Szymanski and Hise, 2000; Zeithaml et al., 2002; Montoya-Weiss et al., 2003; Schiffman et al., 2003; Fusaro et al., 2002; Lynch et al., 2001; Stewart, 2003; Chen and Chang, 2003; Harris and Goode, 2010; Sahoo and Pillai, 2017; Tankovic and Benazic, 2018; Teng et al., 2018). As a result, the language utilized to define financial security elements varies from one author to the next, including financial security (Harris and Goode, 2010), and financial trust (Teng et al., 2018; Tankovic and Benazic, 2018).

The significance of perceived security in online interaction, both Szymanski and Hise (2000) and Schiffman et al. (2003) are in agreement, and felt security is the second most important driver of online pleasure. Another study conducted by Fusaro, et al. (2002) and Zeithaml, et al. (2002) showed a connection between perceived security and both satisfaction and use. In addition, Montoya-Weiss et al. (2003) led another study that found a link between perceived security and both satisfaction and usage. This is consistent with theories that emphasize the importance of perceived security in online exchange (Szymanski and Hise, 2000; Schiffman et al., 2003); however, researchers Chen and Chang (2003) as well as Tankovic and Benazic (2018) have found that the ease with which payments are made and processed, forms a key dimension used by consumers to evaluate websites (Lynch et al., 2001; Stewart, 2003).

### **2.3.5. Interactivity**

In general, interactivity refers to the amount to which users may engage in real-time modification of the appearance and content of a mediated environment (Steuer, 1992, p. 84). There are social interactions between and among consumers and workers that take place during service encounters in the physical environment. A study conducted by Bitner (1992, p. 58) examined how the physical dimensions of an organization's affect the social interaction between customers and employees. In the online environment, interactions are restricted to those that occur between customers and businesses when they seek information on a website (Jeon and Jeong, 2009, p. 6). Even Tran and Strutton (2020, p. 14) termed interactivity with the capabilities of the technology to insert product videos and remind consumers about the availability of interactive website features. Thus, Lee et al. (2016, p. 399) stated that interactivity is more related to “a functional feature” of e-servicescape. As a result, it is anticipated that there will be no direct contact with workers in the online environment.

Additionally, fast and swift answers from a website administrator will improve the overall impact of the interactivity. The outcomes of utilizing a website often include intangible advantages of interacting with the website, such as enhanced information availability results in time savings, convenience, and a decreased probability of discontent (Williams and Dargel, 2004, p. 311). According to this concept, when customers do online searches on a website, they are engaging in institutional engagement. Customers will like how convenient this situation is as well. Consumers may compare goods in terms of available services, features, and pricing by using websites, which is advantageous to them (Williams and Dargel, 2004; Jeon and Jeong, 2009).

The way people purchase goods and engage with other customers and/or personnel may be a crucial component of the service environment, increasing consumers' sense of connection to the shop and promoting broad exploration (Gefen and Straub, 2003). Hoffman and Novak (1996) distinguish between interpersonal and machine-mediated virtual interactions. The term "interpersonal interaction" refers to the process of conversing, communicating, and exchanging information through websites (Lee et al., 2016, p. 393), while “machine interaction” is the degree to which consumers may engage with a website by browsing, searching, or giving comments (Keng and Ting, 2009, p. 480). Interpersonal interactions are facilitated by the e-servicescape, which enables consumers to initiate dialogs

and engage with one another. Interactivity has an effect on consumers' emotions (Ballantine and Fortin, 2009) and attitudes (Sundar and Kim, 2005).

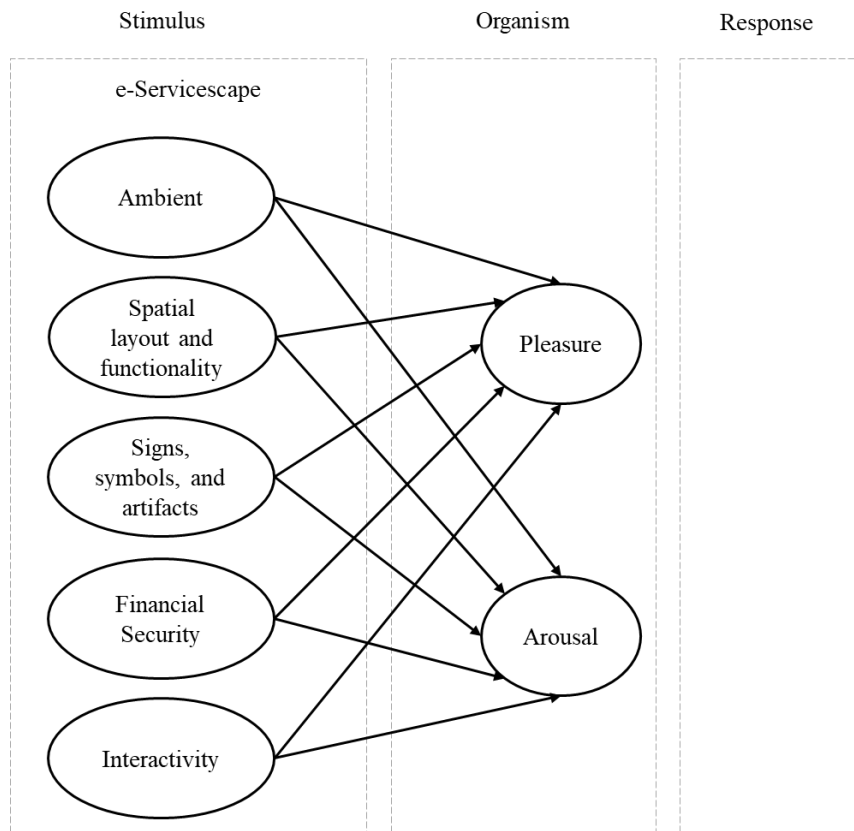
Moreover, in the internet world, the concept is to have two-way communication between the vendor and the customer. The user interacts with a computer transferring information in both directions between the computer and the central point of communication, which is often a continuous process. Increased degrees of interaction for a website are seen positively by customers, resulting in a better online buying experience (Chen and Chang, 2003; Fiore and Jin, 2003; Srinivasan et al., 2002). Consumers' perceptions of website interactivity are the most important factor influencing their reactions and behavioral results while buying online (Fiore and Jin, 2003; Li et al., 2001). A different name is used by some academics such as Lee and Jeong (2012) refer to it as interactivity and Tran et al. (2012) who refer to it as microblog communication. Increased interaction has a positive effect on sentiments about the e-tailer as well as probability of returning to the website and buy intentions (Shih, 1998; Gehrke and Turban, 1999; Li et al., 2001). Teng et al. (2018, p. 339) revealed a website that responds quickly to interaction will generate a more favorable reaction from consumers.

#### **2.4. e-Servicescape on Emotion (Pleasure-Arousal)**

Wu et al. (2014) stated that conducting a study of emotions in the context of consumer behavior is important to see the dynamics of online marketing today. Consumer behavior's emotional component should be highlighted more in future internet marketing tactics Wu et al. (2014, p. 18). According to Kotler (1973, p. 51) the “perceived atmosphere may vary for different customers”. Since each market or service environment has a different range of customers with a diverse range of desires and preferences, there is no universally applicable set of servicescape components. Additionally, Kotler (1973) stated that the components of the servicescape for each market are determined by the target consumer's needs, intended emotional reactions, and competing offerings. The key argument came from Wu et al. (2014, p. 11) who stated that numerous consumer behavior studies use the customer's emotional state as the organism, or intervening variable.

**Figure 5.**

*e-Servicescape on Emotions (Pleasure-Arousal)*



Source: Author (2021)

In general, individuals react emotionally, intellectually, and physically to their settings, and their responses impact behavior in the environment (Bitner, 1992; Sweeney and Wyber, 2002; Gilboa and VilnaiYavetz, 2013; Tasci and Pizam, 2020). Individual personality qualities have been found to impact how a person reacts to his or her circumstances (Mehrabian and Russell, 1974a; Russell and Snodgrass, 1987). Individuals' responses to environments are often influenced by contextual elements as well, such as goal or reason for being in the area (Russell and Snodgrass, 1987; Snodgrass et al., 1988).

Several studies have surfaced and stated that emotions are considered to play a key role in understanding service experiences and interactions (Lin and Liang, 2011; Mattila and Enz, 2002; Vakeel et al., 2018). Based on Mehrabian and Russell's (1974b) the amount of emotional stimulus consumers gets while engaging with the e-servicescape influences their decision to engage in an approach or avoidance response. Mehrabian and Russell's (1974b, p. 283) believed that emotional (such as affective, connotative, feeling) reactions represent the common fundamental of human response to the environments. Mehrabian and Russell (1974a) model provides a theoretical foundation for modern empirical researchers interested

in the way environmental elements influence consumers' emotional states of mind. Additionally, Mehrabian and Russell (1974a, chap. 2) describing any emotional state in terms of the three orthogonal dimensions of pleasure-displeasure, level or arousal, and dominance-submissiveness and that of emotions can be classified as PAD. Thus, Eroglu et al. (2001, p. 181) stated that pleasure and arousal are sufficient terms to describe the variety of emotions shown in response to environmental stimuli.

Moreover, Mehrabian and Russell (1974b, p. 290) revealed that pleasure-displeasure-arousal are an internal feeling which can be assessed using semantic differential measures or with behavioral indicators such smiles, laughter, and positive/negative facial expressions. In other simply words, pleasure is the degree to which an individual feels pleasant, joyful, pleased, feels good in a scenario, cheerful, or satisfied (Mehrabian and Russell, 1974a; Menon and Kahn, 2002); arousal is the degree to which an individual's feelings are aroused, stimulated, and active in a particular context (Mehrabian and Russell, 1974a; Baker et al., 1992; Menon and Kahn, 2002; Wu et al., 2008). While dominance refers to the extent to which an individual feels influential, in control, or important to which an individual feels submissive (Mehrabian and Russell, 1974a; Bigné et al., 2005; Ryu and Jang, 2007).

**Table 1.**

*Hypothesis and Findings Regarding the Influence of e-Servicescape on Emotions (Pleasure-Arousal)*

| Variable                  | Source               | Hypothesis                                                                                                                                                             | Findings                                                                                                                                           |
|---------------------------|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Online environmental cues | Eroglu et al. (2001) | The online store environmental information will influence shoppers' organismic states, which then affect their shopping outcomes (approach and avoidance behaviors).   | This conceptual research argument places environmental influences on emotions in the context of high-low task relevance.                           |
| Site atmosphere           | Eroglu et al. (2003) | The perceived online store environment will influence shoppers' organismic states (emotion and attitude), which then affects their shopping outcomes (satisfaction and | Results show that that site atmosphere affects the level of pleasure that was felt, which in turn influences attitude, which has strong effects on |

| Variable                                  | Source                          | Hypothesis                                                                                                                                                                                                                                                                                                                                                                                  | Findings                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aesthetic                                 | Vilnai-Yavet and Rafaeli (2006) | approach/avoidance behaviors).<br>Customer feelings of pleasantness will be higher in response to an aesthetic virtual servicescape than in response to a less aesthetic virtual servicescape.                                                                                                                                                                                              | satisfaction and approach/avoidance behavior.<br>The results of this study prove that the aesthetics value that is displayed virtually directly evokes feelings of pleasantness. The study confirmed that pleasantness clearly and powerfully mediates the relationship between the aesthetics of virtual servicescape and customer approach. |
| Ambient                                   | Hakim and Deswindi (2015)       | There is a relationship between ambient conditions and perceived quality of hospital website                                                                                                                                                                                                                                                                                                | Positive rs coefficient showed a significant association between ambient conditions variable to perceived quality of hospital website                                                                                                                                                                                                         |
| Ambient                                   | Jeon dan Jeong (2009)           | Ambient/aesthetic conditions positively affect perceived e-servicescape on a B&B Website.                                                                                                                                                                                                                                                                                                   | -                                                                                                                                                                                                                                                                                                                                             |
| Facility aesthetics, ambience, and layout | Ryu and Jang (2007)             | <ul style="list-style-type: none"> <li>• Facility aesthetics has a positive effect on pleasure</li> <li>• Facility aesthetics has a positive effect on arousal</li> <li>• Ambience has a positive effect on pleasure</li> <li>• Ambience has a positive effect on arousal</li> <li>• Layout has a positive effect on pleasure</li> <li>• Layout has a positive effect on arousal</li> </ul> | A structural equation modeling analysis revealed that facility aesthetics and ambience had significant effects on the level of customer pleasure while ambience also significantly influenced the level of arousal.                                                                                                                           |

| Variable                            | Source                          | Hypothesis                                                                                                                                                                                                                                                          | Findings                                                                                                                                                                                                                                                           |
|-------------------------------------|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Atmosphere,<br>Layout design        | Wu et al. (2014)                | <ul style="list-style-type: none"> <li>• The atmosphere of the website has a great impact on the emotional arousal of the online shopper.</li> <li>• The layout design of the website has a great impact on the emotional arousal of the online shopper.</li> </ul> | <ul style="list-style-type: none"> <li>• The atmosphere of the website has a great impact on the emotional arousal of the online shopper.</li> <li>• The layout design of the website has a great impact on the emotional arousal of the online shopper</li> </ul> |
| Signs,<br>Symbols, and<br>Artifacts | Hakim and<br>Deswindi<br>(2015) | There is a relationship between search aids and slogans and perceived quality of hospital website                                                                                                                                                                   | Positive rs coefficient showed a significant relationship between the variable of search aids and slogans with perceived quality of hospital website                                                                                                               |
| Signs,<br>Symbols, and<br>Artifacts | Jeon dan Jeong<br>(2009)        | Search aids and Slogan positively affect perceived e-servicescape on a B&B Website                                                                                                                                                                                  | -                                                                                                                                                                                                                                                                  |
| Interactivity                       | Lee et al.<br>(2016)            | Interactivity positively influences customers' pleasure emotions on the b&b website.                                                                                                                                                                                | Interactivity did not influence pleasure emotions                                                                                                                                                                                                                  |

Source: Author (2021)

In term of pleasure-arousal, Russell and Pratt (1980) assumed that the pleasure (pleasure-displeasure) and arousal (arousal-sleepiness) dimensions are orthogonal in nature and represent distinct human emotional responses to environmental stimuli. Consumers within an e-servicescape will experience a variety of emotions, which will determine whether they approach or avoid the service environment. Researchers interested in the retail environment's effects have found the PAD model to be useful (Baker et al., 1992; Sherman et al., 1997), despite the fact that past researchers were often unwilling to examine dominance and other emotional responses.

In addition, later on, this is the tradition and consideration of researchers not to use "dominance" as a measurement variable in the retail context and to prioritize "pleasure-

arousal". Russell and Mehrabian (1976) founded this research tradition by stating that arousal and enjoyment account for the bulk of variance and that dominance is a superfluous variable. Even Mehrabian and Russell (1974b, p. 55) examined that in retail environments, dominance measurements gain some ambiguity, which may impair predictive validity. Alternatively, Russell (1979) suggested that the Pleasure and Arousal subscales alone may adequately describe the range of emotions shown in response to environmental stimuli. Thus, we use the words pleasure and arousal to reconcile theoretical concepts with earlier empirical studies on the relationship between environmental psychology and pleasure and arousal, among other things.

In the early 20th century, Eroglu et al. (2001) and Eroglu et al. (2003) are widely referenced by e-servicescape researchers in understanding the online environment in a general context. The hypothesis and research results prove that environmental conditions that have a high level of attractiveness will have an effect on organismic states; therefore, from there it affects the approach/avoidance of consumers. However, it should be realized that the research of Eroglu et al. (2001) and Eroglu et al. (2003) do not specifically mention e-servicescape, but online environment (Eroglu et al., 2001) and site atmosphere (Eroglu et al., 2003) in a broad context, although online environment is also interpreted as e-servicescape by some researchers. Thus, using the research of Eroglu et al. (2001) at least utilized and provided justification for the condition of the online environment of a service that would not specifically have an influence on consumers' emotions or attitudes. However, in contrast to the research of Eroglu et al. (2003) where included pleasure, arousal, and attitude on the Organism, and satisfaction and approach/avoidance on Response.

Moreover, Vilnai-Yavet and Rafaeli (2006) revealed that their findings are in line with Mehrabian and Russell (1974a) and Russell and Pratt (1980) with the focus of their findings on "psychological dynamics" (p. 247) where testing is done through experimental methods. If it is associated with e-servicescape, then Vilnai-Yavet and Rafaeli (2006) only focus on Ambient and its relationship with Pleasant and Satisfaction. This research is one of the first steps in identifying the use of the e-servicescape dimension on emotions and consumer behavior; although in general previously only talk about shifting from servicescape to virtual servicescape. In contrast, Ryu and Jang's (2007) research which was specifically discusses the physical environment (servicescape) by relying on the theoretical foundation servicescape of Bitner (1992) and the M-R approach of Mehrabian and Russell (1974). Overall, this study reinforced the importance of understanding the impact of

customers' emotions on behavioral intentions. This research is not related to our study; however, it helps us to justify the relationship between environmental psychology, the M-R approach, and servicescape.

Moreover, there is something interesting in Williams and Dargel (2004) research as they attempt to unravel the servicescape research conducted by Mehrabian and Russell (1974a) and Bitner (1992) in the context of environment and emotion. Williams and Dargel (2004, p. 312) revealed that what happens in a person's emotions towards the environment is a perception. Furthermore, Williams and Dargel (2004, p. 312) suggested that Bitner's (1992) opinion about "complexity, mystery, and coherence" is a form of emotion in a person. The idea in conveying opinions by Williams and Dargel (2004) merely provides a more detailed explanation with a perspective that may differ from previous opinions about environment and emotion to make it easier for future researchers to understand.

It is unfortunate that the research conducted by Jeon and Jeong (2009) and Hakim and Deswindi (2015) found many similarities in their studies. In general, their research explains how consumers produce cognitive, emotional, and physiological reactions to receiving stimuli on the website and perceived quality. In particular, Ambient, Spatial layout and functionality, and Signs, Symbols, and Artifacts are the three main components in the e-servicescape that are the focus of research. However, this research is somewhat ambiguous because perceived quality is interpreted as a reaction by them. When referring to the theory put forward by Mehrabian and Russell (1974ab), cognitive, emotional, and physiological reactions should not be included in the assessment of quality, but internal consumer response reactions as stated by Bitner (1992). Bitner (1992, p. 62) stated that one may conclude from the environmental psychology literature that workers and consumers in service organizations react cognitively, emotionally, and physically to characteristics of their physical environments, and that these responses impact their behavior in the environment. Thus, the perceived servicescape does not directly influence how individuals act.

In contrast to Jeon and Jeong (2009) and Hakim and Deswindi (2015), the research of Wu et al. (2014) raised the Atmosphere and Layout design dimensions, and influence on emotional arousal. The results of his study prove that the two dimensions of the e-servicescape have a great impact on the emotional arousal of the online shopper. It should be realized that Wu et al. (2014) defines emotions in one point of view, namely "emotional arousal" (p. 4) where there is "pleasure" and "arousal" in it. This is somewhat ambiguous and confusing in terms of positioning, where emotions should be interpreted as general

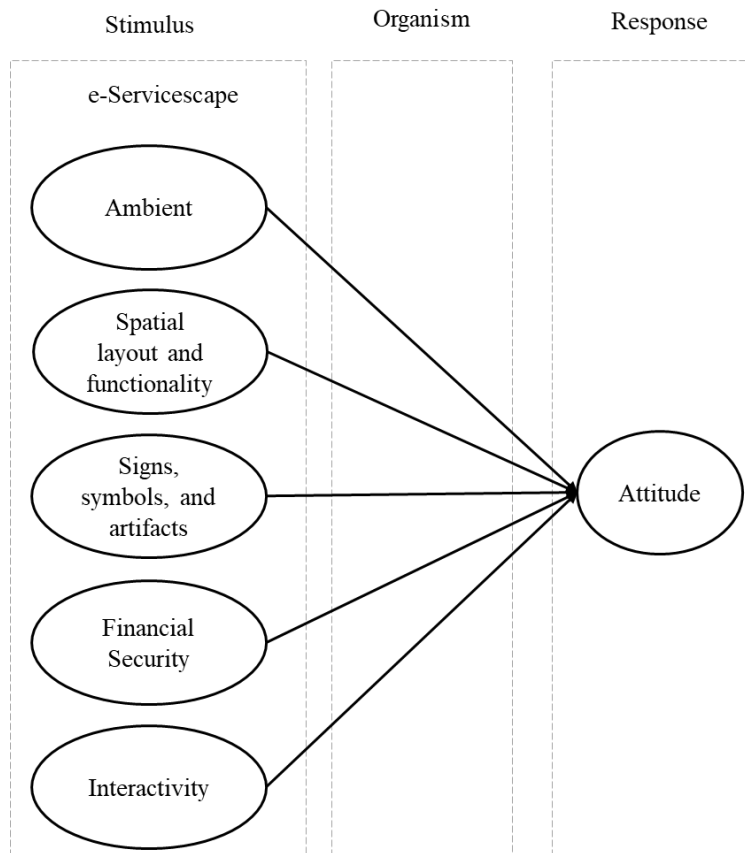
reactions and can be either pleasure or arousal without having to attach the special word "arousal" to emotions. However, this research reveals how the atmosphere and layout design of the website affects consumers' emotions. Mummalaneni (2005) where the influence of ambience is greater than design factors with regard to pleasure. Although later Lee et al. (2016) revealed that interactivity did not affect pleasure emotions; but indicate an influence on cognition as stated by Ballantine (2005).

## **2.5. e-Servicescape on Attitude**

Environmental stimuli or experiences have a direct effect on an individual's behavior and attitude development. According to rigorous behaviorists, internal events that affect attitudes are a result of apparent actions. Individuals may undergo a transformation in attitude or belief system in response to reinforcer-influenced activities. Social-learning theory expands on this topic. According to social-learning theories, behaviors do not necessarily have to be acquired by direct action and reward, as orthodox behavioral psychologists would argue. Indirect learning via observation of a model and verbal teaching has a substantial influence on the development of children's behavior and attitude (Zimbardo and Leippe, 1991). However, when the behavioral component of the attitude changes and vice versa, there will be reciprocal action as well. This is due to the nature of the attitude system components, changing / influencing a person in changing his behavior (Smith, 1982).

**Figure 6.**

*e-Servicescape on Attitudes*



Source: Author (2021)

Wu et al. (2014, p. 11) stated that an attitude is defined as a psychological feeling shown by a degree of favor or disfavor towards a certain thing. It is formed via emotional, cognitive, and behavioral evaluations. Moreover, once individuals incorporate an appraisal of their own sentiments (such as displeasure) into attitude toward the object, emotional assessment has an effect on item rating (Huang, 2005). In conclusion, Lee and Lee (2019, p. 465) revealed that improvement of consumers' attitudes and purchases will result in revenue increase of companies.

Additionally, attitudes, as described in psychology, are mental and emotional entities that are ingrained in, or characterize, a person's personality (Perloff, 2020). Attitudes are complex and they are a state of mind that develops as a result of a range of events. Individuals' predisposed state of mind toward a value is activated by a responsive expression directed towards them (Scheffler, 1992; Mason, 2017), a person, place, thing, or event (the attitude object), which has an effect on the individual's thinking and conduct (Scheffler, 1992).

**Table 2.***Hypothesis and Findings Regarding the Influence of e-Servicescape on Attitudes*

| Variable                                                                                  | Source                      | Hypothesis                                                                                                                                                                                                                                 | Findings                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Aesthetics                                                                                | Keng and Ting (2009)        | Perceived aesthetics (visual appeal and entertainment) value is positively correlated with usage attitude.                                                                                                                                 | A positive correlation exists between the attitudes of readers toward blogs and their experiential value in aesthetics.                                                                                                                       |
| Ambient conditions;<br>Spatial layout and functionality;<br>Signs, symbols, and artifacts | Hopkins et al. (2009)       | It is assumed that positive (negative) evaluations of e-servicescape dimensions will positively (negatively) influence attitude toward the Web site.                                                                                       | The three e-servicescape dimensions were highly correlated and appeared to play a significant role in influencing respondents' attitudes toward a Web site.                                                                                   |
| Atmosphere,<br>Layout Design                                                              | Wu et al. (2014)            | <ul style="list-style-type: none"> <li>• The atmosphere of the website has a great impact on the attitude of online shoppers</li> <li>• The layout design of the website has a great impact on the attitude of online shoppers.</li> </ul> | <ul style="list-style-type: none"> <li>• The atmosphere of the website has no a great impact on the attitude of online shoppers.</li> <li>• The layout design of the website has a great impact on the attitude of online shoppers</li> </ul> |
| Mobile banking servicescape (Aesthetics; Layout and functionality; Financial security)    | Sahoo and Pillai (2017)     | Servicescape of M banking has a positive impact on customer attitude towards M banking.                                                                                                                                                    | The study results indicate that M banking has a pronounced effect on customers' attitudinal evaluations                                                                                                                                       |
| Aesthetic appeal, Layout & functionality, and Financial security                          | Tankovic and Benazic (2018) | <ul style="list-style-type: none"> <li>• Perception of online aesthetic appeal, layout &amp; functionality, and financial security are positively related to consumers' perceived e-shopping value.</li> </ul>                             | Not specifically mentioning attitudes, but attitudinal loyalty.                                                                                                                                                                               |

|            |                    |                                                                                                                                         |                                                                                                              |
|------------|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
|            |                    | <ul style="list-style-type: none"> <li>• Perceived e-shopping value is positively related to consumers' attitudinal loyalty.</li> </ul> |                                                                                                              |
| Aesthetics | Lee and Lee (2019) | In the context of online shopping for fashion products, aesthetics of an online shopping mall will have a positive effect on ATO        | The results revealed that the aesthetics of an online shopping mall directly and significantly affected ATO. |

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Source: Author (2021)

The research of Keng and Ting (2009) does not explain about the e-servicescape, but provides an initial picture of how aesthetics in a service environment has an influence on consumer attitudes. In general, his research is based on the interactivity and perceived similarity between blog readers and the others, and incorporates the concepts from customer experiential value. Empirical results demonstrate that machine interaction generates high aesthetics value which comprises visual and entertainment effects; and a positive correlation exists between user attitudes toward reading blogs and experiential value in aesthetics.

In contrast to Keng and Ting (2009), the results of research conducted by Hopkins et al. (2009) stated that the three dimensions in the e-servicescape (Ambient conditions; Spatial layout and functionality; Signs, symbols, and artifacts) affect the customer's attitude toward the website. Of the three, ambient conditions have the greatest impact. This is undeniable because this dimension "reflects the entertainment value and emotion related aspects of the website. Therefore, those dimensions become appropriate to be used as part of the e-servicescape and its measurement of attitude.

What distinguishes our study from that of Hopkins et al. (2009) is how our research builds arguments about the psychological processes that appear on consumers in the form of attitudes due to the stimuli provided by the e-servicescape on the website. The emergence of this attitude which we explain as an emotion in the organism to stimuli in an environment. Although Hopkins et al. (2009) stated that the formation of a positive attitude cannot be separated from the influence of the e-servicescape which provides entertainment and emotional aspects.

The newness of our study rather than Hopkins et al. (2009) is to answer the limitations of the research they put forward. Hopkins et al. (2009) stated that their study was

limited to the use of three dimensions of the e-servicescape where outside of this research there are other dimensions that have not been explored. Meanwhile, our research uses not only three dimensions in the e-servicescape, but also five. Thus, our research tries to open the space for the possibility of forming consumer attitudes outside the dimensions of the e-servicescape proposed by Hopkins et al. (2009).

In addition, in order to formulate a good website design, Hopkins et al. (2009) suggest to explore issues such as positive approach or behavioral effects (Chang and Waryszak 2004; Mehrabian and Russell 1974) to help drive positive outcomes from superior service provider evaluations and purchase intentions. We respond to this by reformulating and redefining that the formation of positive approaches, attitudes, or behavioral effects on consumers should be preceded by knowing what kind of consumer emotions arise due to environmental stimuli. This is the newness of our research by using the psychological process as the basis for formulating consumer attitudes.

Furthermore, Hopkins et al. (2009) re-emphasized that the use of factors and dimensions in the e-servicescape refers to the framework and principles that are often used in brick-and-mortar services (servicescape). The use of the framework is not only focused on the brokerage company, but also on other e-commerce companies. Simply, it means that there are still many research opportunities that allow other researchers to take advantage of the gaps left by them.

Wu et al. (2014), on the other side, explained that the atmosphere and layout design of the website did not produce the same impact on the attitude of online shoppers. His research resulted in two conditions, where atmosphere has no impact on attitude, while layout design is the opposite. These results are in line with Moreover, Davis et al. (2008) where found a positive relation between pleasure and consumers' avoidance and approach behaviors toward a website. However, we note in the study of Wu et al. (2014) defined emotions in one point of view, namely "emotional arousal" (p. 4) which contains "pleasure" and "arousal" in it. This is somewhat ambiguous and confusing in terms of positioning, where emotions should be interpreted as general reactions and can be either pleasure or arousal without having to attach the special word "arousal" to emotions. However, this research reveals how the atmosphere and layout design of the website affects consumers' emotions.

Sahoo and Pillai (2017) brought a new style of research by calling e-servicescape with the term M banking servicescape. The focus of the research is consumer behavior in

using mobile banking. In my opinion, the replacement of the term M banking servicescape does not reduce the essence of e-servicescape, or we could say the same thing. This is due to the use of e-servicescape dimensional content such as Aesthetics, Layout and functionality, and Financial security by Sahoo and Pillai (2017); in addition, the application of the S-O-R framework is carried out in its work. The research findings revealed that there is an effect of M banking servicescape on attitudinal evaluations. Those findings strengthens our argument about the effect of the same in the online environment.

Moreover, Tankovic and Benazic (2018) did not specifically mention attitudes, but loyalty specifically to attitudinal loyalty. This term refers to Gremler's (1995) opinion which divides loyalty into two dimensions: attitudinal and behavioral, both of which are used by Tankovic and Benazic (2018). In addition, implicitly, the opinion of Tankovic and Benazic (2018) explains attitudinal loyalty as a consumer's effort to spread their thoughts and information, just like the values contained in attitudes. Tankovic and Benazic (2018, p. 1129) stated that one of the most significant advantages of the internet over traditional mass communication technologies is its bidirectional nature, which enables consumers to readily share their own ideas and views with other internet users. However, their research provides a slightly contrary meaning from what was conveyed by Harris and Goode (2010). In my opinion, Tankovic and Benazic (2018) try to simplify items in the dimensions of ambient, spatial layout and functionality, and financial security to be easy for researchers and research participants to understand, and reduce the ambiguity of statements that occur in understanding the e-servicescape. A similar method was also carried out by Tran et al. (2012) and Tran and Strutton (2020) without compromising the essence of the e-servicescape.

In general, Lee and Lee's (2019) research deals with how the beauty factor can affect attitude directly or indirectly through the mediation of positive mood reinforcement (PMR) and negative mood reduction (NMR). However, their research does not go into detail about the meaning of the environment, the psychological process that occurs in the environment, and services in the environment. Therefore, Lee and Lee (2019) interpreted the environment as a situation where there is a stimulus (in the S-O-R model) and how it affects the Organism and Response with a mere perspective of Mehrabian and Russell (1974). It gives us the opportunity to provide new study to our research that discussing the S-O-R framework must be in a holistic context by involving many perspectives, thus it will interpret the environment in a complete context. Before we justify the S-O-R framework, we first present a

psychological process in which the internal response of consumers (Ha and Lennon, 2010; Kawaf and Tagg, 2012; Richard et al., 2010), Environmental psychology (Kumar et al., 2013; Gifford, 2014), the MR approach (Mehrabian and Russell, 1974) occurred and had a role in the formation of the S-O-R framework. These detailed explanations will help us to explain things that Lee and Lee (2019) does not explain; and make it as our novelty to distinguish our theoretical framework from their research.

Furthermore, explicitly, Lee and Lee's (2019) research do not discuss e-servicescape at all. Although some researchers use e-servicescapes in other phrases such as cyberspace (Williams and Dargel, 2004), virtual servicescapes (Vilnai-Yavets and Rafaeli, 2006), or virtual worlds (Jung and Pawlowski, 2014), they do not deny that e-servicescapes is a term that is commonly used to describe the service environment electronically or using internet media. Furthermore, in the context of Stimuli, Lee and Lee (2019) used the Aesthetics and Attractiveness Model variables; those sound the same as in e-servicescape but is not. If we explore in more detail, the approach used in their research is only in one perspective, namely Ambient in e-servicescape. The use of dimensions and frameworks in the e-servicescape certainly requires an application that is at least the same as the servicescape (Hopkins et al., 2009) which has a fairly good representation of the stimuli of an environment. In our opinion, understanding these conditions and presenting the research that we are currently carrying out confirms that our study has novelty compared to the research conducted by Lee and Lee (2019); where we use not only ambient but also other factors of e-servicescape.

## **2.6. Psychological Process**

In the psychological process of a person towards his environment, there are several relevant approaches that describe the process. In terms of emotion, we focus on two approaches; *First*, environmental psychology, where the theory talks about human activity in the same three dimensions, such as individuals, locations, and psychological processes. Theorists who carry this opinion believe that the environment has an influence on human behavior (Fisk et al., 2011; Kumar et al., 2013). *Second*, the approach in theory proposed by Mehrabian and Russell (1974b) or abbreviated as the M-R approach. This approach provides an illustration that environmental situations cause a person's emotions to arise and behave. This approach explores a lot about a person's emotions that grow on the basis of environmental factors. Mehrabian and Russell (1974b, p. 286) stated that humans are biologically predisposed to react similarly to situations—with autonomic, emotional

responses to rewarding and punishing situations (evaluation), with strong or weak muscular tension in response to objects offering great or little resistance (potency); where empirical research also proven by Donovan and Rossiter (1982) as well as Ryu and Jang (2007). More specifically, Mehrabian and Russell (1974b, p. 283) point out “pleasure, arousal, and dominance as the three basic emotional reactions” as emotional states due to a stimulus from the environment may cause a change in an individual’s. As soon as the individual's PAD emotional states are formed, he or she is more likely to engage in approach behavior in the surroundings.

The assumption that human conduct, together with associated emotions and thoughts, exhibits repeated patterns is, definitely, a fundamental premise of psychological study, despite the fact that human behavior exhibits enormous variation (Tamayo, 2011). Psychologists often refer to these behavioral patterns and the underlying mechanisms that underpin them as psychological processes (Tamayo, 2011). Psychology is defined as the study of the mind and behavior. Psychology encompasses the study of conscious and unconscious events, as well as feelings and thoughts, as well as their causes and consequences. Social science seeks to comprehend people and organizations via the establishment of broad principles as well as the investigation of individual and group instances (Fernald, 2007; Hockenbury and Hockenbury, 2010).

Psychological accounts emphasize the implications of an individual's consumption experiences, subjective perception of time (Graham, 1981; Hirschman, 1987; Hornik, 1984; Kellaris and Kent, 1992), time orientation (Bergadaa, 1990), or "timestyle" (Cotte et al., 2004; Usunier and Valette-Florence, 2007). Individual variations in assessing length are one of the themes examined in these investigations, relationships between time perception and psychological characteristics such as personality or mood (Hornik, 1993); behavior and mental processes such as perception and cognition as well as emotion, motivation, brain functioning, and personality (Cacioppo, 2007); but also, how marketers can influence time perception, for example through service environment design (Baker and Cameron, 1996; Kellaris and Kent, 1992).

### **2.6.1. Internal Responses of Consumers**

Studies on the theory of stimuli and reactions have been used to support studies into the effects of e-servicescape atmospheric dimensions [particularly, website and service variables] on customer behavior in e-tailer settings (e.g., online shopping) (Ha and Lennon,

2010; Kawaf and Tagg, 2012; Richard et al., 2010). Customers will be impacted to some extent in an e-service environment, regardless of whether they continue to browse on the website or leave, depending on their internal response to the situation. All of the dimensions and sub-dimensions of the e-servicescape have an effect on the responsiveness of the atmosphere. Consumers' propensity to make purchasing choices depending on the attributes of a business is referred to as atmospheric responsiveness (McKechnie, 1974). Researchers have discovered that certain online signals affect the connection between an e-online tailor's environment and the purchasing decisions and other behaviors of consumers; Eroglu et al. (2001, p. 181) stated that environmental factors impact how and where people purchase, as well as how much time they spend shopping. Aside from influencing sales, the mood of an e-tailer affects the amount of time consumers spend exploring and the chance that they will return to the website in the future. Consumers' attitudes, satisfaction levels, and approach/avoidance behavior toward an e-tailer are all influenced by the online shop environment; emotional reactions serve as a mediator in the connection between the two (Eroglu et al., 2003). Eroglu et al. (2003, p. 146) discovered that inclusion of the mediating emotion and attitude organism responses removes the site atmosphere effects on satisfaction and approach/avoidance behavior. The more pleasant the online atmosphere, the more customers were stimulated, which resulted in greater approach reactions toward the e-tailer, according to the study. The researchers discovered that the quality of the website and the favorable impact of the website explained purchase intentions and customer loyalty (Lynch et al., 2001).

Emotional reactions due to the stimuli of the e-servicescape will have an impact on consumers behavior. Mehrabian and Russell (1974b) have conducted a lengthy line of study in which systematically investigated emotional reactions to surroundings (e.g., Russell and Lanius, 1984; Russell and Pratt, 1980). Those study has led them to the conclusion that the emotion-eliciting characteristics of settings may be represented by two dimensions: pleasure-displeasure and the degree of arousal (arousal level) (i.e., amount of stimulation or excitement).

Furthermore, the website's e-servicescape may have an impact on the user's physiological states. For example, if the visuals are tiny or detailed, or if the site requires an excessive number of steps to browse, it may be exhausting to use. Hopkins et al. (2009, p. 30) stated that contrasts that are too strong or colors that are too subdued may irritate the eye and alter consumers' perceptions of the website. Consequently, perceived usability of

the virtual environment is important in online consumers' assessment of websites and subsequent decision-making in the virtual environment (Cai and Xu, 2011; Casaló et al. 2010; Cyr et al., 2006; Flavián et al., 2006). While the aesthetic attractiveness of a website is essential in establishing consumers' initial impressions of an online shop, the functionality of the website is as important (Lindgaard et al., 2011). As a result, consumers' emotional responses to e-servicescape, such as liking or disliking the website, may be elicited. Hopkins et al. (2009, p. 36) stated that crowding, waiting, operational efficiency, comfort, arousal, and other phenomena influenced by a bricks-and-mortar servicescape may have implications for the design and implementation of a website. Thus, a website that provides clear and simple access to essential information may result in a good mood and a positive attitude toward the organization.

Additionally, research indicates that emotional reactions to the environment may be transmitted to individuals and/or things inside the environment as a result of the environment (Maslow and Mintz, 1956; Mintz, 1956). Participants rated favorably when viewed retail goods in a pleasant environment, viewing similar products in an unpleasant environment (Obermiller and Bitner, 1984). As a result, views of the e-servicescape seem to have impacted emotions about the goods that were apparently unconnected at the time. In order to establish the signals that would indicate compatibility and the items that would be categorized as nuisances in service settings, more investigation is required. Bitner (1992, p. 57-69) concluded that:

- It is possible to record the emotional reactions of customers to the e-servicescape using two dimensions: pleasure and arousal.
- Perceptions of more personal control in the e-servicescape are associated with increased satisfaction.
- The level of complexity in the e-servicescape raises the level of emotional reactivity.
- In the e-servicescape, compatibility, the presence of natural components, and the lack of environmental "pains" all contribute to increased enjoyment.
- Individuals' perceptions of the e-servicescape and the good (negative) emotions that accompany them may lead to positive (negative) sentiments connected with the organization, its employees, and its products.

### **2.6.2. Environmental Psychology**

Environmental psychology is concerned with the physical environment in which we live our lives. According to environmental psychologists, every human activity may be considered to be located in three dimensions at the same time: the person (e.g., age, gender, personality, culture), the location (e.g., house, school, workplace, park, nature), and the psychological process of interest (e.g. socializing, working, learning, playing, exploring). It is possible that change through time will be a significant component. In addition to physical variables, social-psychological contextual factors such as the presence of others or one's position in a group may affect one's behavior in a specific physical environment, and these are included in the field of environmental psychology (Gifford, 2014).

In reaction to the deterioration of the natural environment and the need to design buildings that better fulfill the requirements of their users, environmental psychology that has developed quickly in recent years. Environmental psychology, like other fields of psychology, includes a theoretical component as well as an application component. Others work as consultants to answer practical questions; a few are concerned with making their work serve both immediate, practical goals as well as contributing knowledge for others to build on. Some environmental psychologists are concerned with developing knowledge, while others are concerned with providing answers to practical questions (Stokes, 1997).

Many distinct views of the connection that exists between people and places have been theorized and researched in the field of environmental psychology. Place attachment (Low and Altman, 1992; Williams et al., 1992) and sense of place (Low and Altman, 1992) are two terms that have been used to describe people's feelings about their surroundings (Cantrill, 1998; Hay, 1998; Shamai, 1991; Williams and Stewart, 1998). This phrase explains the emotional connection that a person has to a location and the time that he/she has spent. Moreover, Low and Altman (1992) and Moore and Graefe (1994) stated that time and experience in a place are important in deepening the meaning and emotional attachment of a person; however, at a later date, there will be little in-depth research examining these factors and their role in forging these relationships (Smaldone, 2007).

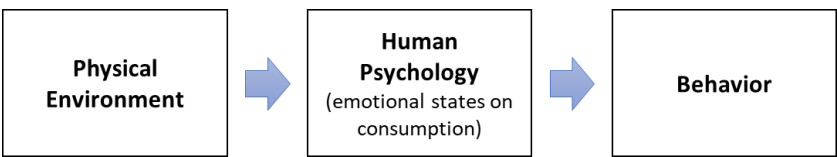
Environmental psychologists believe that the environment to which individuals are exposed and encounter in their everyday lives has an effect on human behavior (Kumar et al., 2013). Holistically, all visible and tangible signs of the environment have an effect on people's formulations of emotional states and decision-making processes about how to behave (Fisk et al., 2011; Lee and Jeong, 2012). As a consequence, humans prefer to

evaluate the environment holistically before assessing its physical and tangible components, which results in the production of good and/or negative feelings and actions (Lee et al., 2008). The holistic approach incorporates evaluations based on emotional and subjective states in an environment, as well as psycho-physical evaluations (i.e., assessment based on the actions of environmental stimulus features), cognitive evaluations (i.e., assessment based on given information about an environment), and experiential evaluations (i.e., assessment based on personal experiences with an environment) (Kumar et al., 2013). As stated in the main assumption of environmental psychology theory, individuals seek for and evaluate environmental signals based on their subjective perceptions and emotional states (subjective) as well as (in)tangible features (objective). As a consequence, it has been proposed that environmental psychology theory be examined from cognitive / experiential / emotional perspectives in order to get a more holistic understanding of the phenomena (Fisk et al., 2011; Kumar et al., 2013).

The theory of environmental psychology, which investigated the connection between physical surroundings and human behavior, was applied to the study of e-servicescape. This idea is predicated on the notion that human conduct is affected by the environment that people are exposed to and interact with on a daily basis (Kumar et al., 2013). In brief, this is a method to the study of emotional and subjective judgments that has been developed (i.e., assessment based on current emotional states in an environment).

**Figure 7.**

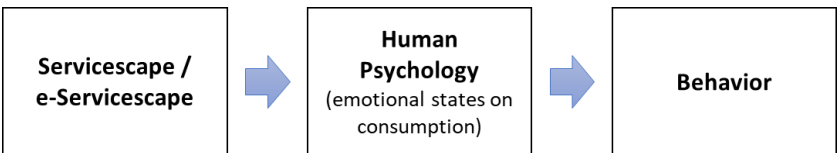
*First Approach in Environmental Psychology*



Source: Author (2021)

**Figure 8.**

*Second Approach in Environmental Psychology*



Source: Author (2021)

Based on Figure 7 and Figure 8, emotional states are formed in two perspectives, some stated stimulation in the context of the physical environment in general (Wakefield

and Blodgett, 1996; Lucas, 2003; Newman, 2007; Ryu and Jang, 2007; Wirtz et al., 2007). In this perspective, it is believed that a person's conduct is affected by physical surroundings as well as psychological makeup. A growing number of academic fields, such as architecture, environmental psychology, retailing, and marketing, are focusing their attention on how the physical environment affects people's psychology and behavior (Donovan and Rossiter, 1982; Turley and Milliman, 2000, p. 193-194).

Moreover, numerous academicians were discussing it in the context of shopping (servicescape/e-servicescape) (Bitner, 1992; Bauer et al., 2012; Chang, 2016; Lockwood and Pyun, 2019). Kim and Moon (2009) investigate the psychological mechanisms by which the servicescape influences perceived service quality, pleasure-feeling, situational element, and the desire to return to the service provider. Prior studies on the relationship between the servicescape and emotional states have examined the servicescape as a single environmental parameter and regarded its effect as a kind of stimulus eliciting emotion that affects behavioral intentions (e.g., approach, avoidance), in accordance with Mehrabian and Russell's (1974a) typical 'Stimulus-Organism-Response models' that dominate environmental psychology (i.e., the M-R model).

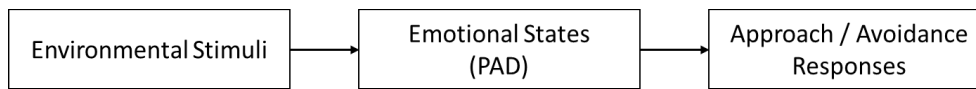
### **2.6.3. The M-R Approach**

Mehrabian-Russell's model which describes stimuli, emotions, and response paradigms, may be used to characterize the field of environmental psychology. This reasoning prompted Mehrabian and Russell (1974a, p. 288) to develop a theoretical model in which a customer's emotions are stimulated by the service environment through arousal and pleasure as basic responses to stimuli, which in turn affects the customer's behavioral choices and decisions. Therefore, physical surroundings serve as the stimulus that influences emotional states, which in turn influence consumer reactions to products and services. Moreover, Mehrabian and Russell (1974a) developed a paradigm that focuses on the identification of three emotional states: pleasure, arousal, and dominance (or PAD emotions). In contrast to unhappiness, pleasure is associated with emotions such as gladness, pleasure is associated with irritation, and joy is associated with sadness. Arousal may be indicated by emotions such as stimulation as opposed to relaxation, excitement as opposed to calmness, or frenzy as opposed to indifference, among other things. Controlling as opposed to being controlled, being influential as opposed to being influenced, and being in command as

opposed to being cared for are all examples of emotions of dominance (Ezeh and Harris 2007).

**Figure 9.**

*Mehrabian-Russell Model Theory (1974)*



Source: Mehrabian-Russell Model Theory (1974a)

There has been a significant amount of study done to examine the customer's reactions to servicescape and e-servicescape since the advent of the idea of atmospherics in the 1980s. In term of atmospherics, Kotler (1973) defines it as a deliberately created atmosphere that is intended to elicit emotional responses in the consumer that will affect their purchasing behavior. Donovan and Rossiter (1982) presented the first empirical examination of the impacts of the retail environment throughout the course of the development. Donovan and Rossiter (1982, p. 36) stated that although several academics have sought to investigate particular facets of the environment-behavior interaction, no one has applied an overarching framework from environmental psychology to the retail industry. According to the authors' model, which was based on environmental psychology literature (Mehrabian and Russell, 1974a), the stimulus, emotion, and response frameworks were used to arrange the data.

Environmental psychologists Mehrabian and Russell (1974a) and Donovan and Rossiter (1982, p. 37) both agree on the existence of four types of approach avoidance behavior as they postulate it with the word "response taxonomy", which categorize as follows: *first*, the desire to physically remain in (approach) or to physically leave (avoid) the environment; *second*, a desire or willingness to explore or look around the environment (approach) as opposed to a tendency to remain inanimate and not interact with it (avoid); *third*, a desire or willingness to communicate with others in the environment (approach) as opposed to a tendency to avoid or ignore communication attempts from others (avoid); and *fourth*, the degree of enhancement (approach) (Kearney et al., 2007). Although there are those who argue that the typology of PAD is too limited in scope and does not cover the whole spectrum of potential variances in emotional responses, the majority of experts agree that the typology is accurate (Richins, 1997; Machleit and Eroglu, 2000). In order to avoid this, researchers recommend considering some of the emotion typologies that include a more comprehensive set of emotional responses (for example, Izard, 2013; Plutchik, 1980;

Richins, 1997) and either using the entire set of emotions or selecting the ones that are hypothesized to be relevant in their specific research context (for example, Izard, 2013).

In regards of environmental psychology theory, Mehrabian and Russell (1974a) presented a connected theoretical model in which a service environment stimulates a customer's emotions and, as a result, affects the customer's behavior. After defining three emotional states, it goes on to explain the stimulus, emotion, and reaction paradigms; and discusses the response paradigms.

## **2.7. Debate and Rational on Emotions**

The debate about the effect of stimulation on a person has been much debated, not only about cognition or emotion, but also what kind of emotion appears. Moreover, several claims have emerged by academics about emotional states precedence (Oliver, 1980, 1981; Lazarus, 1999) and emotional states precede cognitive states (Swinyard, 1993; Pham et al., 2001); until another opinion appears about information processing. Moreover, there are many opinions that position studies on the emergence of cognition as part of information processing on stimulation; as the popular model proposed by Atkinson and Shiffrin (1968). We need to underline that the use of emotions in our proposed model does not create a complicating model, but clarifies the position of the study in the existing research stream. Emotions in this study play a key role in positioning him as the information processing experienced. This research has long been discontinued (Zajonc, 1980, 1984; Pham et al., 2001) for more than a decade by Clore and Storbeck (2006), and Storbeck and Clore (2008).

The purpose of this sub-chapter is to investigate debates, and rationales on consumer emotions to capture relevant issues in term on environment, stimuli, information, and consumer behavior. This sub-chapter is not to resolve the theoretical debate surrounding emotion research, but to provide an understanding of arguments to boost our basis study's regarding the structure and content of the consumer emotions. We begin by uncovering the side of cognition that many researchers associate with information processing. Then, we continue with the researchers' assumptions about what happens between cognition and emotion, where lies the influence of the two, and whether they influence each other or become separate parts of each other. Next, we sequence the theories and models that accompany the emotion side, as a result, they can be related to information processing.

### **2.7.1. Cognition or Emotion comes First?**

In this section, we want to explain how views have been on emotions over the decades. In our opinion, many experts have their own views on this topic, thus they have discrete constructions and fundamentals, although in detail the items in these emotions will intersect with each other. Next, we attempt to get a better understanding of these perspectives and conclude that the utilization of disparate research methodologies will result in distinct dimensions and classifications of emotions from these experts. The basic debate of scholars related to emotions is a definitive understanding of what emotions are, consequently, experts interpret them with subjective experience (Gendron and Feldman, 2009). It seems that the dispute regarding emotions, which is represented as positive and negative affect, is still generic and not particular; even Laros and Steenkamp (2005, p. 1437) stated that emotions are often understood in terms of broad dimensions.

According to Cohen et al. (2008) the term "affect" means a broad group of mental processes that express subjective internal feelings or emotions. It is common for people to distinguish between affect-based processing and cognition-based processing, even though the link between affect and cognition has been the subject of much controversy. Those who agreed with Zajonc (1980, 1984) stated that the distinction between emotion and cognition are largely independent processes. According to Zajonc (1984, p. 117) the broad notion that affect and cognition are distinct and somewhat independent systems; although they often operate in tandem, affect may be formed without a preceding cognitive process.

In cognitive psychology, the affect-as-information, is an approach that can be used as the basis for why emotions are important and different from cognitions. Based on Storbeck and Clore (2008, p. 1838) arousal has an impact on cognitive processing, attention, and perception. It should be emphasized that the affect-as-information approach is an evaluating processing model that assumes that affective feeling provides a source of information about objects, tasks, and decision alternatives (Clore and Storbeck, 2006; Storbeck and Clore, 2008). This viewpoint is part of a developmental collection of research that argues emotion is distinct from cognition and serves as a precursor to the creation of cognition in the first place. Storbeck and Clore (2008, p. 1824) examined that affect may convey evaluative information about one's own cognitions and response preferences, providing guidance for thinking and reasoning. Psychologists believe that this approach can account for a broad range of behavioral events in a number of settings (Forgas, 2011). This

opinion emphasizes that emotion as information or source can be processed by someone's cognition and influence his/her behavior.

Moreover, previous research conducted by Lazarus (1999, p. 127) revealed that in the sequence of psychological processes, cognitive activity precedes an emotion, and future cognitive activity is influenced by that feeling. The causal cognitive activity continues into the emotional response itself as an integral feature. According to Lazarus, this leads to cognitive appraisal and interpretation of the affective response. Finally, individuals respond behaviorally (e.g., approach or avoidance behavior) (Mehrabian and Russell, 1974). The study conducted by Lazarus (1999) is certainly in line with the study of Oliver (1980, 1981) where believed that when customers enter a servicescape, there are numerous environmental cues that they sense and visualize. Hence, unconsciously, consumers are accumulating and recalling all of the information in order to form a mental image in their thoughts. This level of cognitive processing is critical since it is thought that customers create certain expectations about a product/servicescape before to making a purchase.

How do consumers evaluate a servicescape? Do customers think first or feel first when they first enter a servicescape? Over the years, an immense literature has developed on emotion and cognition. Some scholars claim that cognitive states precede emotional ones (Oliver, 1980, 1981; Lazarus, 1999), while others stated that emotional states precede cognitive states during the assessment or appraisal process (Swinyard, 1993; Pham et al., 2001). The opinion of Swinyard (1993, p. 272) validates previous research conducted by Isen and Simmonds (1978), Clark and Isen (1982), Gardner (1985), Isen et al. (1988) which stated that mood is a subjective state that may modulate the effects of cognitive cues by biasing the selection, encoding, or recall of information in a scenario. However, the debate has not been settled.

Zajonc (1980, p. 172) made an intriguing point when he stated that affects should not be addressed in an irreversible and uniform manner post-cognitively. Zajonc (1980) underlined that emotional or affect reactions are distinct from perceptual and cognitive functions, and that they might have an impact on responses. Rapoport (1982, p. 14) in the context of environment-behavior interactions, supports this point of view by stating that individuals respond to situations on a global and emotive level before analyzing and evaluating them in greater detail. The dispute is expected to be a hot subject in the field of psychology. This is the subject of at least two major schools of thought: 1) the emotions-lead-to-cognition as stated by Zajonc and Markus (1985), who contend that an emotion can

be triggered by biological, sensory, or cognitive events; and 2) the cognition-leads-to-emotions proposed by Lazarus (1991), which asserts that cognition is a necessary but not sufficient condition for the development of emotions.

Consequently, research exploration related to emotions in consumer behavior becomes ambiguous and creates ambiguity in two important areas (Bagozzi et al., 1999): 1) the structure of emotions; and 2) the content of emotions. According to Izard (1977), all emotions are at the same degree of generality, however other researchers, such as Shaver et al. (1987) and Storm and Storm (1987), have discovered the hierarchical structure of emotions, which is comprised of the previously discovered fundamental emotions. There is a heated dispute over the substance of emotions in the context of their expression. Whether emotions are considered as a general element such as pleasure/arousal (Russell, 1980) or as positive/negative affect (Russell, 1980), there is a difference between the two (Watson and Tellegen, 1985). In order to find a middle ground, other researchers, such as Frijda et al. (1989), Smith and Lazarus (1993), Roseman et al. (1996), applied the appraisal theory, which revealed that specific emotions cannot be combined with broad emotional factors because each emotion has a distinct set of appraisals. This alternative opinion emphasizes the difference between emotion structure and emotion content in a clearer concept.

### **2.7.2. Basic and Constructive Emotion**

Ekman (1992) associates emotions as “basic emotions” such as anger, sadness, or fear that are stimulated through the brain's appraisal or cognition. Meanwhile, on the other hand, a person's emotions occur because of an elemental biological and psychological response to a stimulus or event. This view is what Barrett (2006) calls a “constructionist” who sees emotions through functional signs, either the nervous system or distinct physiological signatures.

In addition, Darwin (1872) proposed eight families of emotion and their functions; which is suspected to be the beginning of opinions about “basic emotions”. Moreover Tomkins (1962) developed a “psychobiological theory” based on Darwin's book, which postulated a set of basic emotions along with neuromotor expression mechanisms. This is what inspired Ekman (1992) to reveal about six distinct basic emotions (i.e. anger, fear, sadness, happiness, disgust and surprise). According to Gross and Feldman Barrett, (2011), the theory of basic emotions has a functional structure that contributes to a distinct mental

states and outcomes. However, the opinion that carries the theory of basic emotions argues that emotions are universal and focus on the basic things in a person.

In contrast to other views which assume that emotion is a non-static thing. This view is called constructivist emotion where emotion can emerge and develop constructively. Gross and Feldman Barrett (2011, p. 3) revealed that originating from a continuing, constantly updated creative process that incorporates more fundamental which are not specific to emotional elements. Opinions about constructivist emotion theory were widely discussed by Cannon (1927) regarding autonomous responses, where Schachter and Singer (1962) explained about the existence of a stimulus that gave rise to an undifferentiated state of physiological arousal, as well as the subsequent conscious cognitive attribution of arousal itself that produces a specific emotional experience.

Some opinions that support the views of Schachter and Singer (1962) are Russell (2003) who developed the core affect theory and Barrett (2006) with the conceptual act theory. Both of these theories agree on emotion that is constructed from experience of the stimulus that is felt by a person. Russell (2003) revealed that a stimulus's affective quality may be defined as its capacity to alter core affect. Instead of that, significant emotions such as anger or anxiety are social constructions that are just categories of core affect. Barrett (2006) confirms the opinion of Russell's (2003) statements that the experience is shaped by the categorization of core emotion, which is influenced by one's conceptual understanding or cultural background.

### **2.7.3. Affect Heuristic: Information and Decision Making**

Debates appear in describing how people receive information and the decisions they make; and how they understand the situation and the behavior in it. The arguments and debates around it can be seen in research conducted by Fishbein and Ajzen (1977), Anderson (1981), Bettman et al. (1998) with an emphasis on the evaluation process as reasonable judgments and weights of quality target components. Furthermore, this statement is reinforced by evidence by Damasio (1994), Schwarz and Clore (1996), Pham (1998), Wyer et al. (1999) about a person's subjective evaluation of emotion responses to a particular target or object. Wyer and Carlston (1979, p. 192) proposed that affect can serve informational functions, for instance, one's fondness for a person may be motivated in part by pleasurable sentiments experienced while the individual is present. Certainly, it makes the study of Schwarz and Clore (1988) on heuristics even stronger, with the emphasis on the argument

that people sometimes infer the direction of their preference. The affect heuristic is a mental shortcut that enables individuals to make judgments, decision, and solve issues more quickly and effectively by using present emotion – fear, pleasure, joy, surprise, and so on – to impact decisions.

Furthermore, Zajonc (1980, p. 156) stated that the affect heuristic is defined as affective responses to stimuli are often the first response that occurs instinctively, later impacting how we interpret and assess information. One may have control over the display of emotion, but not over the experiencing of it. This view has inspired further research on how a person feels the feelings and emotions that arise due to a specific target or object, such as Gorn et al. (1993), Levine et al. (1994), and Pham (1998). Including how the research of Slovic et al. (2007) developed the topic and position of the study on "affect heuristics" as a description of a person's emotions in influencing and assessing something due to positive or negative feelings towards a stimulus; or feelings that cause arousal (Gorn et al., 2001).

Such a condition by Schwarz (1990) and Schwarz and Clore (1996) is interpreted as the affect-as-information theory, where people make their feelings and emotions contain valuable information. However, in this study we need to explain that stimuli in environmental psychology not only affect cognition, but also emotions, as Schwarz and Clore (1983) and Ottati and Isbell (1996) examined those individual feelings cease to affect judgments and decisions. When individuals believe that their emotions were caused by the target in the first place; or when individuals believe their sentiments for targets are irrelevant to the judgments or choices made (Pham, 1998; and Raghunathan and Pham, 1999).

#### **2.7.4. Affect as Information**

However, it should be realized that the study of affect as information is an evaluation process that originates from feelings that affect a person's affective states, resulting in certain responses such as pleasure Clore (1992), Schwarz and Clore (1996), Wyer et al. (1999), or certain judgments or attitudes (Pham et al., 2001). Storbeck and Clore (2008, p. 1826) stated that the purpose of emotion-as-information and similar techniques is to get a better understanding of how affect may modify cognition. Thus, Schwarz and Clore (1996) use the basis of "feelings" as an evaluative source of someone's assessment due to something experience, and mention two things, namely integral and incidental, as a description of one's perception of a target or object. Buck (1985) and Cohen and Areni

(1991) reveal that integral affective responses and feelings can be seen in three types of mechanisms:

- I) the triggering of innate which triggers the sensory-motor in the self;
- II) the mapping of stimuli that arise due to schema structures that have been previously connected with certain emotional reactions through conditioning (e.g. fearness and happiness);
- III) a controlled appraisal of the stimulus which involves a subjective assessment of the stimulus on well-being (Lazarus, 1991).

What is interesting is that mechanisms I and II are affective or emotional responses that occur very quickly (Hermans et al., 1994; LeDoux, 1996), whereas mechanism III often involves considerable and slow-paced cognitive mediation (Cohen and Areni 1991). From this we can conclude that information as a stimulus [in any environment] received by consumers will be divided into two, based on more inclined to pure emotions or emotions due to cognitive mediation. This is what emerged in previous research presented by Mehrabian and Russell (1974) about the relationship between stimulus and responses.

It should be underlined that the debates and empirical studies that have been conducted regarding the affect-as-information confirm that overall judgments are not a simple association, but a controlled inferential process. This is confirmed in the research of the feeling-based inference is the heuristic Schwarz and Clore (1988), a controlled inferential process (Wyer et al., 1999, Schwarz, 2000), like/dislike or satisfaction/dissatisfaction inference (Schwarz and Clore, 1983; Gorn et al., 1993; Pham 1998). Thus, Pham et al. (2001) in the context of affect-as-information research emphasizes two basic things, namely 1) the conversion of incidental mood-produced feelings into judgments as revealed by Martin et al. (1997) and Ottati and Isbell (1996), and 2) not the informational properties of integral feelings as revealed by (Clore, 1992; Wyer et al., 1999).

### **2.7.5. Strengthen the PAD model**

The basic questions are, what type of emotional response occurs in the shopping experience and how to test it. At least, there are several types of emotions that are often cited by researchers, including: 1) Theory psychology of emotions (Izard, 1977) with postulates ten primary emotions: interest, joy, surprise, sadness, anger, disgust, contempt, fear, shame and guilt. Izard (1977, p. 64) defines emotion as an intra-individual process characterized

by specific neurophysiological activity and distinctive facial expressions; 2) Plutchik model (Plutchik, 1980) with eight basic emotion categories (anger, fear, sadness, disgust, surprise, anticipation, trust, and joy); and 3) the PAD model (Mehrabian and Russell, 1974a) with Pleasure, Arousal, and Dominance dimensions of response.

A previous study was conducted by Havlena and Holbrook (1986) comparing the Plutchik model and the PAD model and in the context of shopping. The results of this study prove that the PAD model has more power in gathering information than the Plutchik model. Havlena and Holbrook (1986, p. 402) revealed that the three dimensions of pleasure, arousal, and dominance by Mehrabian and Russell conveyed more information about the emotional nature of consumer experiences than the eight fundamental emotional categories established by Plutchik. Within the context of consumer behavior, Havlena and Holbrook (1986) found that that the Mehrabian-Russell framework is likely more beneficial than Plutchik's scheme for categorizing consuming events and establishing experience-specific emotional profiles. These results strengthen the justification in this study for using the PAD model in retail context.

Therefore, we need to emphasize that the dissimilar between the Plutchik model, the Izard model, and the PAD model lies in the context in which it is used. In other words, if the PAD model is used to represent the premier measure in the field of environmental psychology for assessing individuals' emotional responses to their environment (Donovan and Rossiter, 1982); then the Plutchik model explains that the eight emotion categories he identified are the root of all human emotional responses and the Izard model identifies ten primary and discrete emotions. The debate occurs between the Plutchik model and the Izard model, where the Plutchik model is actually a simplification of the Izard model because "shame" and "guilt" are not a person's basic emotions. However, Izard (1977, p. 64) stated that the ten postulates of emotions that he put forward are fundamental emotions that cannot be reduced to basic emotions. Thus, if we condense the debate, two opposing camps will emerge, namely the PAD model vs the Plutchik model and the Izard model. Measurement of emotions where a person is in a certain environment, or measurement of emotions due to the basic emotions of a person. From here we can adjust to the study we are going to do, which model is the right one to apply between the two measurements.

## **2.8. The S-O-R as Theoretical Framework**

Haggbloom et al. (2002) believed that the S-O-R framework is the original work of Woodworth (1918) where at that time he introduced a formula that could explain the effect or response in an organism due to a stimulus. As a functionalist, Woodworth (1918) stated that the establishment of a technical language for psychology, as opposed to depending only on often subjective operational definitions. However, opinions and studies have developed to be dynamic and contemporary to the point of embedding the S-O-R framework on the M-R approach promoted by Mehrabian and Russell (1974a). The two approaches are not contradictory, but interrelated. If the S-O-R framework is the basis of the argument on how a person behaves due to a stimulus, the M-R approach explores more about the emotional states caused by a stimulus in an environment. Both of them provide views about the dynamic activities that exist in environmental psychology.

As shown by the S-O-R framework, stimuli are antecedents that cause consumers' emotional states (organisms) to change, with the resulting reaction resulting in their actions or intents. This framework was later used by Donovan and Rossiter (1982, p. 36) in a real-world retail setting using the Mehrabian-Russell (M-R) model because it has benefits. Donovan and Rossiter (1982, p. 41) revealed that Mehrabian and Russell's model is superior to these other methods in that it describes the predicted relationship between individual differences and the other variables in their system.

The S-O-R framework has been thoroughly tested in a number of trials including conventional retail shops, with positive results (Ong et al., 2012; Vieira, 2013). Similarly, the framework has been extensively evaluated in prior online store research, and it has been shown to be accurate in predicting online shoppers' cognitive judgment and subsequent actions (Chang and Chen, 2008; Jai et al., 2013; Kawaf and Tagg, 2012; Kim and Lennon, 2013; Liu et al., 2013; Richard, 2005; Rose et al., 2012). Examples include the research conducted by Chang and Chen (2008), which showed that online environmental signals (such as web site quality and web site brand) had beneficial effects on cognitive judgment (consumers trust and perceived risk).

The S-O-R framework is used in emotional states research as well as in other fields. According to the paradigm, every situation will cause a person to experience emotional states that may be classified according to the PAD. Regarding to consuming experiences, Havlena and Holbrook (1986) contrasted the Plutchik (1980) and Mehrabian and Russell (1974a) frameworks of emotions with regard to each other. As a consequence, Havlena and

Holbrook (1986) stated that the three PAD dimensions collected much more information regarding the function emotions play in consuming experiences than Plutchik's eight categories of emotions did. In brief, the S-O-R framework depicts the connection between environmental stimuli, people's emotional states, and the approach or avoidance behavior that arises from the interplay of environmental stimuli and emotional states.

**Figure 10.**

*The S-O-R Framework*



Source: Mehrabian and Russell (1974a)

The S-O-R framework offers a foundation for identifying the connections between environmental stimuli, the organism, and the reaction to those stimuli. This framework has been used to describe consumer behavior in the shop environment (Bitner 1992; Chebat and Michon, 2003; Donovan and Rossiter, 1982), as well as in the online servicescape (Ha and Lennon, 2010; Kim et al., 2007; Richard et al., 2010; Lockwood and Pyun, 2019; Chang, 2016). The physical evidence of a brick-and-mortar shop serves as the trigger for the behavior described above. Consumers' internal reactions arise in response to a variety of various stimuli, and these reactions have a direct impact on their behavior. This paradigm has been used to the study of website features, emotional reactions of customers, and purchasing behavior (Mummalaneni 2005). The stimulus (S) is comprised of the e-servicescape (ambient; spatial, layout, and functionality; signs, symbol, and artifacts; financial security; and interactivity). This research will examine a variety of website variables that may have an impact on a consumer's emotional arousal and attitude about a certain website. Two of the most important website features have been identified in the organism (O), namely emotional pleasure and arousal toward the website. This section looks at the psychological impacts that customers have when they visit the website in question. Obviously, in our study, organisms highlight psychological theory and a research framework with a focus on emotions. The attitude of customers toward the website will be evaluated at this point in the final response (R).

In order to empirically verify the effectiveness of the proposed conceptual model for online store shopping, the research results are expected to accomplish the following: revealing how consumers react and behave in response to the online store stimuli after a website visit, and exploring the interrelationships between the e-servicescape, emotional (pleasure-arousal), and attitude toward the website after a website visit are all expected to

be achieved. Emotion is used to represent the "stimuli" in this study, while attitude is used to represent the "organism" in this study. In this study, the e-servicescape manipulation is used to represent the "stimuli" and is investigated in each of its dimensions.

Some researchers such as Lee and Jeong (2012), Abarbanel (2013), Wu et al. (2017), Kühn and Petzer (2018), Tankovic and Benazic (2018), Carneiro (2019), Tran and Strutton (2020) were explicitly adopting the S-O-R framework in their study. The framework helps retailers understand how different stimuli affect the behavior of their customers. It helps them develop strategies that can stimulate both physical and emotional responses. Therefore, it helps to the understanding of consumers psychological process by studying customer attitude as a reaction and as a multidimensional construct derived from customer experience in the e-servicescape.

## **2.9. Summary**

In closing this chapter, we would like to convey that the findings that occur in the arguments presented by the researchers are a wealth of knowledge that contributes to the enrichment of e-servicescape research topics, emotions, and attitudes. The contrary of phenomena, theories, methods, objects, and research conclusions influence future researchers to be able to find other ideas, explore research, or update past research that needs new evidence to adapt to current phenomena. We convey that the use of multi-factor e-servicescape in this study is a rational choice, where previously use only involved two to four factors. This decision will at the same time test whether all of these factors work well in an online environment. By using the theories and opinions of Mehrabian and Russell (1974a), Donovan and Rossiter (1982), and Bitner (1992), our study will focus on the psychological processes that occur in an online environment.

## **CHAPTER 3**

### **STUDY I: MANIPULATION CHECKS**

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#### **3.1. Introduction**

The problem to be solved in this stage is to find out whether consumers can feel the difference in the environment and the stimuli provided by the company to them; and also to investigate the application of manipulation checks in the independent variable. Concerns regarding manipulation checks are not new (Sigall and Mills, 1998); the issue is not that optimal practices are unknown, but that they are frequently neglected. Manipulation checks are important in experimental research for determining if manipulation works or fails in an experiment that is about to be conducted. According to Fayant et al. (2017), 75% of recent polls of social psychologists believe manipulation checks are required in a well-designed experiment. Some even contend that removing manipulation checks from studies is a significant disadvantage (Simons and Holcombe, 2014).

Manipulation checks are not a new idea. As stated by Festinger (1953) that manipulation checks are a safe step to assume beforehand that the operations used to manipulate variables will be successful and will be directly related to the concepts in the experimenter's mind. Furthermore, by Hauser et al. (2018) manipulation checks are generally used as attention checks, independent variable induction effectiveness checks, and mediation process checks.

#### **3.2. Research Design**

The research design in this study is experimental research, where we started by making a series of manipulations on the variables we wanted and checking whether the manipulations worked well or not. The context of manipulation in this study is about an online experiment that examines the effect of website stimulation on consumer response. Next, we manipulate a website and display the website image on the link we create ([bit.ly/surveykobeu](https://bit.ly/surveykobeu)). Next, we display 10 images of neutral images website and 10 images of pleasant image website, where the neutral image is the manipulated website, while the pleasant image is the actual website. The Spotify music website and music player were chosen as contexts for this study because they provide an opportunity to investigate the effects of different levels of response to the stimuli of the service environment. To see consumer responses, we use e-servicescape variables such as ambient; spatial layout and

functionality; signs, symbols and artifacts; financial security, and interactivity will be manipulated and tested.

Hinkelman and Kempthorne (2007) define an experiment as a method that is used to either support or disprove a hypothesized outcome. Experiments offer insight into cause-and-effect relationships by showing what happens when a specific element is changed in a controlled environment. Even if the goals and size of experiments vary considerably, the procedures used and the reasoning used to analyze the findings are always the same. Experimental research, as defined by Babbie (1998), is a kind of study that is extensively used in the design of scientific research projects. Statistical inference is the primary approach for investigating causal (cause/effect) relationships and exploring the link between one variable and another. According to Babbie (1998), the hypothesis testing or deductive research approach is used to confirm or deny hypothesis that have been generated by the researcher in order to address a certain issue or problem.

There are at least three primary experimental designs, which are addressed in further detail below: pre-experimental designs, quasi-experimental designs, and true experimental designs. The extent to which the researcher randomly assigns participants to different conditions and groups dictates the kind of experimental design utilized.

1. *First*, the pre-experimental design is the simplest and most basic kind of experimental design, in which the fundamental experimental methods are performed, but there is no control group participating in the experiment. In this study, the researcher only investigates a single group and draws no comparisons between this group and an equivalent non-treatment group as a result of the design.
2. *Second*, a quasi-experimental design is similar to an experimental design in that participants are not randomly allocated to different groups, but the subjects are given a chance to do so.
3. *Third*, the true experimental design is the most critical sort of experimental design since it is the most precise type of experimental research because it employs statistical analysis to support or refute a hypothesis. True experimental design is the costliest sort of experimental design due to its time requirements. Additionally, this sort of design is often regarded as the only type of experimental design capable of establishing cause and effect relationships.

### **3.2.1. Design of Experiments**

The design of experiments includes any information-gathering activities in which variation is present, regardless of whether the variation is completely within the control of the researcher or not (Pearl, 2000). Most of the time, the experimenter is interested in the impact of a procedure or intervention (the "treatment" or "treatments") on certain items (the "experimental units" or "experimental units"), which may include humans. As a result, design of experiments is a subject that has a very wide range of applications across all of the natural and social sciences disciplines (Box et al., 2005).

Experimental design uses independent variables to identify the connection between an observed event (the dependent variable) and a variable whose values are controlled or chosen by the researcher (Pearl, 2000; Box et al., 2005). In a situation like this, researchers are attempting to uncover evidence that indicates that values of one independent variable influence those of a second independent variable (that which is being measured). The independent variable may be modified as needed, and its values do not constitute an issue that has to be explained in an analysis, but are simply accepted as they are in practice. However, the dependent variable is generally unable to be manipulated directly by the researcher (Pearl, 2000; Box et al., 2005). Controlled variables are equally essential to detect in experiments since they can be controlled. This refers to the variables that are maintained constant in order to avoid their having an impact on the effect of one variable on another (the dependent variable).

### **3.2.2. Treatment Manipulation**

Experimental manipulation is defined as the process by which researchers intentionally modify, alter, or affect the Independent Variables (IVs), known as treatment variables or factors, in an experimental study design with the goal of learning something new. As a result of this procedure, researchers are able to investigate causal connections between Independent Variables (IV) and Dependent Variables (DVs), which are known as outcome or criterion variables, that are relevant to a specific study. In particular, manipulating an IV enables researchers to investigate whether the IV is responsible for changes in the DVs of a study.

Moreover, in experimental testing, the website is evaluated using a 5-point Likert scale, using question items pertaining to e-servicescape stimuli as the basis for scoring. We built a website where we displayed images of a neutral website and pleasant website. The

webpage that we are interfering with is the Spotify website. We used websites to see how much influence website stimuli had on consumers' emotions and attitudes. A website that we admire will feel like a neutral website, where it doesn't look as flashy and eye-catching as what the actual website looks like. This is in line with journals that analyze studies on customer behavior when visiting a website, by presenting a neutral website as a manipulative website, and the real website as a pleasant website. Non-Spotify users that take part in this experiment are assumed to have never accessed, seen, or utilized Spotify prior to taking part in this experiment. The selection of non-Spotify users as responders was done in order to avoid any prejudice in the evaluation of the website we developed and launched.

Treatments are the distinguishing characteristic of experimental research that distinguishes it from all other research designs. Controlling for the "cause" in cause-and-effect connections is made possible via treatment modification. It goes without stating that the validity of experimental study is dependent on how well the therapy was modified. Prior to conducting the experimental research, it is necessary to evaluate the treatment modification using pretests and pilot tests. Any measurements taken before the therapy is given are referred to as pretest measures, and any measurements taken after the treatment are referred to as posttest measures.

### **3.2.3. Manipulation Checks**

Carlsmith et al. (1976), Aronson and Carlsmith (1968) and Mills (1969) expressed the same point of view by stating that manipulation checks should be considered as a separate measure designed to determine whether the experimental treatment was successful in producing the internal states that represented the conceptual variable. Control checks are defined as a measure utilized in the construct addressed by an experimental modification according to their original concept. This is the same point of view as other scholars such as Wilson et al. (2010), Haslam and McGarty (2019). A further point of contention was made by Sigall and Mills (1998), who claimed that manipulation checks are a phrase used in the practical world to evaluate assumptions about changes in experimental circumstances. According to academics, differing perspectives on the concept of manipulation checks must be understood as an extra measurement under certain circumstances, with various measures being used properly on something that is unknown and is intended for evaluation, among other things.

A basic definition of manipulation checks is variable measurements that demonstrate whether or not the modified variable has the ability to influence other variables. Measurement of manipulation checks have been extensively utilized on problems that need concept validity testing; to observe and show that the operationalizations properly reflect the constructs that they are intended to represent, measurement of manipulation checks have been commonly used (Shadish et al. 2002). To summarize, evaluating the hypothesized variables that are anticipated to be directly affected by the manipulation, as well as variables that are predicted to be uninfluenced by the manipulation, may help to increase the construct validity of the study.

Statistical manipulation checks are used as internal analysis to determine if the independent variables are reliable and capable of supporting the hypothesis in a statistical analysis. For the reason that failures in hypothesis testing may be caused by two factors: improper manipulation or the application of the erroneous theory (Festinger, 1953; Carlsmith et al., 1976; Wilson et al., 2010). In brief, as long as the manipulation checks are measuring the construct represented by the independent variable, even if the manipulation is inefficient, the researcher will still be able to examine the expected association between the manipulation check measure and the dependent measure.

Abelson (1995) presented a quantitative measure of causal effectiveness, the ratio of effect size to cause size, to help determine the magnitude and importance of an experimental effect. Abelson (1995) recommended dividing the unstandardized effect size (impact on the dependent variable) by the cause size to assess causal effectiveness (effect on the manipulation check). For example, an adjustment of 4.50 scale points on the dependent measure leads in a 2.10 scale point adjustment on the manipulation check. This corresponds to an effect size 2.14 times bigger than the cause size and a causal effectiveness of 2.14.

Pilot testing is important because it allows evaluating the validity of manipulations in a context where the dependent measure is not influenced by assessing the manipulations constructed. Pilot studies are frequently more effective than big research, in our view (Fayant et al., 2017). Despite the fact that pilot tests frequently have smaller sample numbers than other researches, Ejelöv and Luke (2020) stated that pilot tests may give vital data concerning the validity of manipulations. But, like with any research, proper sampling is essential for statistical power and accuracy. To be relevant, Ejelöv and Luke (2020) focus on summary statistics like mean and median. Ejelöv and Luke (2020) claimed that effect sizes are typically one-third of cause sizes (as assessed by a manipulation check).

### **3.3. Data Collection**

Data collection was carried out on the Prolific website ([www.prolific.co](http://www.prolific.co)), which is operated by an organization that provides an on-demand platform that connects academics with volunteers situated across the globe. In order to use the Google form as a tool, we must input the URL to the Google form in our Prolific account before distributing it to possible participants all over the globe. In addition, data retrieval is available online for one day (24 hours) and is not restricted to a certain time period or location. If the information provided into the Prolific account corresponds to the intended number of samples, then Prolific will cease collecting data for the remainder of the time period.

We categorize our sample as Spotify non-users, and we expressly state that this survey is intended for them in the first place. When establishing the Prolific service, we consider factors such as participants' active usage of English and have conducted a minimum of 10 Prolific surveys without being rejected. The participants in Study I, II, and III are distinguished by the fact that they have never taken part in any of the other studies that we have undertaken in the past. As a result, we make certain that each research has a diverse set of subjects.

Non-probability sampling is deemed suitable for this study due to the difficulty of quantifying the whole non-Spotify user population and the inaccuracy of available data (Reynolds et al., 2003; Zikmund et al., 2011). Numerous circumstances need the use of convenience sampling. To begin, convenience sampling is a critical component of this study because it allows for the testing of theory regarding the interrelationship between three critical marketing constructs. Additionally, convenience sampling is a simple technique for limited budgets and time periods, particularly when population data is unavailable (Zikmund and Babin, 2010).

#### **3.3.1. Sample Size**

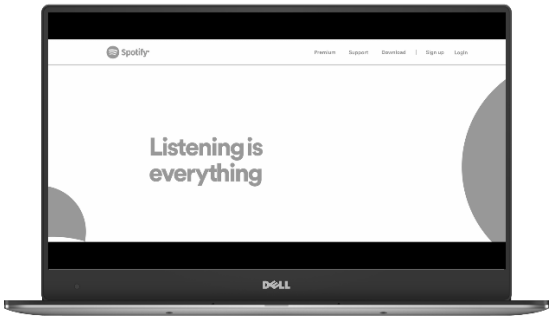
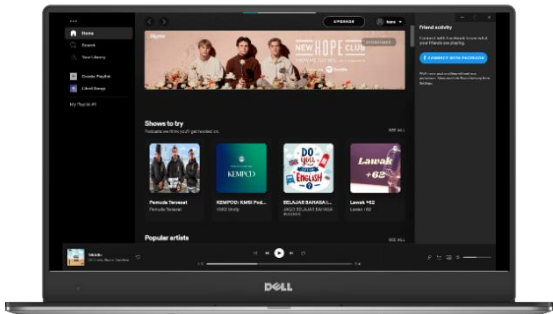
There are many techniques for estimating the sample size that have been proposed in the literature. At the manipulation checks stage, Ejelöv and Luke (2020) examined that the use of sample sizes in the pilot and main studies was different. Additionally, Ejelöv and Luke (2020) used a minimum sample size of 17 pilot studies and a minimum of 25 main studies. In contrast to the opinion from Fayant et al. (2017) which in the manipulation checks study used a sample of 49. Surely, the usage of samples number is influenced by the size of the population and how much it can increase the confidence of the researcher and the

statistical power of the research. Thus, in this study we used a sample of 85 participants. The sample was selected based on the conditions that the researcher wanted, such as age, use of language (English), and not the user of the object of research that we studied. The selection of this number is based on the literature review; empirical research that has been done; and to increase the confidence of researchers.

### 3.3.2. Procedure

We manipulated the apparent of the website to neutral approach. Under this condition, the respondent will feel they are in actual website with slight differences. We made 10 images connected by hyperlinks and sections representing e-servicescape variables. The sections are made accessible using the main menu located at the bottom of each page. After, looking and examining manipulation website, participants will answer questionnaire about their feeling regarding online service environment. We used 5-point likert scale in independent variables (e-servicescape). Website items that will be manipulated such as color, font size, menu/logo position, numbers of menu, and detailed information.

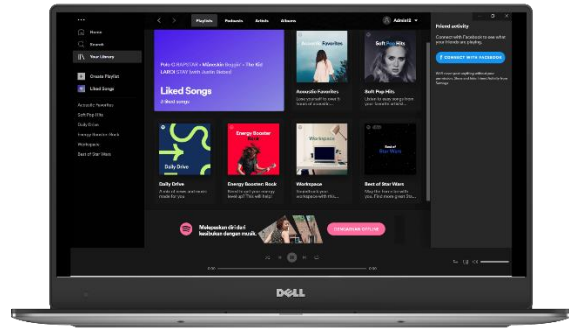
**Table 3.**  
*Neutral and Pleasant Images of Website Stimulation*

| Neutral Images                                                                      | Pleasant Images                                                                      |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Ambient                                                                             |                                                                                      |
|  |  |
|  |  |

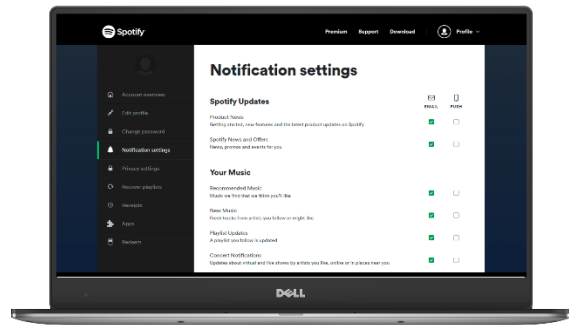
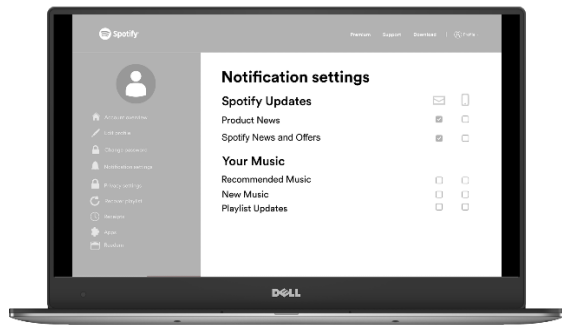
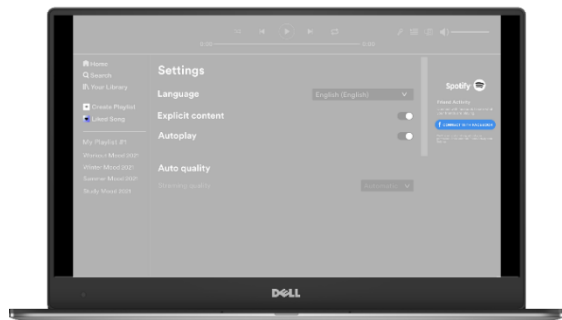
## Neutral Images



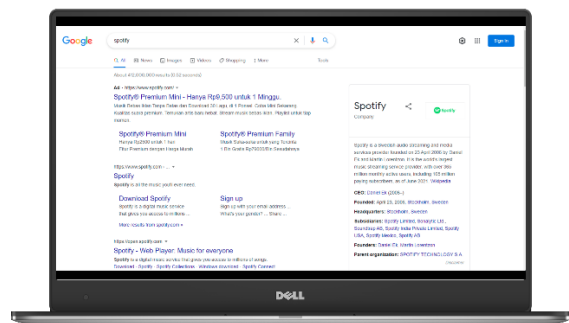
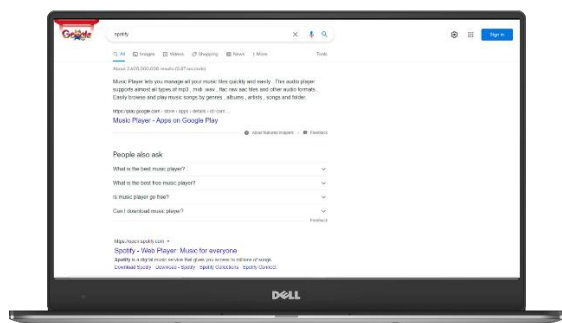
## Pleasant Images



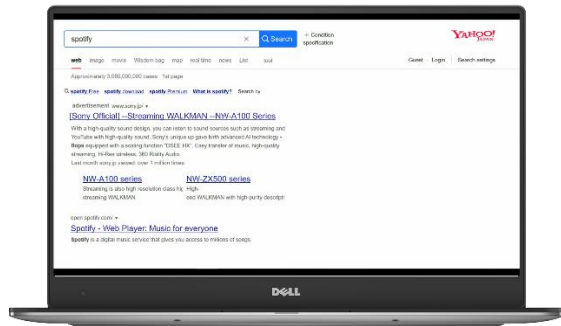
## Spatial layout and functionality



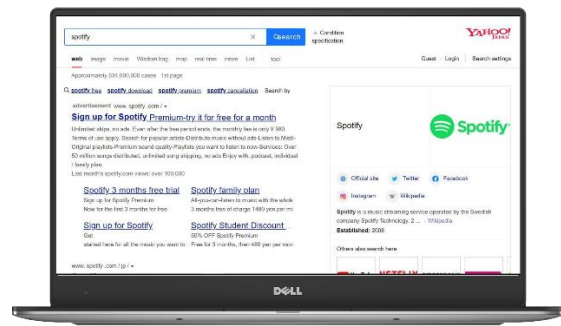
## Signs, symbols and artifacts



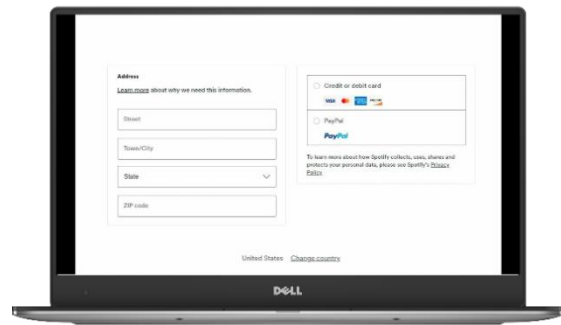
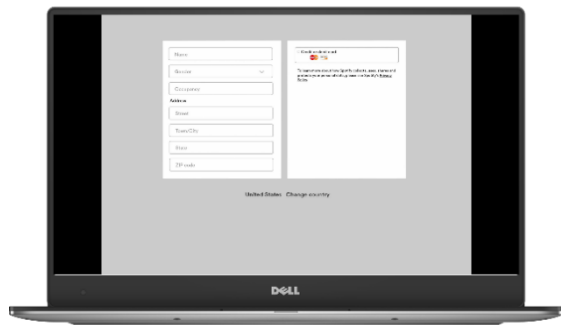
## Neutral Images



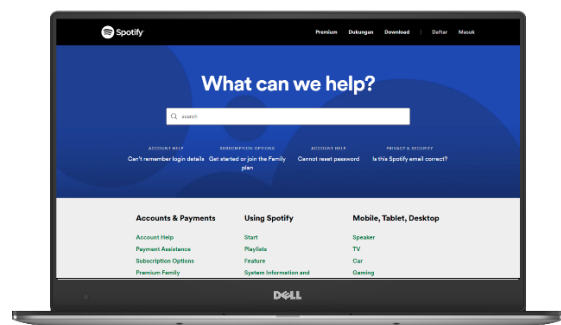
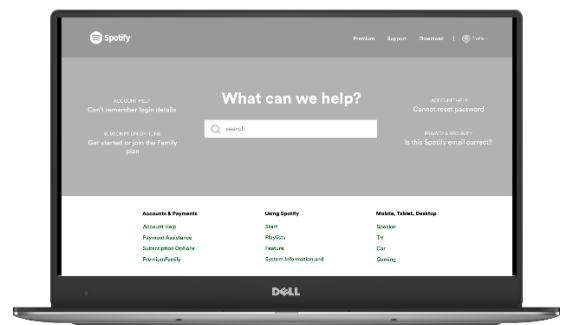
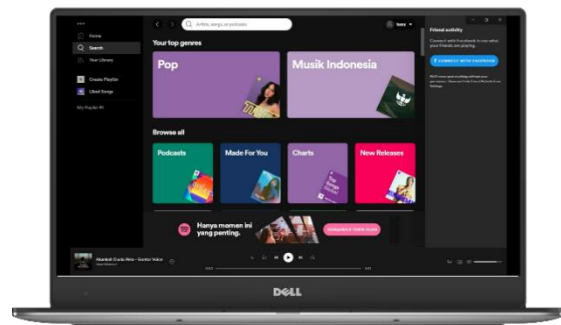
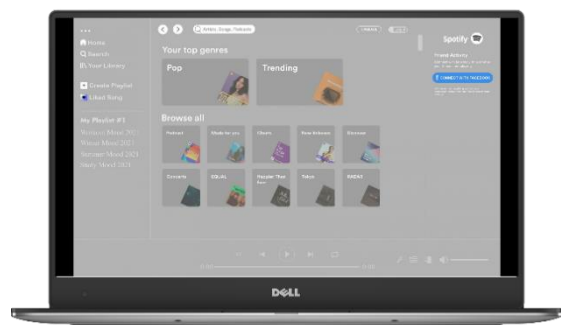
## Pleasant Images



## Financial security



## Interactivity



Source: Author (2021)

According to Redish (2012) and Yang et al. (2005), manipulation can take the form of web content containing detailed information such as the length of the information; the length, clarity, and simplicity of sentences; the order of the summary and the entire

information; and the attractiveness of the title are all examples of web content manipulation. For our part, we alter the aesthetics of a website such that participants are assigned to one of two aesthetic levels: low (neutral) and high (pleasant). The four principles of visual organization, namely proximity, alignment, repetition, and contrast (PARC), were followed by the high-level (pleasant) websites (Lee and Koubek, 2010; Williams, 2015). The high level was further conveyed by using a strong contrast of background and text color, as well as an attractive font style (McCracken and Wolfe, 2004). In addition, the low-level (neutral) websites did not adhere to the PARC concept and they were diametrically opposed in terms of color contrast between the backdrop and text (no contrast). As a result, we restrict our attention to classical aesthetics (Lavie and Tractinsky, 2004) rather than expressive aesthetics in order to prevent excessively complicated manipulations.

**Table 4.**

*Independent Variables Details Manipulation*

| Independent variable             | Neutral Images                                                                                                                                                     | Pleasant Images                                                                                                                                                    |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient                          | <ul style="list-style-type: none"> <li>• Non-PARC (Proximity, Alignment, Repetitive, Contrast)</li> <li>• Minimum background and text color design</li> </ul>      | <ul style="list-style-type: none"> <li>• PARC</li> <li>• Colorful background and text color design</li> </ul>                                                      |
| Spatial layout and functionality | <ul style="list-style-type: none"> <li>• No detailed information</li> <li>• Minimum background and text color design</li> <li>• Limited personal set-up</li> </ul> | <ul style="list-style-type: none"> <li>• Detailed information</li> <li>• Colorful background and text color design</li> <li>• Broad personal set-up</li> </ul>     |
| Signs, symbols and artifacts     | <ul style="list-style-type: none"> <li>• Not top position of searching</li> <li>• No company profile</li> <li>• Mentioning other music platform</li> </ul>         | <ul style="list-style-type: none"> <li>• Top position of searching</li> <li>• There is a company profile</li> <li>• Not mentioning other music platform</li> </ul> |
| Financial security               | <ul style="list-style-type: none"> <li>• Unclear information</li> <li>• Additional unnecessary menu</li> <li>• Long information</li> </ul>                         | <ul style="list-style-type: none"> <li>• Clear information</li> <li>• Secured concern menu</li> <li>• Short information</li> </ul>                                 |

| Independent variable | Neutral Images                                                                                                                                                                        | Pleasant Images                                                                                                                                                                        |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Interactivity        | <ul style="list-style-type: none"> <li>• Limited choices of payment</li> <li>• Small icons</li> <li>• Minimum background and text color design</li> <li>• Non-aligned menu</li> </ul> | <ul style="list-style-type: none"> <li>• Broad choices of payment</li> <li>• Proportional icons</li> <li>• Various background and text color design</li> <li>• Aligned menu</li> </ul> |

Source: Author (2021)

### 3.3.3. Participants

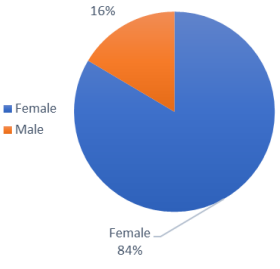
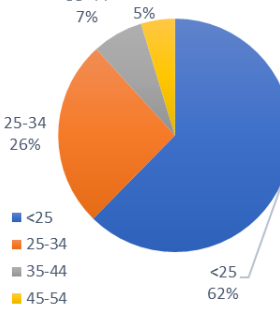
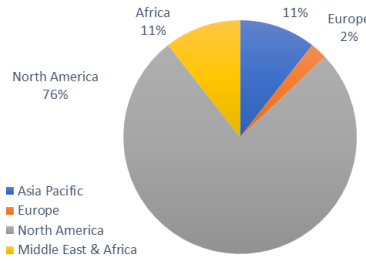
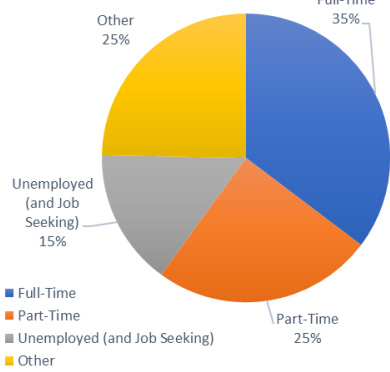
This trial enrolled 85 non-Spotify users. The target demographic consists of genuine online users who are at least 18 years old. A little reward of around £ 5.14 (815) per hour will encourage involvement. Participants are asked to participate in the study by following link ([bit.ly/surveykobeu](https://bit.ly/surveykobeu)) to the research website included in Prolific notifications. We design our experiment into several steps:

- 1) **Step one.** Once participants volunteer their self in the experiment, they are directed to fill a short set of demographics background using Google Form.
- 2) **Step two.** After participants finishing demographic background, they are asked to click the experimental link which is directed to Spotify manipulation website with neutral approach. In this step, participants are told to spend as much time as they require to have feeling about website environment.
- 3) **Step three.** After examining the neutral appearance of the neutral website, participants are instructed to click on it to proceed to step three. In this step, the experiment asks the participants to respond to our questionnaire, which involves filling out the observable variable (e-servicescape)
- 4) **Step four.** After finish filling the questionnaire, participants are asked to click the next step which direct to the actual Spotify website with pleasant approach. In this step, participants are told to spend as much time as they require to have feeling about website environment.
- 5) **Step five.** After examining the pleasant appearance of the pleasant website, participants are instructed to click on it to proceed to the last step. In this step, the experiment asks the participants to respond to our questionnaire, which involves filling out the observable variable (e-servicescape).

### 3.3.4. Demographic Information of Participants

**Table 5.**

*Demographic Information of Participants*

| <b>Gender</b>                | <b><i>n</i></b> | <b><i>%</i></b> |                                                                                                                                                                                            |
|------------------------------|-----------------|-----------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Male                         | 14              | 16              |  <p>Male 16%</p> <p>Female 84%</p>                                                                       |
| Female                       | 71              | 84              |                                                                                                                                                                                            |
| <b>Age</b>                   | <b><i>n</i></b> | <b><i>%</i></b> |                                                                                                                                                                                            |
| < 25                         | 53              | 62              |  <p>35-44 7%</p> <p>45-54 5%</p> <p>25-34 26%</p> <p>&lt;25 62%</p>                                     |
| 25-34                        | 22              | 26              |                                                                                                                                                                                            |
| 35-44                        | 6               | 7               |                                                                                                                                                                                            |
| 45-54                        | 4               | 5               |                                                                                                                                                                                            |
| <b>Area of Residence</b>     | <b><i>n</i></b> | <b><i>%</i></b> |                                                                                                                                                                                            |
| Asia Pacific                 | 9               | 11              |  <p>Middle East &amp; Africa 11%</p> <p>Asia Pacific 11%</p> <p>Europe 2%</p> <p>North America 76%</p> |
| Europe                       | 2               | 2               |                                                                                                                                                                                            |
| North America                | 65              | 76              |                                                                                                                                                                                            |
| Middle East & Africa         | 9               | 11              |                                                                                                                                                                                            |
| <b>Employment Status</b>     | <b><i>n</i></b> | <b><i>%</i></b> |                                                                                                                                                                                            |
| Full-Time                    | 30              | 35              |  <p>Full-Time 35%</p> <p>Part-Time 25%</p> <p>Unemployed (and Job Seeking) 15%</p> <p>Other 25%</p>    |
| Part-Time                    | 21              | 25              |                                                                                                                                                                                            |
| Unemployed (and Job Seeking) | 13              | 15              |                                                                                                                                                                                            |
| Other                        | 21              | 25              |                                                                                                                                                                                            |

Source: Author (2021)

Participants' response based on gender showed that there were 14 male (16%) and female 71 people (84%). From the data, it can be seen that gender is dominated by Female. Furthermore, participants' responses based on age showed that age < 25 were 53 people

(62%), age 25-35 were 22 people (26%), age 35-44 were 6 people (7%) and age 45-54 were 4 people (5 %). Also, from the data, it can be seen that age is dominated by age < 25.

Meanwhile, participants' response based on area of residence showed that there were 9 participants from Asia Pacific (11%), 2 from Europe (2%), 65 from North America (76%) and 9 from Middle East & Africa (11%). From the data, it can be seen that the area of residence is dominated by participants living in North America. Furthermore, participants' response based on employment status showed that participants who had Full-Time jobs were 30 people (35%), Part-Time were 21 people (25%), Unemployed (and Job Seeking) were 13 people (15%) and Others were 21 people (25%). Also, it can be seen that the employment status is dominated by respondents who have full-time jobs.

### **3.4. Test**

#### **3.4.1. Validity Test**

It is a metric that indicates the degree to which an instrument's reliability and validity have been established. An instrument is considered to be valid if it is capable of measuring what it is intended to measure or if it is capable of revealing suitable data from the variables under investigation. The degree to which the data gathered does not depart from the description of the variable in issue is shown by the high and low validity of the instrument. For additional information, see the following table:

**Table 6.***Variable Validity Test*

| Item                                                                          | Pleasant Website |       | Neutral Website |       | Status |
|-------------------------------------------------------------------------------|------------------|-------|-----------------|-------|--------|
|                                                                               | r value          | Sig.  | r value         | Sig.  |        |
| Spotify is visually attractive (A1)                                           | 0.771            | 0.000 | 0.854           | 0.000 | Valid  |
| Spotify uses visually appealing graphics (A2)                                 | 0.887            | 0.000 | 0.882           | 0.000 | Valid  |
| Spotify is aesthetically appealing (A3)                                       | 0.853            | 0.000 | 0.878           | 0.000 | Valid  |
| Spotify design is innovative and creative (A4)                                | 0.845            | 0.000 | 0.778           | 0.000 | Valid  |
| Spotify is very entertaining (A5)                                             | 0.837            | 0.000 | 0.760           | 0.000 | Valid  |
| Spotify provides enjoyment (A6)                                               | 0.686            | 0.000 | 0.650           | 0.000 | Valid  |
| Spotify provides useful navigational aids (SL1)                               | 0.885            | 0.000 | 0.832           | 0.000 | Valid  |
| Spotify is easy to navigate (SL2)                                             | 0.797            | 0.000 | 0.863           | 0.000 | Valid  |
| Spotify's e functions on Spotify are easy to operate (SL3)                    | 0.789            | 0.000 | 0.833           | 0.000 | Valid  |
| Spotify is user-friendly (SL4)                                                | 0.833            | 0.000 | 0.756           | 0.000 | Valid  |
| Spotify visual information is easily accessed (SL5)                           | 0.845            | 0.000 | 0.795           | 0.000 | Valid  |
| All relevant information on Spotify is easily available (SL6)                 | 0.838            | 0.000 | 0.767           | 0.000 | Valid  |
| Spotify technical details about menus can be easily accessed (SL7)            | 0.781            | 0.000 | 0.733           | 0.000 | Valid  |
| Spotify is tailored towards me (SL8)                                          | 0.694            | 0.000 | 0.747           | 0.000 | Valid  |
| I feel that Spotify is designed for me (SL9)                                  | 0.749            | 0.000 | 0.761           | 0.000 | Valid  |
| Spotify's services are often personalized to me (SL10)                        | 0.678            | 0.000 | 0.714           | 0.000 | Valid  |
| If we type keywords, Spotify is easy to find in the search engine (SS1)       | 0.804            | 0.000 | 0.890           | 0.000 | Valid  |
| If we type meta-tag words, we found Spotify easily in the search engine (SS2) | 0.845            | 0.000 | 0.897           | 0.000 | Valid  |

| Item                                                                   | Pleasant Website |       | Neutral Website |       | Status |
|------------------------------------------------------------------------|------------------|-------|-----------------|-------|--------|
|                                                                        | r value          | Sig.  | r value         | Sig.  |        |
| If we type catch phrases, will draw internet browsers' attention (SS3) | 0.802            | 0.000 | 0.827           | 0.000 | Valid  |
| Payment procedures take a short time to complete on Spotify (F1)       | 0.730            | 0.000 | 0.702           | 0.000 | Valid  |
| Online payment process is reasonable (F2)                              | 0.772            | 0.000 | 0.828           | 0.000 | Valid  |
| Paying for goods is straightforward on Spotify (F3)                    | 0.792            | 0.000 | 0.821           | 0.000 | Valid  |
| Spotify has efficient payment procedures (F4)                          | 0.854            | 0.000 | 0.788           | 0.000 | Valid  |
| The payment facilities of Spotify are easy to use (F5)                 | 0.833            | 0.000 | 0.860           | 0.000 | Valid  |
| I have no security concerns about buying things from Spotify (F6)      | 0.754            | 0.000 | 0.746           | 0.000 | Valid  |
| Spotify seems security conscious (F7)                                  | 0.765            | 0.000 | 0.735           | 0.000 | Valid  |
| Spotify enables me to view the music in different ways (I1)            | 0.868            | 0.000 | 0.744           | 0.000 | Valid  |
| Spotify has a search tool which helps me find what I want (I2)         | 0.778            | 0.000 | 0.737           | 0.000 | Valid  |
| Spotify helps me to compare music and genres (I3)                      | 0.823            | 0.000 | 0.819           | 0.000 | Valid  |
| I feel that this is a very engaging app (I4)                           | 0.872            | 0.000 | 0.886           | 0.000 | Valid  |
| I believe that Spotify is a very dynamic one (I5)                      | 0.895            | 0.000 | 0.776           | 0.000 | Valid  |

Source: Author (2021)

Correlating each component or variable with the overall factor or variable using correlation ( $r$ ) product moment may be used to evaluate the validity of a model. The following are the test criteria that may be used to accept or reject the hypothesis of a valid statement or not:

$H_0 : r = 0$ , there is no valid data at the error level ( $\alpha$ ) 5%.

$H_1 : r \neq 0$ , there are valid data at an error rate ( $\alpha$ ) of 5%.

The null hypothesis ( $H_0$ ) is accepted if  $r_{\text{value}} < r_{\text{table}}$ , and vice versa the alternative hypothesis ( $H_1$ ) is accepted if  $r_{\text{value}} > r_{\text{table}}$ .

Validity testing is carried out using the SPSS version 21.0 and the product moment correlation method, which provides the value of each statement item in relation to the total question item score. From Table 6, in this section, we show the initial results of the items validity testing that we will use in our research. In general, the validity test that we conducted on participants on two different website conditions resulted in a sig value.  $r < 0.05$ . These results indicate that each item on the variables that we use in the next test is proven to be valid.

### 3.4.2. Reliability Test

Performing a reliability test on a measuring instrument or test to evaluate the degree of stability, consistency, and accuracy of a measuring instrument or test is used to determine the extent to which the measurement is generally constant when repeated measurements are performed. This test is designed to evaluate the degree to which a person's responses are consistent or steady over the course of many questions. The alpha reliability coefficient value is used as the basis for the reliability testing method. If the value of the alpha reliability coefficient is higher than 0.7, then the variable is considered reliable, according to the decision-making criterion.

**Table 7.**

*Variable Reliability Test*

| Reliability                    | Cronbach's Alpha |                 | Status   |
|--------------------------------|------------------|-----------------|----------|
|                                | Pleasant Website | Neutral Website |          |
| Ambient                        | 0.896            | 0.888           | Reliable |
| Spatial Layout & Functionality | 0.929            | 0.925           | Reliable |

|                           |       |       |          |
|---------------------------|-------|-------|----------|
| Signs, Symbols & Artifact | 0.726 | 0.840 | Reliable |
| Financial Security        | 0.888 | 0.889 | Reliable |
| Interactivity             | 0.900 | 0.852 | Reliable |

Source: Author (2021)

From Table 7, In this case, it can be observed that the value of Cronbach's alpha is higher than 0.7 for all variables. All of the variables utilized in the study are reliable, based on the conditions previously stated.

### 3.4.3. Normality Test

This test is used to assess whether or not the data are regularly distributed. If the test data are normally distributed, one of the prerequisites for doing parametric statistical analysis is satisfied. The test procedure is carried out by the *Kolmogorof* test, with the following conditions:

Hypothesis used:

$H_0$  : data has normal distribution

$H_1$ : the data has an abnormal distribution

If the value of sig. (*p-value*) > 0.05 then  $H_0$  is accepted, which means normality is met.

**Table 8.**

*Normality Test*

|                                | N  | Kolmogorov-Smirnov Z | Assump. Sig. (2-tailed) | Status     |
|--------------------------------|----|----------------------|-------------------------|------------|
| <i>Pleasant</i>                |    |                      |                         |            |
| Ambient                        | 85 | 1.572                | 0.014                   | Non normal |
| Spatial Layout & Functionality | 85 | 1.238                | 0.093                   | Normal     |
| Signs, Symbols & Artifacts     | 85 | 2.159                | 0.000                   | Non normal |
| Financial Security             | 85 | 1.513                | 0.021                   | Non normal |
| Interactivity                  | 85 | 1.441                | 0.031                   | Non normal |
| <i>Neutral</i>                 |    |                      |                         |            |
| Ambient                        | 85 | 0.831                | 0.495                   | Normal     |
| Spatial Layout & Functionality | 85 | 0.740                | 0.644                   | Normal     |
| Signs, Symbols & Artifacts     | 85 | 1.239                | 0.093                   | Normal     |

|                    | N  | Kolmogorov-<br>Smirnov Z | Assump. Sig.<br>(2-tailed) | Status |
|--------------------|----|--------------------------|----------------------------|--------|
| Financial Security | 85 | 1.267                    | 0.081                      | Normal |
| Interactivity      | 85 | 1.107                    | 0.173                      | Normal |

Source: Author (2021)

From the results of the normality test in Table 8, the value of the *Kolmogorof Smirnof* test with a significance value (p) for the Neutral Website variable has a sig. value.  $> 0.05$ , then  $H_0$  is accepted and it can be concluded that the data used has a normally distributed distribution. However, for the Pleasant Website only the Spatial Layout & Functionality variable is normally distributed. Based on these results, the Paired t-test was only carried out on the Spatial Layout & Functionality variable, because it had a normal data distribution on the Pleasant and Neutral Website. While the other variables were tested non-parametric using the Wilcoxon test.

### 3.5. Result

After obtaining respondent data, only the “Spatial Layout & Functionality” stimulus has data with a normal distribution; while other stimuli such as “Ambient; Signs, Symbols & Artifacts; Financial Security; and Interactivity” does not have a normal data distribution. The normality of the distribution is affected by the number of samples we collect; accordingly, it requires 2 different tests to determine whether the hypothesis is accepted or rejected. In normal data distribution, we use paired t-test and in non-normal data distribution we use Wilcoxon test. The paired t-test and the Wilcoxon test both resulted in the null hypothesis being rejected. In general, however, with small sample numbers, the assumptions of the e-servicescape stimuli t-test may not be fulfilled, as shown by the results of this study. In this situation, using a non-parametric test is generally the safest option. The t-test, on the other hand, has higher statistical power than the Wilcoxon test assuming the assumptions of the test are fulfilled.

**Table 9.***Manipulation Checks Result*

| Dependent Variable             | Pleasant |      |      | Neutral  |      |      | Paired t-test & Wilcoxon test |          |
|--------------------------------|----------|------|------|----------|------|------|-------------------------------|----------|
|                                | <i>M</i> | SD   | Mean | <i>M</i> | SD   | Mean | <i>t</i> / <i>Z</i>           | <i>p</i> |
| Ambient                        | 4.50     | 0.60 | 4.42 | 3.83     | 0.80 | 3.81 | 5.213 (Z)                     | 0.000    |
| Spatial Layout & Functionality | 4.40     | 0.69 | 4.23 | 4.00     | 0.78 | 3.91 | 3.220 (t)                     | 0.002    |
| Signs, Symbols & Artifacts     | 4.67     | 0.58 | 4.43 | 3.91     | 4.00 | 4.00 | 3.692 (Z)                     | 0.000    |
| Financial Security             | 4.57     | 0.51 | 4.45 | 4.29     | 0.62 | 4.26 | 2.127 (Z)                     | 0.033    |
| Interactivity                  | 4.40     | 0.70 | 4.29 | 4.00     | 0.71 | 4.06 | 2.455 (Z)                     | 0.014    |

Source: Author (2021)

These results confirm that:

1. Manipulation on the website affects the perception of a website by consumers.
2. Consumers think that a pleasant website is better than a neutral website.
3. It verifies the hypothesis that the pleasant website is better than the neutral website is acceptable; and manipulation works.
4. There is a slight difference in the five e-servicescape stimuli between the pleasant website and the neutral website.

Moreover, our main Hypothesis is “there is no difference perception between neutral approach website and pleasant approach website”. Based on Table 9, the results of the paired t-test and Wilcoxon test are as follows:

1. The result of Ambient variable testing shows the value of sig. of 0.000, because the value of sig.  $(0.000) \leq 5\%$ , then  $H_0$  is rejected. Therefore, it can be concluded that there is a significant difference between the Ambient of Pleasant Website and the Neutral Website with a higher median and mean (average) on Pleasant Website.
2. The result of Spatial Layout & Functionality variable testing shows the value of sig. of 0.002, because the value of sig.  $(0.002) \leq 5\%$ , then  $H_0$  is rejected. Therefore, it can be concluded that there is a significant difference between the Spatial Layout & Functionality of the Pleasant Website and the Neutral Website with a higher median and mean (average) on Pleasant Website.

3. The result of Signs, Symbols & Artifacts variable testing shows the value of sig. of 0.000, because the value of sig.  $(0.000) \leq 5\%$ , then  $H_0$  is rejected. Therefore, it can be concluded that there is a significant difference between the Signs, Symbols & Artifacts of the Pleasant Website and the Neutral Website with a higher median and mean (average) on Pleasant Website.
4. The result of Financial Interactivity variable testing shows the value of sig. of 0.033, because the value of sig.  $(0.033) \leq 5\%$ , then  $H_0$  is rejected. Therefore, it can be concluded that there is a significant difference between the Financial Interactivity of Pleasant Website and the Neutral Website with a higher median and mean (average) on Pleasant Website.
5. The result of the Interactivity variable testing shows the value of sig. of 0.014, because the value of sig.  $(0.014) \leq 5\%$ , then  $H_0$  is rejected. Therefore, it can be concluded that there is a significant difference between the Interactivity of Pleasant Website and the Neutral Website with a higher median and mean (average) on Actual Website.

### **3.6. Discussion**

This study is intended to provide opportunities for internal analyzes when treatments fail. Besides allowing us to examine the effectiveness of the manipulation, this study allows us to see correlations between variables and test the validity of the hypothesis, even if the manipulation is not effective, in future research. This refers to the opinion expressed by Angrist and Pischke (2009) that manipulation checks will take into account the actual effect of the proposed manipulation or treatment. Gaining validation in the manipulations we perform in the study is important. This needs to be done in order to gain the confidence of researchers in the sustainability of the research to be carried out. The manipulation in this experimental study contributes to the improvement of the quality of the study.

This study contributes to the initiation before doing real experiments in future research. In future research, we plan to use experimental research for a variety of reasons, including: 1) it provides us with the opportunity to test ideas in a specific environment before making judgments about certain things we assume; 2) this process is to support our main study of stimulation and consumer behavior and stimulation; 3) We believe that experimental research results will provide more specific results through a combination of different experimental situations; and can be applied to situations similar to the Practical steps of the organization; 4) Furthermore, we can identify the cause and effect of a

hypothesis; in-depth reviews can be through experiments in analyzing a relationship; 5) However, the most important thing is that experimental research is an ideal first step to build an argument and constructive research model by gathering more ideas in conducting research.

### **3.7. Summary**

In general, the first study that we have done focuses on our efforts to see consumer reactions when they are in two dissimilar situations; and when they feel the difference. We set the goal in this study simply to see, whether the manipulation works well. The standard of manipulation and procedures for the participants who carried out the experiment were in accordance with the rules and regulations that had been carried out in other previous empirical studies. The findings of our study prove that manipulation on the website has an effect on certain perceptions of consumers. Consumers respond to their tendency to choose a website with a pleasant appearance rather than a neutral appearance. These results prove that consumers will choose a website with a good and pleasant appearance; accordingly, it becomes the basis of consideration for further research to conduct studies related to this matter.

## CHAPTER 4

### STUDY II: FACTORIAL AND QUASI EXPERIMENT

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#### 4.1. Introduction

The problem to be solved in this stage is to prove whether the multi-factors of e-servicescape stimuli in two different groups are strongly related to pleasure and arousal. To solve the problem, we conduct 2 types of experiments: 1) factorial design experiment, and 2) quasi-experiment. The purpose of the study in this chapter is to find out information and strengthen the justification of the research argument. If we want to be sure that stimuli will act in the environment, we expect them to, then the experimental studies in this chapter will feel very appropriate. This chapter will describe how these stimuli work and influence other variables in the study.

An analysis of variance (ANOVA) in factorial design experiment is required if we want to find out how environmental stimuli impact other variables in a given situation. The ANOVA test allows for the comparison of more than two groups at the same time in order to see whether there is a relationship between them. For example, what is the influence of a single stimulus provided in two different settings on a single variable? By using Factorial ANOVA, researchers can work more efficiently in analyzing two factors in one action, rather than doing them separately. On the other hand, research using this approach allows researchers to investigate interactions between multiple factors or even complex associations. The next section will explain how it works.

The F statistic (also known as the F-ratio) obtained by the ANOVA formula allows for the examination of several sets of data in order to determine the degree of variability between and within groups of samples. If there is no statistically significant difference between the groups under consideration, this is referred to as the null hypothesis, the F-ratio for ANOVA will be close to one. This is the distribution of all possible values of the F statistic, which is represented by the F-distribution. Essentially, this is a collection of distribution functions having two unique integers, the numerator and denominator degrees of freedom, that are distinct from one another.

Next, a quasi-experiment where we aim to evaluate the intervention, but do not use randomization. According to Abraham and MacDonald (2011), quasi-experimental research is comparable to experimental research in that it involves the modification of an independent variable as part of the process. It varies from experimental research in that there is either no

control group, no random selection, no random assignment, and/or no active manipulation, or because there is no active manipulation. This sort of study is often carried out in situations when a control group cannot be established or where random selection cannot be carried out; Abraham and MacDonald (2011) often used in to specific psychological investigations. This approach aims to demonstrate causality between an intervention and an outcome. Additionally, by adopting quasi-experimental methods, results from one subject and context may be transferred to other subjects and situations, allowing for some population-level generalizations. Among the benefits of this strategy is the ability for the researcher to do whatever manipulations he or she wishes. In natural experiments, researchers must allow modifications to occur spontaneously and have no control over them (DeRue et al., 2012).

Although the absence of random assignment in the quasi-experimental design technique makes investigations more viable, it also presents several obstacles for the investigator in terms of internal validity. This randomization defect complicates the process of excluding confounding factors and creates additional challenges to internal validity (Robson et al., 2001). Morgan et al. (2000) assert that internal validity is critical for upholding the rule of randomization in portraying the total population. However, if internal validity can persuade researchers, then using a quasi-experiment may provide a response to the researchers' preconceptions about the impact of treatment on a group.

#### **4.2. Model Development**

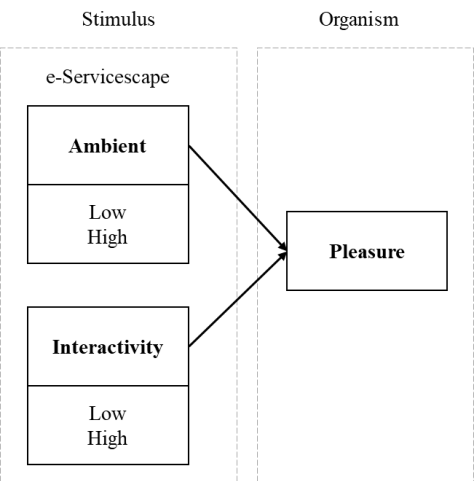
The proposed model presented in this study consists of two main variables, e-servicescape and emotions. The reasons for choosing these three variables have been explained in the previous chapter, but this is important to summarize the logic behind the choice. In addition, in this study we try to look at two specific factors of e-servicescape, Ambient and Interaction.

Although all factors in the e-servicescape are important in the study, but Ambient and Interactivity are assumed play an important role for consumers when they are in online environment. Many previous studies have reviewed ambient and spatial layout functionality as independent variables, but in our observation, no one has studied a 2x2 factorial research on ambient and interactivity. Moreover, Ethier et al. (2006), Lin (2007), Kim and Lennon (2008), and Jeon and Jeong (2009) stated that ambient conditions in online environment settings include high-quality pictures, vibrant colors, animation effects, a virtual tour, and music/sound. In addition, Tran et al. (2012) and Teng et al. (2018) adds the importance of

aesthetic value and graphics on the website as an innovation and entertainment that creates freshness for consumers who see. Moreover, Chen and Chang (2003), Fiore and Jin (2003), and Srinivasan et al. (2002) have all found that when consumers perceive higher levels of interactivity for a website, their online shopping experience is enhanced; and influencing consumers' responses and behavioral outcomes when shopping online (Fiore and Jin, 2003; Li et al., 2001).

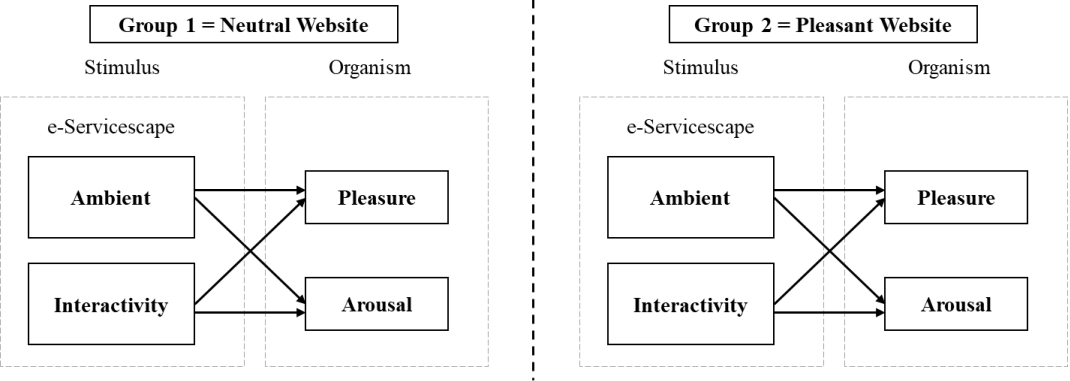
Transformation of observed environmental inputs into meaningful information that results in a shift in one's cognitive or emotional states (Loureiro and Ribeiro, 2011; Mehrabian and Russell, 1974a). Emotional states are the feelings (both good and negative) that people experience as they engage with external stimuli (Eroglu et al., 2001; Islam and Rahman, 2017).

**Figure 11.**  
*Proposed Model of a 2x2 Factorial Design Research*



Source: Author (2021)

**Figure 12.**  
*Proposed Model of Quasi-experiment Research*



Source: Author (2021)

In general, there are two proposed models that we propose to study on, namely a 2x2 factorial design and quasi-experimental research. Both models are purely survey experiments where environmental stimuli are tested for pleasure and arousal.

### **4.3. Hypothesis Development**

#### **4.3.1. Research Objective One: The Interrelationship between e-Servicescape and Emotions (Pleasure and Arousal)**

The internet allows merchants to not only offer their goods and services online, but also to personalize their e-servicescape to meet the specific needs of each individual consumer (Vrechopoulos, 2010). Traditionally, the word "physical environment" is used to describe the space and design of a shop, but it is now used to describe the layout and design of an online business's website in e-commerce settings (Abbott et al., 2000). A broad classification system for websites, including style and color, content, and social cues, was created by Karimov et al. (2011). Several studies have shown that including marketing aspects into the design of an online store's environment is a very successful strategy for obtaining a competitive edge (Baloglu and Pekcan, 2006; Caballero-Luque et al., 2010; El Gazzar and Mourad, 2012).

When a stimulus is received by the human brain, there is no question that a reaction is triggered (Mari and Poggesi, 2013; Mehrabian and Russell, 1974a). The reaction may either be perceived consciously or subconsciously, but in multisensory research, it is believed to be essential for the results of marketing and sales campaigns and campaigns. Consumer behavior is defined as a consequence of both cognition and emotion in a significant amount of research (Hultén, 2011; Krishna, 2012; Mehrabian and Russell, 1974a; Spence et al., 2014). Mehrabian and Russell (1974b, p. 55) stated that at each point in time, the three dimensions in our framework may be used to define a person's feeling (e.g., pleasure, arousal, and dominance). Pleasure is a feeling state that is related to liking, but it also has a correlation with arousal. Arousal may be thought of as a feeling condition that can fluctuate along a single dimension, ranging from sleep to frenzied enthusiasm, among other things.

According to Roy and Tai (2003) customers' affective responses to store stimuli. Cheng et al. (2009) stated that moods and emotional states are thought to be the result of consumers' reactions to store stimuli. Pleasure and arousal may be good indicators of the range of emotion shown in response to environmental stimuli. In general, happy and

negative emotions are divided into two orthogonal dimensions: the positive and the negative (Isen and Daubman, 1984). Emotions of excitement, movement, activity, and alertness (Beatty and Ferrell, 1998) are associated with sensations of movement, activity, and alertness, and they may arise from a pre-existing mood, emotional composition, or a response to external stimuli (such as a wish list or sales) (Chang et al., 2014).

According to Parboteeah et al. (2009), subjective pleasure and usefulness are the most important organic factors that respond to website stimulation in encouraging customers to make impulsive purchases. A complete model of online consumer behavior was created by Mazaheri et al. (2011), which incorporated factors related to emotions and cognitive processes. Specifically, Mazaheri et al. (2011) suggested that the perceptions of site atmospherics are linked with the emotions of consumers (pleasure, arousal, and domination). Furthermore, according to research conducted by Liu et al. (2013), website cues have a favorable impact on customers' internal reactions (normative assessment and immediate gratification).

Thus, to answer research objective one, we would like to test the following hypotheses:

**a) Study IIa: Factorial Experiment**

1.  $H_1$ : There is significant average difference between Low and High Ambient on Pleasure
2.  $H_2$ : There is significant average difference between Low and High Interactivity on Pleasure
3.  $H_3$ : There is significant average difference between Ambient\*Interactivity on Pleasure

**b) Study IIb: Quasi-Experiment**

1.  $H_1$ : Ambient has a significant effect on Pleasure
2.  $H_2$ : Interactivity has a significant effect on Pleasure
3.  $H_3$ : Ambient has a significant effect on Arousal
4.  $H_4$ : Interactivity has a significant effect on Arousal
- In Neutral Group (Group 1)
5.  $H_5$ : Ambient has a significant effect on Pleasure
6.  $H_6$ : Interactivity has a significant effect on Pleasure
7.  $H_7$ : Ambient has a significant effect on Arousal
8.  $H_8$ : Interactivity has a significant effect on Arousal

- Pleasant Group (Group 2)
- 9.  $H_9$  : Ambient has a significant effect on Pleasure
- 10.  $H_{10}$  : Interactivity has a significant effect on Pleasure
- 11.  $H_{11}$  : Ambient has a significant effect on Arousal
- 12.  $H_{12}$  : Interactivity has a significant effect on Arousal

#### **4.4. Study IIa: Factorial Experiment**

When a quantitative design includes two or more independent variables (factors), and when variables have two or more values (levels), and when all potential combinations of every level of each factor are examined, the design is believed to be factorial (El Saadawi et al., 2008). Or, to put it another way, experimental research in which two or more categorical variables are concurrently manipulated or observed in order to investigate their combined impact (interaction effect) and separate affects (main effects) on a different dependent variable. As a result, if there are two factors, each of which has two levels, there are four possible combinations, which is referred to as a 2x2 factorial design. This design is represented as a matrix, in which two rows represent one independent variable and two columns represent the second independent variable (Crump et al., 2018). Factorial design with two replications is sometimes referred to as two-by-two design or two-way factorial design.

For the purpose of assessing its impact or influence, the independent variable in an experiment is one that is explicitly controlled or seen to occur before the dependent, or outcome, variable (Crump et al., 2018). Independent variables may or may not be associated with the dependent variable in a causal manner. Path analysis, regression analysis, and structural equation modeling are all examples of statistical studies in which an independent variable is referred to as a causative variable, explanatory variable, or predictor variable.

The researcher does not have any influence over the independent variable in this design. To examine treatment type (e.g., new exercise method vs. old process) and age (e.g., 35 vs. > 35), a researcher might, for example, employ a factorial design. The main benefits of factorial designs are enabling the examination of interrelationships and are more effective than performing numerous experiments with a single variable. Fisher (1935) was the first to use this kind of design. Furthermore, he asserted that factorial designs were superior than studies that just looked at one component at a time. Then, using the Yates algorithm, Yates (1978) made a significant contribution to the study of designs. In this design, researchers are

interested in evaluating the effects of two or more independent variables, as well as testing for interactions between factors. This approach allows researchers to evaluate the combined impact of all factors in a single experiment rather of conducting separate trials for each variable separately. As an illustration, we provide an overview of factorial design as follows:

**Table 10.**

*Illustration of Factorial Design*

| 2x2<br>Design |                  | IV 1             |                  |
|---------------|------------------|------------------|------------------|
|               |                  | IV 1:<br>Level 1 | IV 1:<br>Level 2 |
| IV 2          | IV 2:<br>Level 1 | DV               | DV               |
|               | IV 2:<br>Level 2 | DV               | DV               |

| 2x2<br>Design |             | Time of Day |           |
|---------------|-------------|-------------|-----------|
|               |             | Morning     | Afternoon |
| Tea           | Some<br>Tea | DV          | DV        |
|               | No Tea      | DV          | DV        |

Source: Author (2021)

In the Table 10, we illustrate an abstract form of the design as well as a concrete version of the design, with the time of day and sugar serving as the two Independent Variables (IVs), each of which has two levels in the design. Using the first level of Time of Day (morning), when some persons drink tea and others do not, we may analyze test performance on the first day. As a result, we may choose whether or not to drink tea first thing in the morning. In addition, we alter tea on the second level of the Time-of-Day (afternoon). Individuals who take or do not consume tea in the afternoon are observed, and we collect information on test performance in both situations. We might argue the same thing, but from the second IV's perspective. For instance, when individuals consume tea, we test them in the morning and afternoon. Thus, the time of day is adjusted to benefit tea drinkers. Additionally, when individuals do not drink tea, we test them in the morning and afternoon. Thus, the time of day is adjusted to accommodate those who do not consume tea. Finally, a condition is a term that refers to each of the four squares that constitute a Dependent Variable (DV). Thus, we have two IVs, each with two levels, totaling four conditions.

#### **4.4.1. Advantage and Purpose**

There are many reasons why researchers may conduct factorial design studies, according to Kim et al. (2004), including: 1) The factorial design has been shown to be effective at testing the interaction of multiple factors; this is especially true when a variable

has more than one distinct or graded condition; 2) The factorial design is efficient and cost-effective when researchers wish to test multiple factors for a single variable in one study, rather than conducting multiple series of studies with different independent variables; and 3) Finally, by testing all factors, the factorial design performed by resampling.

Additionally, Lavrakas (2008) stated that experimental study using a factorial design serves many purposes. For example, it enables researchers to concurrently investigate the primary impacts of two or more independent variables. Second, a factorial design enables researchers to identify factors that interact with one another. This is consistent with Fisher (1992) and Montgomery (2017), who stated that the factorial design experiment enables researchers to determine which kinds of manipulations may result in changes in the effects they are studying. However, the view expressed above is conditional for many reasons, including the following: first, consumers exhibit complex and varied behavior; second, not only behavioral conditions, but also a person's states is difficult to anticipate due to the impact of several factors on him.

#### **4.4.2. Analysis of Variance (ANOVA)**

In statistics, the term "analysis of variance" refers to a set of statistical models and their related estimate methods (such as the "variation" within and between groups) that are used to investigate variations in means between and across groups. As a result of the rule of total variance, the observed variance of a given variable is partitioned into components that may be attributed to various sources of variation. In the most basic form, ANOVA offers a statistical test to determine if two or more population means are equal, and as a result, it extends the scope of the t-test beyond two means.

ANOVA is a statistical technique that may be used to investigate the effects of many variables. It is known as a factorial experiment when the experiment involves observations at all possible combinations of levels of each component. Multi-factor tests are more efficient than a series of single-factor trials, and the efficiency of multi-factor studies rises as the number of components grows (Montgomery et al., 2003). A large number of factorial designs are employed as a result.

The use of ANOVA to investigate the impact of many variables is not without its difficulties. Specifically, in a 2-way ANOVA with two variables, the ANOVA model contains terms for the main effects (x and y) and terms for interactions (x and y) (xy, yx). Hypothesis tests are required for all words. The proliferation of interaction terms raises the

likelihood that any hypothesis test may yield a false positive as a result of random chance. The good news is that high order interactions are very uncommon, according to experience (van Belle, 2011). The capacity to identify interactions is a significant benefit of using multiple factor ANOVA in research studies. Testing just one element at a time obscures interactions, but leads in experimental findings that seem to be inconsistent (Montgomery et al., 2003).

Factorial ANOVA is used to compare groups that are likely to interact with one another in the future. It turns out that we are comparing four groups, not two (majors and experience), as you first thought. For example, there are two factors (which we refer to as independent variables) with two degrees of therapy for each of the factors. There will be four groups formed as a result of the combination of these variables.

Factorial ANOVA technique is used for testing several levels of independent variables and evaluating multiple levels of independent variables. The factorial design, on the other hand, has the benefit of being able to deal with many independent variables at the same time. The test looks for differences among variables (known as main effects), but it looks for whether those factors interact with one another to create a difference (known as interaction effects).

### **Main effects**

The capacity to discrete between primary effects and possible interactions in the groups is the true distinguishing characteristic of factorial design. Like one-way ANOVA, a major effect exists when the groups within a factor show statistically significant differences from the grand mean. The effects of one variable change depending on the levels of another variable is referred to as an interaction. The presence of such interactions can only be discovered when the variables are evaluated together (Lavrakas, 2008).

Main effects are defined as the mean differences for a single independent variable in formal terms. Each IV has a single primary impact that is always present. Because there are two IVs in a 2x2 configuration, there are two primary impacts. Our example has one major impact for distraction and one main effect for reward, with the latter being the more significant of the two. We will often inquire as to whether the primary impact of a certain IV is statistically significant. Specifically, this relates to a statistical question: Were discrepancies between the means for that IV likely or unlikely to have been produced by chance? (Sampling error).

- With a 2x2x2 design, three major effects would be measured, one for each IV.
- With a 3x3x3 design, you would still have three IVs, resulting in three primary impacts.

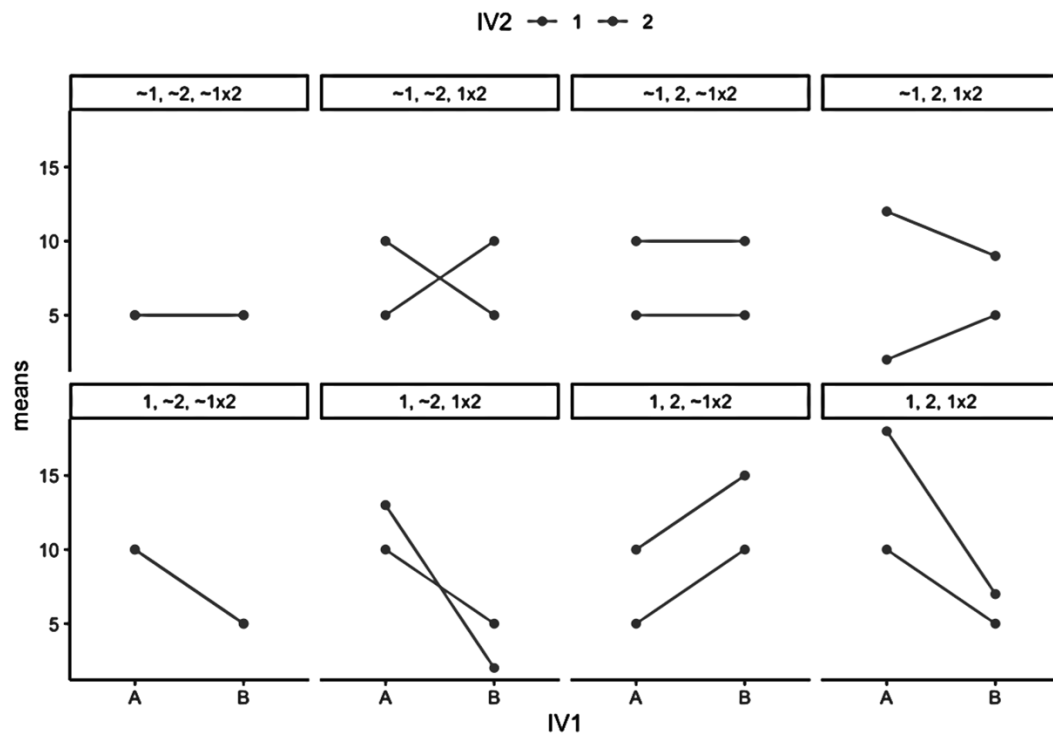
## **The Graph**

If a researcher uses a factorial design, he or she will see graphs that depict the outcomes of designs with many variables and that explain the pattern of main effects and interactions. In a 2x2 factorial design, there will always be the potential of two main effects and one interaction, as well as the chance of one interaction. There are a variety of possible outcomes for this situation, including the following:

1. No Independent Variable 1 (IV 1) main effect; no Independent Variable 2 (IV 2) main effect; no interaction.
2. Independent Variable 1 (IV 1) main effect, no Independent Variable 2 (IV 2) main effect, no interaction
3. Independent Variable 1 (IV 1) main effect, no Independent Variable 2 (IV 2) main effect, interaction
4. Independent Variable 1 (IV 1) main effect, Independent Variable 2 (IV 2) main effect, no interaction
5. Independent Variable 1 (IV 1) main effect, Independent Variable 2 (IV 2) main effect, interaction
6. No Independent Variable 1 (IV 1) main effect, Independent Variable 2 (IV 2) main effect, no interaction
7. No Independent Variable 1 (IV 1) main effect, Independent Variable 2 (IV 2) main effect, interaction
8. No Independent Variable 1 (IV 1) main effect, no Independent Variable 2 (IV 2) main effect, interaction.

**Figure 13.**

*The Graph Illustration in Factorial Design*



Source: Crump et al. (2018)

Furthermore, if we perform a 2x2 on our data, any of the eight basic patterns listed above may appear. A major effect or interaction may be estimated from the graph, and we can tell if there is or is not one. There is a potential of interaction wherever the lines cross, or would cross if they were to continue on their current path. When the lines are parallel, there is no way for them to interact with one another. It is possible to have a major impact for Independent Variable 1 (IV 1) when both of the points on the A side are higher or lower than both of the points on the B side (A vs B). The presence of a major impact for Independent Variable 2 (IV 2) is shown if the green line is either above or below the red line (1 vs. 2). During this procedure, we should see what all of the options look like when we begin to add additional layers or more Independent Variables to the equation.

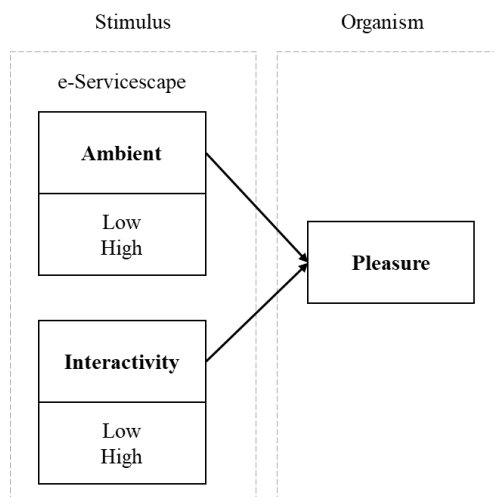
- 1 = there was a main effect for Independent Variable 1 (IV 1)
- ~1 = there was not a main effect for Independent Variable 1 (IV 1)
- 2 = there was a main effect for Independent Variable 2 (IV 2)
- ~2 = there was not a main effect of Independent Variable 2 (IV 2)
- 1x2 = there was an interaction
- ~1x2 = there was not an interaction

#### 4.5. Research Design: Factorial Experiment

The context of this study is about an online experiment that compares the effects of website stimulation on consumer responses with two levels of stimulation. We have two objectives in this study: *First*, we try to examine the effects of low-level (ambient and interactivity) and high-level (ambient and interactivity) on participants' pleasure. *Second*, we attempt to examine how low-level and high-level stimuli interact and have an effect on the respondent's pleasure. In doing so, we created a website (<https://bit.ly/surveykobeu1>) by displaying website images in two stimulus effects levels which are low-level and high-level stimuli.

**Figure 14.**

*a 2x2 Factorial Design Proposed Model*



Source: Author (2021)

Among the five factors of e-servicescape are ambient; spatial layout and functionality; signs, symbols and artifacts; financial security; and interactivity; we chose two to be used as experimental materials in this 2x2 factorial study, namely ambient and interactivity. Although all factors in the e-servicescape are important in the study, we choose these two factors (ambient and interactivity) because they assumed play an important role for consumers when they visit a website. Ambient is more about presenting a website display, while Interactivity is an interaction between consumer and businesses when they “seek information on a website” (Jeon and Jeong, 2009, p. 6). Many previous studies have reviewed ambient and spatial layout functionality as independent variables, but in our observation, no one has studied a 2x2 factorial research on ambient and interactivity.

As we mentioned above, the studies conducted in this section focus on the relationship between e-Servicescape and Emotions (Pleasure and Arousal). The purpose of this research is to prove that the two variables are interrelated and influence under certain conditions. As Lusch and Vargo (2014: 96) stated that the service environment [servicescape or e-servicescape] is an important thing that enables the firm to "channel consumer realities in certain ways". This opinion is in line with Mutum (2017) who revealed that the servicescape [e-servicescape] affects both the customer's emotional and behavioral responses in service settings. In general, the research model built in this study seeks to describe all the customer interactions that occur during a service encounter and to understand how environmental elements impact on the customer's emotions.

#### **4.5.1. Data Collection**

As with Study I, data collection for Study II took place on the Prolific website ([www.prolific.co](http://www.prolific.co)). To utilize the Google form as a tool, we must first enter the URL of the Google form into our Prolific account before distributing it to potential participants located around the world. Additionally, data retrieval is accessible online for one day (24 hours) and is neither time- or location-limited. If the information entered into the Prolific account matches the anticipated sample size, Prolific will suspend data collection for the balance of the time period.

We define our sample as Spotify non-users and explicitly indicate that this survey is for them. We examine parameters such as participants' active use of English while developing the Prolific service and have done a minimum of ten Prolific surveys without being rejected. The participants in Study I, II, and III are characterized by the fact that they have never participated in any of our previous studies. As a consequence, we ensure that each study includes a varied range of individuals.

Due to the difficulty in quantifying the whole non-Spotify user population and the lack of precision in publicly available data, non-probability sampling is considered acceptable for this study (Reynolds et al., 2003; Zikmund et al., 2011). For a variety of reasons, convenience sampling must be used in certain cases. To begin, convenience sampling is considered to be an important component of this study because it allows for the testing of theory on the interrelationship between three important marketing constructs. It is considered to be a simple technique for limited budgets and time periods, especially when the population data is unavailable (Zikmund and Babin, 2010).

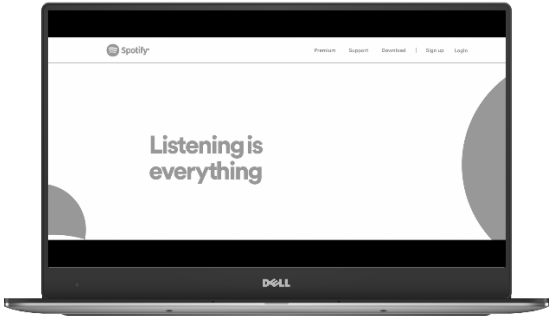
4.5.1.1. Sample Size

The use of the sample in the experimental survey consists of various versions of opinion. Wu et al. (2008) in the study of atmospheric factors of online store using a total sample of 150 participants in 5 groups. Furthermore, Etcheverry et al. (2012) used a number of 55 participants in an experiment on the performance of a web page. However, Baraković and Skorin-Kapov (2015) used a sample of 77 participants in the research on quality of experience for mobile web browsing. Considering all above, in this experimental study, we are using 150 participants in testing a 2x2 factorial design of experimental research. The selection of this number is based on the literature review; empirical research that has been done; and to increase the confidence of researchers.

4.5.1.2. Procedure

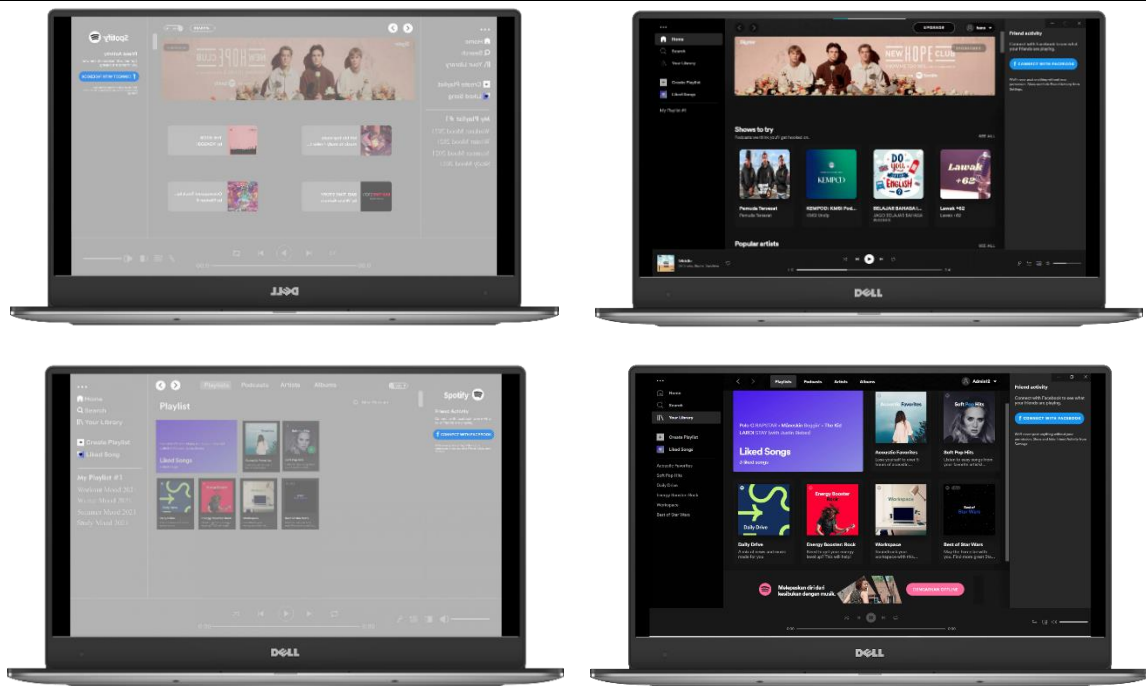
We used neutral images as low-level stimuli and pleasant images as high-level stimuli. Low-level stimuli are images of a website that we have manipulated. Under this condition, the respondent will feel they are in actual website with slight differences. We made 10 images in total connected by hyperlinks and sections representing e-servicescape variables. The sections are made accessible using the main menu located at the bottom of each page. After, looking and examining manipulation website, participants will answer questionnaire about their emotions (pleasure) regarding online service environment. We used 5-point likert scale in independent variables and 7-point semantic scale in dependent variables. Website items that will be manipulated such as color, font size, menu/logo position, numbers of menu, and detailed information.

**Table 11.**  
*Low-level and High-level Stimulation*

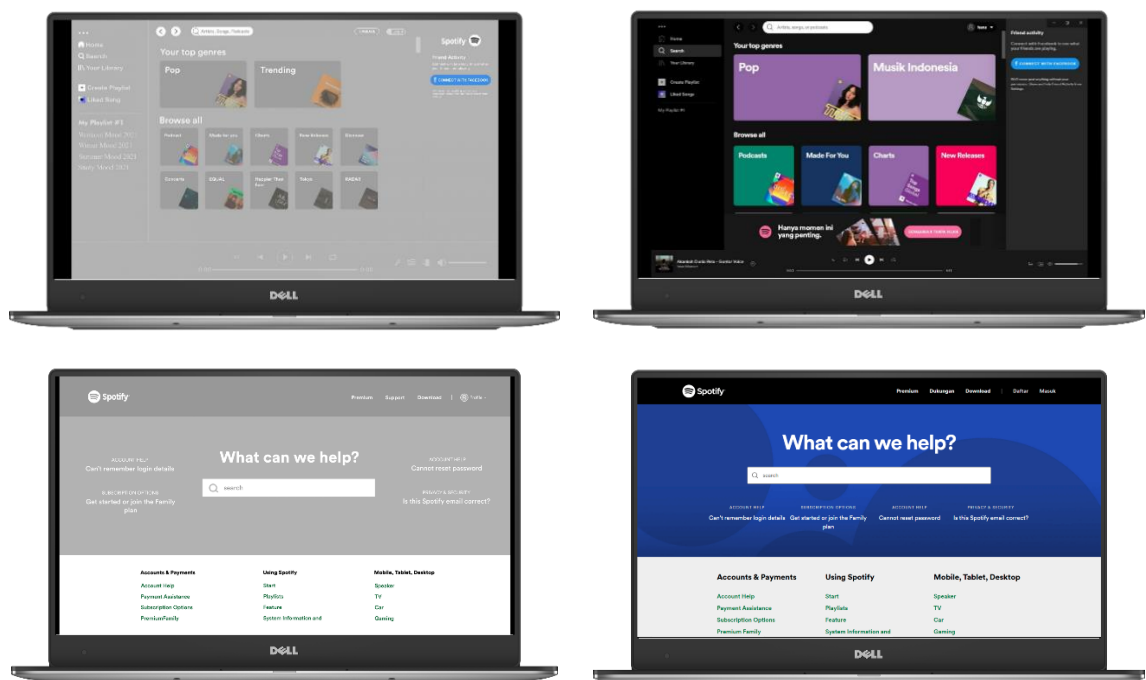
| Low-level                                                                           | High-level                                                                           |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Ambient                                                                             |                                                                                      |
|  |  |

## Low-level

## High-level



## Interactivity



Source: Author (2021)

**Table 12.***Independent Variables Details Manipulation*

| Independent variable | Low-level                                                                                                                                                     | High-level                                                                                                                                         |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient              | <ul style="list-style-type: none"> <li>• Non-PARC (Proximity, Alignment, Repetitive, Contrast)</li> <li>• Minimum background and text color design</li> </ul> | <ul style="list-style-type: none"> <li>• PARC</li> <li>• Colorful background and text color design</li> </ul>                                      |
| Interactivity        | <ul style="list-style-type: none"> <li>• Small icons</li> <li>• Minimum background and text color design</li> <li>• Non-aligned menu</li> </ul>               | <ul style="list-style-type: none"> <li>• Proportional icons</li> <li>• Various background and text color design</li> <li>• Aligned menu</li> </ul> |

Source: Author (2021)

**4.5.1.3. Participants**

Participants in this trial included a total of 150 people who were not already subscribers to Spotify. A minor reward of around £ 5 (£ 780) per hour will be offered in order to encourage participation. Participants are asked to participate in the study by clicking on links to the research site that appear in Prolific notifications and completing the registration form. We design our experiment into several steps:

- 1) Step one.** Once participants volunteer their self in the experiment, they are directed to fill a short set of demographics background using Google Form.
- 2) Step two.** After participants finishing demographic background, they are asked to click the experimental link which is directed to Spotify manipulation website with low-level stimulation. In this step, participants are told to spend as much time as they require to have felt about website environment.
- 3) Step three.** After examining the low-level appearance, participants are instructed to click on it to proceed to step three. In this step, the experiment asks the participants to respond to our questionnaire, which involves filling out the observable variables (ambient, interactivity, and pleasure)
- 4) Step four.** After finish filling the questionnaire, participants are asked to click the next step which direct to the actual website with high-level stimulation. In this step,

participants are told to spend as much time as they require to have feeling about website environment.

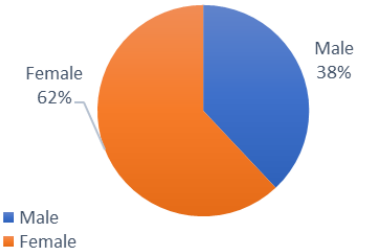
**5) Step five.** After examining the high-level appearance of the website, participants are instructed to click on it to proceed to the last step. In this step, the experiment asks the participants to respond to our questionnaire, which involves filling out the observable variables (ambient, interactivity, and pleasure).

#### 4.5.2. Demographic Information of Participants

**Table 13.**

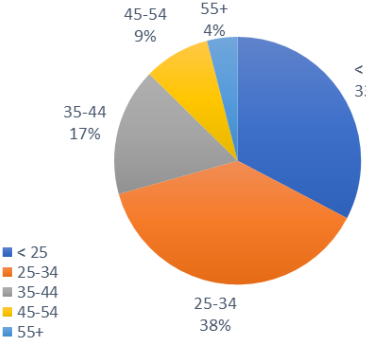
*Demographic Information of Participants*

| Gender | <i>n</i> | %  |
|--------|----------|----|
| Male   | 57       | 38 |
| Female | 93       | 62 |



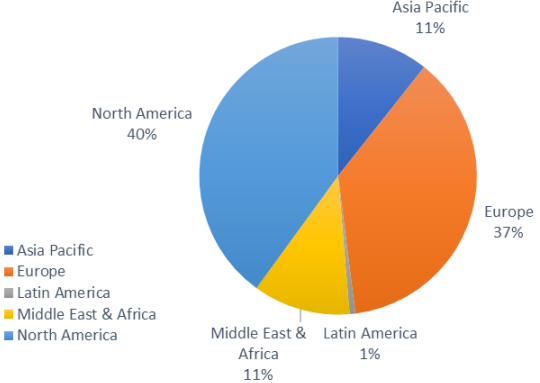
Male 38%  
Female 62%

| Age   | <i>n</i> | %  |
|-------|----------|----|
| < 25  | 49       | 33 |
| 25-34 | 57       | 38 |
| 35-44 | 25       | 17 |
| 45-54 | 13       | 9  |
| +55   | 6        | 4  |



< 25 33%  
25-34 38%  
35-44 17%  
45-54 9%  
55+ 4%

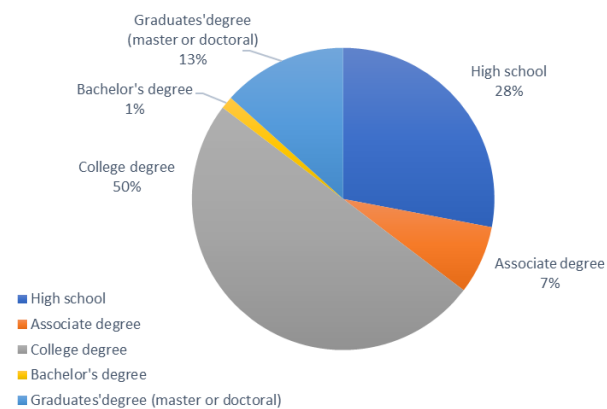
| Area of Residence    | <i>n</i> | %  |
|----------------------|----------|----|
| Asia Pacific         | 16       | 11 |
| Europe               | 56       | 37 |
| Latin America        | 1        | 1  |
| North America        | 17       | 11 |
| Middle East & Africa | 60       | 40 |



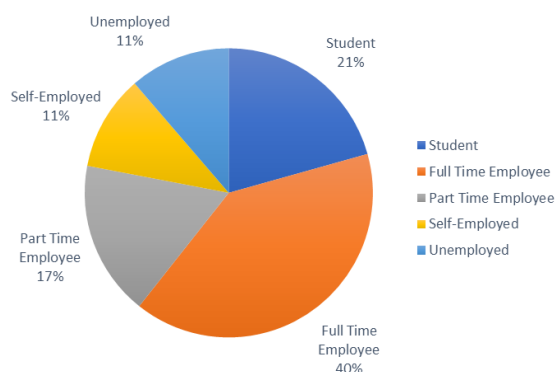
North America 40%  
Europe 37%  
Middle East & Africa 11%  
Asia Pacific 11%  
Latin America 1%

| Educational Background | <i>n</i> | %  |
|------------------------|----------|----|
| High school            | 42       | 28 |
| Associate degree       | 11       | 7  |

|                                        |    |    |
|----------------------------------------|----|----|
| College degree                         | 75 | 50 |
| Bachelor's degree                      | 2  | 1  |
| Graduates' degree (master or doctoral) | 20 | 13 |



| Employment Status  | n  | %  |
|--------------------|----|----|
| Student            | 31 | 21 |
| Full Time Employee | 60 | 40 |
| Part Time Employee | 26 | 17 |
| Self-Employed      | 16 | 11 |
| Unemployed         | 17 | 11 |



Source: Author (2021)

Based on the participants' data, it shows that the gender that has the highest score is Female as many as 93 people (62%) and the lowest score is Male gender as many as 57 people (38%). The participants' data based on age from highest to lowest order are as follows: age 25-34 as many as 57 people (38%), age < 25 as many as 49 people (33%), age 35-44 as many as 25 people (17%), age 45-55 as many as 13 people (9%) and age +55 as many as 6 people (4%).

The participants' data based on area of residence from highest to lowest order are as follows: Middle East & Africa as many as 60 people (40%), Europe as many as 56 people (37%), North America as many as 17 people (11%), Asia Pacific as many as 16 people (11%), and Latin America as many as 1 person (1%). Respondent's data based on educational background shows that there are 42 people (28%), Associate degree as many as 11 people (7%), College degree as many as 75 people (50%), Bachelor's degree as many as 2 people (1%), and Graduates' degree (master or doctoral) as many as 20 people (13%). From the data above, it can be seen that the educational background is dominated by college degree respondents.

The participants' data based on employment status shows that there are 31 people (21%) students, 60 people (40%) full time employees, 26 people (17%) part time employees,

16 (11%) people self-employed, and unemployed as many as 17 people (11%). From the data above, it can be seen that the employment status is dominated by full time employee participants.

### 4.5.3. Test

#### 4.5.3.1. Variable Frequency Distribution

Descriptive analysis is intended to find out the general description of the results of filling out research questionnaires. To find out the description for each variable can be seen in the following table:

**Table 14.**

*Descriptive Analysis*

| Ambient | Interactivity | Mean  | Std. Deviation |
|---------|---------------|-------|----------------|
| Low     | Low           | 5.155 | 1.028          |
| Low     | High          | 5.262 | 0.954          |
| High    | Low           | 5.339 | 0.844          |
| High    | High          | 6.063 | 0.786          |

Source: Author (2021)

Based on the results of descriptive statistics, it is found that the interaction between High-level Ambient and High-level Interactivity has the highest average pleasure. While the other combinations have almost the same average pleasure. Thus, this is an overview of the data obtained in this study. To find out the results of the study, a hypothesis test will be carried out using the Factorial ANOVA test with an error rate of 5% or a confidence level of 95%. However, before using parametric statistics, the data normality and homogeneity requirements were first tested.

#### 4.5.3.2. Normality Test

This test is used to assess whether or not the data are regularly distributed. If the test data are normally distributed, one of the prerequisites for doing parametric statistical analysis is satisfied. The test procedure is carried out by the *Kolmogorof* test, with the following conditions:

Hypothesis used:

- $H_0$  : data has normal distribution

- $H_1$ : the data has an abnormal distribution

If the value of sig. (*p-value*) > 0.05 then  $H_0$  is accepted, which means normality is met.

**Table 15.**

*Normality Test Result*

|                          |                | Pleasure |
|--------------------------|----------------|----------|
| N                        |                | 150      |
| Normal Parameters (a, b) | Mean           | 5.4857   |
|                          | Std. Deviation | .97911   |
| Most Extreme Differences | Absolute       | .077     |
|                          | Positive       | .061     |
|                          | Negative       | -.077    |
| Kolmogorov-Smirnov Z     |                | .948     |
| Asymp. Sig. (2-tailed)   |                | .329     |

Source: Author (2021)

Note: a. Test distribution is Normal; a. Calculated from data.

From the results of the normality test in Table 15 shows the value of the Kolmogorof Smirnof test with a significance value (*p*) of 0.329. Therefore, the value of  $p > 0.05$ , then  $H_0$  is accepted and it can be concluded that the data on Pleasure has a normal distribution.

#### 4.5.3.3. Homogeneity Test

Using the homogeneity of variance test (Levene's test) to assess whether or not the data used for each treatment had the same variance, the data acquired for each treatment was compared to the data used for the other treatments prior to conducting the ANOVA test. The results of the homogeneity test can be seen in table below:

**Table 16.**

*Homogeneity Test Result*

| F    | df1 | df2 | Sig. |
|------|-----|-----|------|
| .656 | 3   | 146 | .580 |

Source: Author (2021)

The test result shows the value of the Levene's test on Pleasure has *p-value* of 0.580. Because the *p-value* is greater than alpha 0.05 ( $p\text{-value} > 0.05$ ), then  $H_0$  is accepted and it

can be concluded that the data used has a homogeneous variance. Consequently, testing using ANOVA can be used on Pleasure.

#### 4.5.4. Result

This test is to find out whether there is a significant difference between Ambient and Interactivity. In addition, to test whether there is a significant difference between the interactions, an analysis is carried out using ANOVA. The results of the ANOVA test for the interaction between Ambient and Interactivity on Pleasure can be seen in the following table:

**Table 17.**

*ANOVA Factorial*

| Source                     | Type III Sum of Squares | df  | Mean Square | F      | Sig. |
|----------------------------|-------------------------|-----|-------------|--------|------|
| Ambient                    | 8.726                   | 1   | 8.726       | 10.550 | .001 |
| Interactivity              | 6.220                   | 1   | 6.220       | 7.520  | .007 |
| Ambient *<br>Interactivity | 3.437                   | 1   | 3.437       | 4.156  | .043 |
| Error                      | 120.763                 | 146 | .827        |        |      |
| Corrected Total            | 142.839                 | 149 |             |        |      |

Source: Author (2021)

Based on Table 17 the results of the Factorial ANOVA as following:

**1. H<sub>1</sub>: There is significant average difference between Low and High Ambient on Pleasure.**

Ambient has a sig. F of 0.001. Because Ambient has a sig. value < 0.05, then H<sub>0</sub> is rejected, which means that there is a significant average difference between Low and High Ambient on Pleasure with an error rate of 5%.

**2. H<sub>2</sub>: There is significant average difference between Low and High Interactivity on Pleasure.**

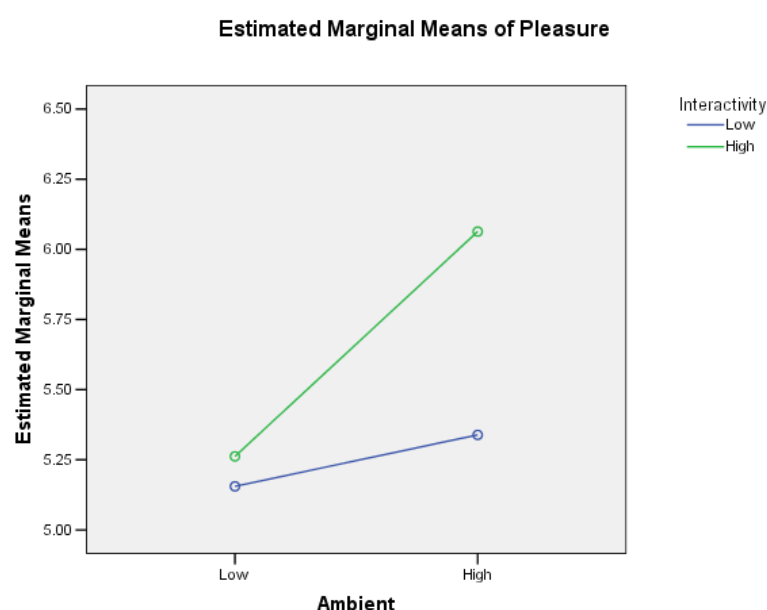
Interactivity has a sig. F of 0.007. Because Interactivity has a sig. value < 0.05, then H<sub>0</sub> is rejected, which means that there is a significant average difference between Low and High Interactivity on Pleasure with an error rate of 5%.

### 3. H<sub>3</sub>: There is significant average difference between Ambient\*Interactivity on Pleasure.

The interaction between Ambient\*Interactivity has a sig. F of 0.043. Because Ambient\*Interactivity has a sig. value < 0.05, then H<sub>0</sub> is rejected, which means that there is a significant average difference between Ambient\*Interactivity on Pleasure with an error rate of 5%.

**Figure 15.**

*Graph of Interaction Ambient and Interactivity*



Source: Author (2021)

To find out the difference between Ambient, Interactivity and their interactions, further tests were carried out using *Tukey's test*. The use of the *Tukey's test* will see if there is a difference in the average value between the Ambient, Interactivity and interaction groups if they have Sig. < 0.05 then there is a significant difference. With the test results in the following table:

**Table 18.**

*Tukey's Test Result*

| Comparison |       | Mean Different | Sig.  | Status         |
|------------|-------|----------------|-------|----------------|
| AL*IL      | AL*IH | -0.107         | 0.619 | No Significant |
| AL*IL      | AH*IL | -0.183         | 0.393 | No Significant |
| AL*IL      | AH*IH | -0.908         | 0.000 | Significant    |
| AL*IH      | AH*IL | -0.077         | 0.744 | No Significant |
| AL*IH      | AH*IH | -0.801         | 0.000 | Significant    |

|       |       |        |       |             |
|-------|-------|--------|-------|-------------|
| AH*IL | AH*IH | -0.725 | 0.000 | Significant |
|-------|-------|--------|-------|-------------|

---

Source: Author (2021)

Based on the Table 18, we accepted our hypothesis ( $H_1$ ) which stated “participants exposed to an environment with High-level Ambient and High-level of Interactivity have higher level of Pleasure”. It means that the combination of High-level Ambient and High-level Interactivity has the highest pleasure value and has a significant difference in Pleasure with other combinations because it has a sig. value  $< 0.05$ . Meanwhile, the comparison of the other combinations of Ambient and Interactivity has no significant difference.

#### 4.5.5. Discussion

Our hypothesis “participants exposed to an environment with High-level Ambient and High-level of Interactivity have higher level of Pleasure” has been proven. It proves that an environment that has a good atmosphere can have an influence on consumer pleasure. After we get the results through data processing using Factorial ANOVA, then we try to reflect on the theories related to it. By processing data using Factorial ANOVA, we hope to be able to analyze in two approaches, exploratory and confirmatory. As stated by Tukey (1977) that ANOVA empowers researchers with great flexibility to explore the potentially interesting relationships manifested by the data. On the other hand, we do not deny the opinion of Rutherford (2013) who stated that this analysis is used as confirmatory data analysis. Because in this study, we have a hypothesis that must be proven, consequently, we use confirmatory data analysis for confirming (or rejecting) hypothesis derived from theory. Eventually, it directly examines the theory-driven hypothesis and provides relatively more reliable answers to the questions of interest, facilitating theory revision and development.

In theory, studies using processing using Factorial ANOVA contribute to support and strengthening the justification used by researchers in managing data sets of more than 1 group. This is intended to obtain information about the relationship between the independent variable and the dependent variable. Factorial ANOVA testing in this study is interpreted as an initial step in analyzing factors that affect a given data set. The researcher utilizes the ANOVA test results in an f-test to generate additional data that aligns with the proposed regression models.

#### **4.6. Study IIb: Quasi-Experiment**

The term "quasi-experiment" refers to an empirical interventional study that is used to investigate the causal impact of an intervention on a target population without the use of randomized assignment. However, despite the fact that quasi-experimental research is similar in many aspects to conventional experimental design or randomized controlled trial, it does not have the element of random assignment to treatment or control groups. Instead, quasi-experimental designs allow the researcher to preserve some control over the assignment to the treatment condition by applying a criterion other than random assignment to determine who gets assigned to which treatment condition (Dinardo, 2008).

According to Harris et al. (2006), a quasi-experiment is non-randomized research that is used to assess the effectiveness of a particular treatment. It is unlikely that volunteers in a quasi-experiment will be selected at random. Instead, they will be chosen based on their preferences or the preferences of the researcher, whichever is greater. It is possible that a control group will be employed.

Because the treatment and control groups may not be similar at the start of the study, internal validity of quasi-experiments is a source of worry for researchers. In other words, it may not be feasible to establish a compelling causal connection between the treatment condition and the observed results in all circumstances. This is especially true if there are confounding factors that cannot be controlled or accounted for, as in the case of (Rossi et al., 2004).

Participants in a study who are randomly allocated have the same probability of being assigned to either the intervention group or the comparison group, thanks to random assignment. It follows that any observed and unobserved variations between groups would be attributable to chance rather than a systematic component associated with the therapy (e.g., illness severity). It is not guaranteed that groups will be equal at the start of the study simply because of randomization. Any change in features that occurs after the intervention is almost certainly due to the intervention.

What is the discrete between an experimental study and a quasi-experimental study? Here we present these differences in a table:

**Table 19.***The Difference between an Experimental Study and a Quasi-experimental*

|                         | Experimental Study<br>(Randomized Controlled Trial)                                           | Quasi-Experimental Study                                                                                                                                                                                                                                           |
|-------------------------|-----------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Objective               | Determine the impact of a certain intervention or therapy/treatment.                          | Identify and assess the impact of a particular intervention or therapy/treatment.                                                                                                                                                                                  |
| Assignment to treatment | Subjects are assigned to control and treatment groups by chance, according to the researcher. | Subjects are assigned to groups using a non-random technique other than the one described above.                                                                                                                                                                   |
| Control over treatment  | In most cases, the therapy/treatment is created by the researcher.                            | The researcher often does not have control over the therapy/treatment, but instead examines pre-existing groups that have been exposed to a variety of therapy/treatment options after they have been established.                                                 |
| Use of control groups   | It is necessary to utilize both control and treatment groups.                                 | There is no need for control groups (although they are commonly used).                                                                                                                                                                                             |
| Level of evidence       | In the hierarchy of evidence, a randomized trial is the greatest level of evidence.           | In the hierarchy of evidence, a quasi-experiment is one step below experimental research.                                                                                                                                                                          |
| Advantages              | Reduces the likelihood of bias and confounding.                                               | <ul style="list-style-type: none"> <li>• This method may be utilized in circumstances when conducting an experiment would be unethical or impractical.</li> <li>• It is possible to conduct experiments with lower sample sizes than randomized trials.</li> </ul> |

|             | Experimental Study<br>(Randomized Controlled Trial)                                                                                                                                                                        | Quasi-Experimental Study                                                                                                                                                           |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Limitations | <ul style="list-style-type: none"> <li>• High cost (as it generally requires a large sample size)</li> <li>• Ethical limitations</li> <li>• Generalizability issues</li> <li>• Sometimes practically infeasible</li> </ul> | This research is ranked lower in the hierarchy of evidence because it lacks the power of randomization, which makes it more vulnerable to bias and confounding than other studies. |

Source: Harris et al. (2006) and Manson et al. (2016)

According to Thomas (2020) there are several types of quasi-experimental designs, such as nonequivalent groups design, regression discontinuity, and natural experiments.

#### 1. Non-equivalent groups design

In a non-equivalent group design, the researcher selects existing groups that seem to be comparable but in which only one group receives therapy. In a genuine random assignment experiment, the control and treatment groups are deemed comparable in all respects except for the treatment. However, in a quasi-experiment with non-random groups, they may vary in other ways—they are not equal groups. When researchers use this kind of design, they attempt to account for confounding factors by including them into their study or by selecting groups that are as comparable as feasible.

#### 2. Regression discontinuity

Numerous prospective therapies that researchers intend to investigate are constructed around an essentially arbitrary cutoff, with those who meet the cutoff receiving therapy and those who do not get it being excluded. Near this point, the distinctions between the two groups are often negligible as to be almost nonexistent. As a result, researchers may utilize people who fall just below the threshold as a control group and those who fall just over the threshold as a treatment group.

#### 3. Natural experiments

In both laboratory and field investigations, researchers often have complete control over the grouping of individuals. In a natural experiment, a random or random-like assignment of individuals to the treatment group is caused by an external occurrence or

scenario ("nature"). While some natural experiments use random assignment, they are not regarded legitimate experiments due to their observational character. While the researchers have no control over the independent variable, they may use this incident to analyze the treatment's influence after the fact.

A quasi-experimental study is a non-randomized study that is performed to assess the effectiveness of a certain treatment or intervention. The choice of who receives the intervention and who does not is not randomized in a quasi-experimental study, unlike a true experiment; instead, the intervention can be assigned to participants based on their preferences or the preferences of the researcher, or by using any method other than randomness.

Having a control group is not necessary, but having one offers a greater degree of evidence about the connection between the intervention and the result if one is present. In order to establish a causal connection between an intervention/treatment and a result, both experimental and quasi-experimental research are conducted. Their designs, on the other hand, are distinct. In an experiment (also known as a randomized controlled trial), we gather volunteers and split them at random into two groups: the control group and the experimental group:

- A treatment group (where participants receive the intervention)
- And a control group (used for comparison)

The use of randomization guarantees that each person has the same probability of getting the intervention as the other participants. Due to the fact that it equalizes the two groups, it is possible to ascribe any observed differences in result to the intervention.

#### **4.6.1. Multigroup Analysis (MGA)**

Cheah et al. (2020) examined that one of the fundamental assumptions in the use of Multigroup Analysis (MGA) is that there is heterogeneity across groups; thus, it is helpful to evaluate differences between groups (Cheah et al., 2020). In accordance with Sarstedt and Ringle (2010), many studies have neglected to account for heterogeneity, which has the potential to undermine the validity of partial least squares path modeling (PLSPM) findings, resulting in the drawing of incorrect conclusions. With this in mind, including measures of generalized asymmetry (MGA) into route modeling significantly improves the researcher's

capacity to detect important variations in connections across group-specific outcomes (Picón-Berjoyo et al., 2016; Schlägel and Sarstedt, 2016).

There are two advantages to employing the MGA strategy rather than conducting each group independently (Arbuckle and Wothke, 1999). To begin, it acts as a check on the significance of any differences observed across groups. Second, if no difference between groups can be established or if group differences are restricted to a few model parameters, multi group analysis provides more efficient parameter estimations than either of the two single-group models utilized in the experiment. The variances and covariances of the exogenous variables would still be permitted to vary across the groups under this model, but the regression weights would not be allowed to change between the groups (Arbuckle and Wothke, 1999). Models that limit just the regression weights across groups are seen in a variety of statistical methods, including multiple regression. It is referred to as a main-effects model in the context of analysis of variance. The assumption of homogeneity of within-group regression in analysis of variance is a critical model assumption (Winer, 1971; Huitema, 1980; Arbuckle and Wothke, 1999).

In accordance with Henseler et al. (2009), Sarstedt et al. (2011), and Hair et al. (2018) a multi-group analysis allows researchers to determine whether or not pre-defined data groups have statistically significant differences in their group-specific parameter estimates (either positive or negative) (e.g., outer weights, outer loadings and path coefficients). SmartPLS offers the findings of three distinct methods, each of which is based on bootstrapping results from each of the groups involved. Multiple group analysis techniques are described in depth by Sarstedt et al. (2011) as well as Hair et al. (2018).

#### 1) Confidence Intervals (Bias Corrected)

Using the bias-corrected confidence intervals, you can determine the confidence intervals for group-specific parameter estimates in the PLS path model. If the bias-corrected confidence intervals for a route coefficient do not overlap, the path coefficient's group-specific results will be significantly different.

#### 2) Partial Least Squares Multi-Group Analysis (PLS-MGA)

This technique provides a non-parametric significance test for the difference of group-specific outcomes using the PLS-SEM bootstrapping results. Statistical significance is defined as a p-value less than or equal to 0.95 for a given difference in group-specific route coefficients. Nota bene: The PLS-MGA methodology (Henseler et al., 2009), as

implemented in SmartPLS, is a nonparametric version of Henseler's MGA method, which was established in the 1970s (as described, for example, by Sarstedt et al., 2011).

### 3) Parametric Test

In this approach, the difference of group-specific PLS-SEM findings is tested for statistical significance using a parametric significance test that assumes equal variances across groups.

### 4) Welch-Satterthwait Test

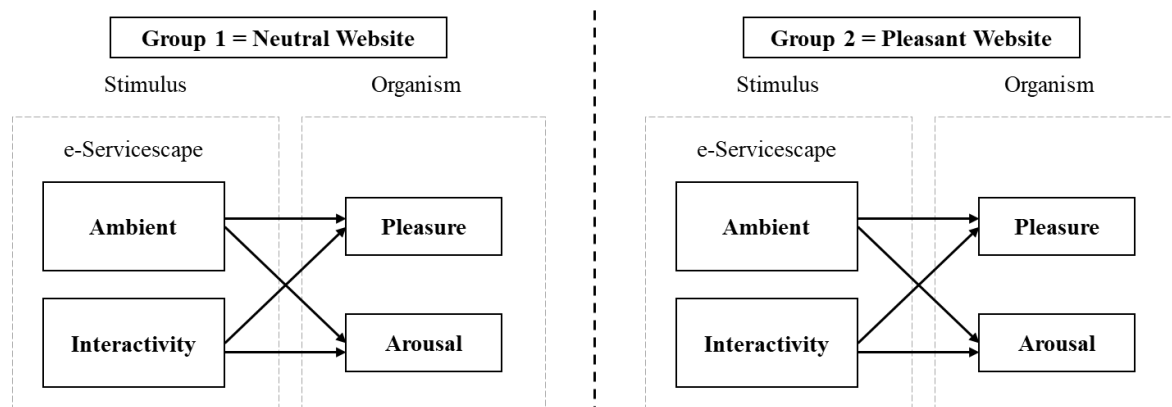
In this approach, the difference of group-specific PLS-SEM findings is tested for statistical significance using a parametric significance test under the assumption of unequal variances across groups.

## 4.7. Research Design: Quasi-Experiment

In this section, the context of the study focuses on a quasi-experiment which is part of an empirical interventional study that is used to see the impact of an intervention on certain samples and variables. In this study, we made quasi-experiment using two different dependent variables, 1) pleasure and 2) arousal; while the independent variable is still the same, which is e-servicescape. Technically, we divided the participants into two groups (neutral group and pleasant group) where we gave different stimuli between the two. Each group did not know each other and felt confident that the test was only in one group. To see between the neutral group and the pleasant group in assessing e-servicescape on emotions, we created a website with different addresses: 1) e-servicescape on pleasure in <https://bit.ly/surveykobeu2>; and e-servicescape on pleasure in <https://bit.ly/surveykobeu3>.

**Figure 16.**

*Quasi-experiment Proposed Model*



Source: Author (2021)

We conducted two tests of factors in the e-servicescape, ambient and interactive. This step is an effort to increase the researcher's validity of the two stimuli that work on emotions (pleasure and arousal).

#### **4.7.1. Data Collection**

As with Study I, data collection for Study II took place on the Prolific website ([www.prolific.co](http://www.prolific.co)). To utilize the Google form as a tool, we must first enter the URL of the Google form into our Prolific account before distributing it to potential participants located around the world. Additionally, data retrieval is accessible online for one day (24 hours) and is neither time- or location-limited. If the information entered into the Prolific account matches the anticipated sample size, Prolific will suspend data collection for the balance of the time period.

We define our sample as Spotify non-users and explicitly indicate that this survey is for them. We examine parameters such as participants' active use of English while developing the Prolific service and have done a minimum of ten Prolific surveys without being rejected. The participants in Study I, II, and III are characterized by the fact that they have never participated in any of our previous studies. As a consequence, we ensure that each study includes a varied range of individuals.

This study uses non-probability sampling since the whole non-Spotify user population is difficult to identify and available data is inaccurate (Reynolds et al., 2003; Zikmund et al., 2011). Convenience sampling is required in some situations. First, convenience sampling is considered as a straightforward strategy for limited budgets and time periods, particularly when the population data is unavailable (Zikmund and Babin, 2010).

##### **4.7.1.1. Sample Size**

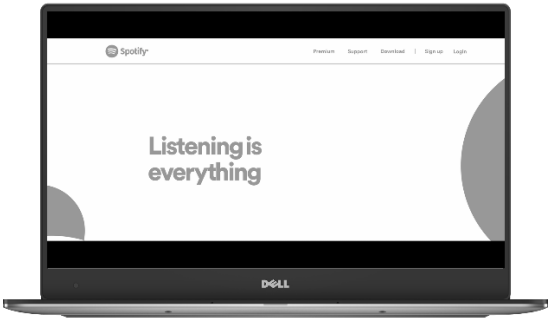
A sample is a representation of a subset of a population (Sekaran and Bougie, 2019). According to Gall et al. (1996) and Cohen et al. (2007), experimental methods need a minimum of 15 individuals in both the control and experimental groups to allow for comparison. Researchers may use these sources if they are working with a limited sample size. The use of the sample in the experimental survey consists of various versions of opinion. Wu et al. (2008) in the study of atmospheric factors of online store using a total sample of 150 participants in 5 groups. Furthermore, Etcheverry et al. (2012) used a number of 55

participants in an experiment on the performance of a web page. However, this is contrary to the research conducted by Sicilia and Ruiz (2010) which used 76 – 78 participants in 3 experimental groups on the effect of web-based information availability. This is similar to Baraković and Skorin-Kapov (2015) which used a sample of 77 participants in the research on quality of experience for mobile web browsing. Considering all, in this experimental study, we are using 80 participants in each test group (with total sample of 160 participants from two groups). The selection of this number is based on the literature review; empirical research that has been done; and to increase the confidence of researchers.

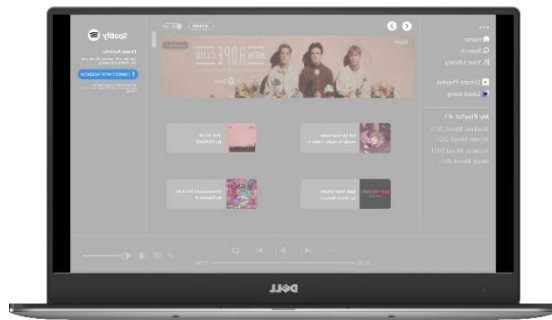
#### 4.7.1.2. Procedure

As with previous research, in this study, we are still using neutral website and pleasant website images. Neutral website images are images of a website that we have manipulated. Under this condition, the respondent will feel they are in actual website with slight differences. We made 10 images connected by hyperlinks and sections representing e-servicescape variables. The sections are made accessible using the main menu located at the bottom of each page. After, looking and examining manipulation website, participants will answer questionnaire about their emotions regarding online service environment. We used 5-point likert scale in independent variables and 7-point semantic scale in dependent variables. Website items that will be manipulated such as color, font size, menu/logo position, numbers of menu, and detailed information.

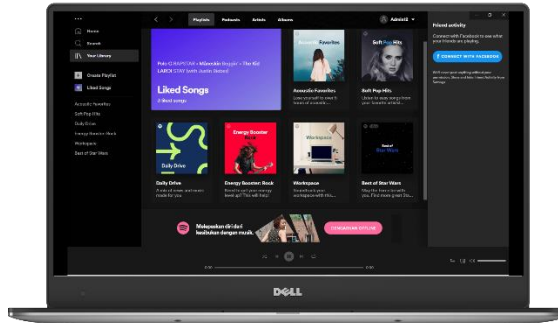
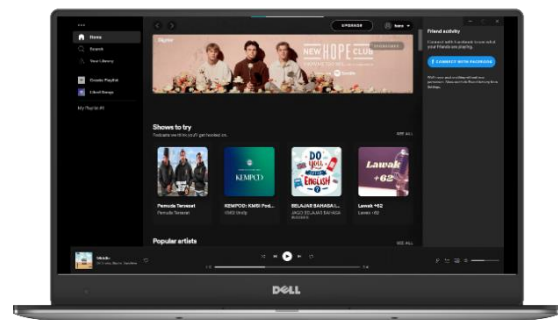
**Table 20.**  
*Neutral Group and Pleasant Group Stimulation*

| Neutral Group                                                                       | Pleasant Group                                                                       |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| Ambient                                                                             |                                                                                      |
|  |  |

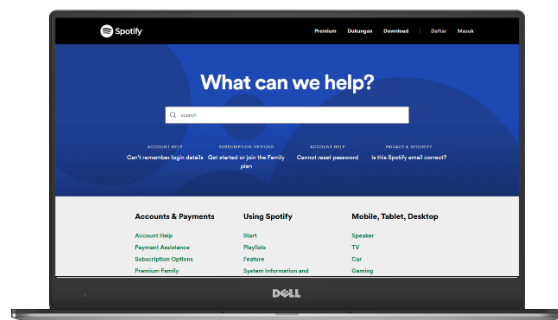
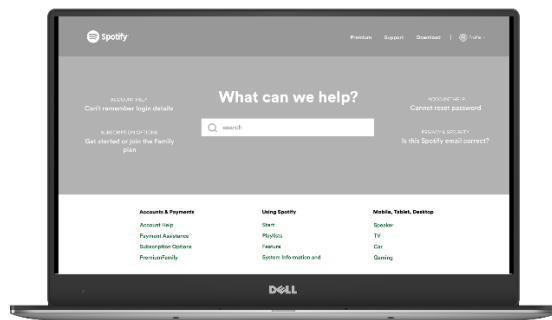
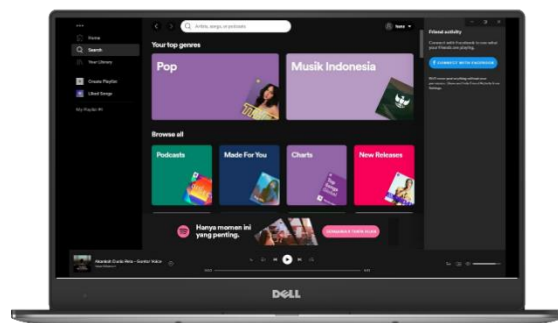
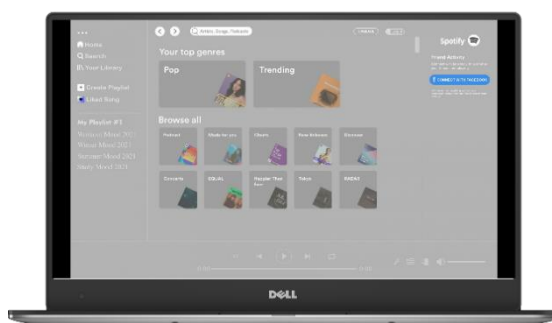
## Neutral Group



## Pleasant Group



## Interactivity



Source: Author (2021)

**Table 21.***Independent Variables Details Manipulation*

| Independent variable | Neutral Group                                                                                                                                                 | Pleasant Group                                                                                                                                     |
|----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient              | <ul style="list-style-type: none"> <li>• Non-PARC (Proximity, Alignment, Repetitive, Contrast)</li> <li>• Minimum background and text color design</li> </ul> | <ul style="list-style-type: none"> <li>• PARC</li> <li>• Colorful background and text color design</li> </ul>                                      |
| Interactivity        | <ul style="list-style-type: none"> <li>• Small icons</li> <li>• Minimum background and text color design</li> <li>• Non-aligned menu</li> </ul>               | <ul style="list-style-type: none"> <li>• Proportional icons</li> <li>• Various background and text color design</li> <li>• Aligned menu</li> </ul> |

Source: Author (2021)

**4.7.1.3. Participants**

This study included 160 non-Spotify users. We put the 160 participants into two groups (neutral and pleasant), each with 80 participants. A minor reward of £4.5 per hour will encourage involvement. Participants may join the study by clicking on links in Prolific announcements. We design our experiment into several steps:

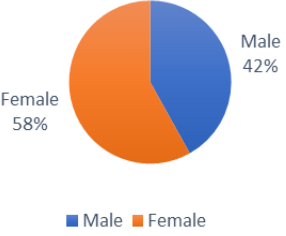
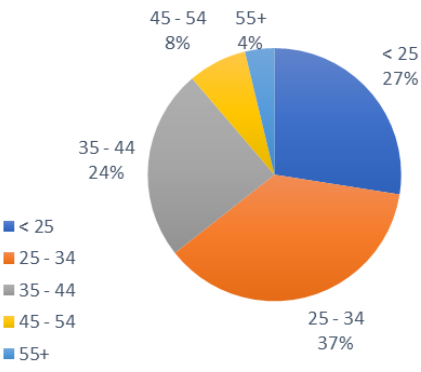
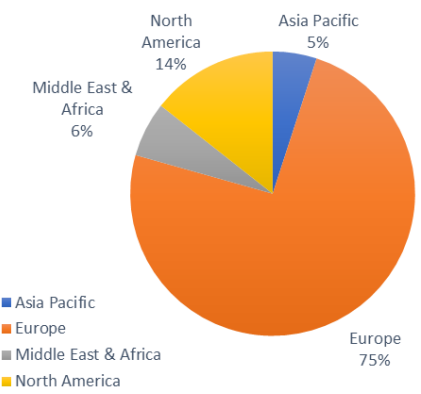
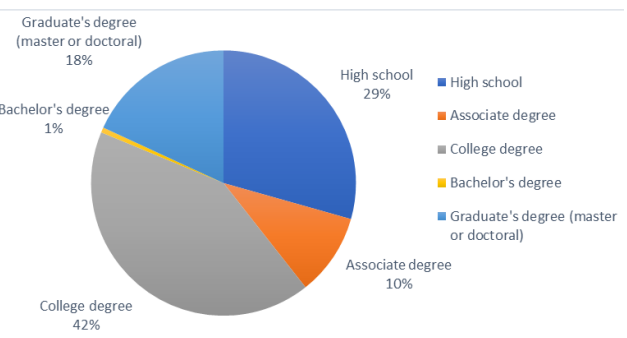
On a separate occasion, we divided the participants into two groups; 1) a group that received a neutral approach stimulus and 2) a group that received a pleasant approach stimulus. The experimental procedure for both groups is the same, with details as follows:

- 1) Step one.** Once participants volunteered in the experiment, they were directed to fill out a series of short demographic backgrounds using Google Forms.
- 2) Second step.** After participants completed their demographic background, they were asked to click on an experimental link which was directed to a website containing a Spotify image with neutral/fun manipulation. In this step, participants are asked to spend as much time as they need experiencing the website environment.
- 3) Step three.** After checking the neutral/fun image from the website, participants were instructed to click on it to proceed to the third step. In this step, the experiment asked participants to respond to our questionnaire, which involved filling in the observable variables (Ambient, Interactivity, Pleasure, and Arousal).

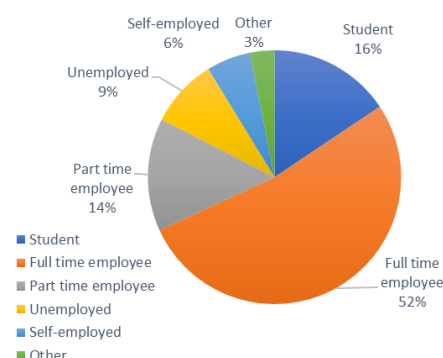
#### 4.7.2. Demographic Information of Participants

**Table 22.**

*Demographic Information of Participants*

| Gender                                 | <i>n</i> | %  |  <p>Male 42%<br/>Female 58%</p> <p>■ Male ■ Female</p>                                                                                                                                                                                                                                  |
|----------------------------------------|----------|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Male                                   | 67       | 42 |                                                                                                                                                                                                                                                                                                                                                                           |
| Female                                 | 93       | 58 |                                                                                                                                                                                                                                                                                                                                                                           |
| Age                                    | <i>n</i> | %  |  <p>&lt; 25 27%<br/>25 - 34 37%<br/>35 - 44 24%<br/>45 - 54 8%<br/>55+ 4%</p> <p>■ &lt; 25<br/>■ 25 - 34<br/>■ 35 - 44<br/>■ 45 - 54<br/>■ 55+</p>                                                                                                                                     |
| < 25                                   | 44       | 28 |                                                                                                                                                                                                                                                                                                                                                                           |
| 25 - 34                                | 59       | 37 |                                                                                                                                                                                                                                                                                                                                                                           |
| 35 - 44                                | 39       | 24 |                                                                                                                                                                                                                                                                                                                                                                           |
| 45 - 54                                | 12       | 8  |                                                                                                                                                                                                                                                                                                                                                                           |
| 55+                                    | 6        | 4  |                                                                                                                                                                                                                                                                                                                                                                           |
| Area of Residence                      | <i>n</i> | %  |  <p>Europe 75%<br/>North America 14%<br/>Middle East &amp; Africa 6%<br/>Asia Pacific 5%</p> <p>■ Asia Pacific<br/>■ Europe<br/>■ Middle East &amp; Africa<br/>■ North America</p>                                                                                                    |
| Asia Pacific                           | 8        | 5  |                                                                                                                                                                                                                                                                                                                                                                           |
| Europe                                 | 119      | 74 |                                                                                                                                                                                                                                                                                                                                                                           |
| Middle East & Africa                   | 10       | 6  |                                                                                                                                                                                                                                                                                                                                                                           |
| North America                          | 23       | 14 |                                                                                                                                                                                                                                                                                                                                                                           |
| Educational Background                 | <i>n</i> | %  |  <p>High school 29%<br/>College degree 42%<br/>Graduate's degree (master or doctoral) 18%<br/>Associate degree 10%<br/>Bachelor's degree 1%</p> <p>■ High school<br/>■ Associate degree<br/>■ College degree<br/>■ Bachelor's degree<br/>■ Graduate's degree (master or doctoral)</p> |
| High school                            | 47       | 29 |                                                                                                                                                                                                                                                                                                                                                                           |
| Associate degree                       | 16       | 10 |                                                                                                                                                                                                                                                                                                                                                                           |
| College degree                         | 67       | 42 |                                                                                                                                                                                                                                                                                                                                                                           |
| Bachelor's degree                      | 1        | 1  |                                                                                                                                                                                                                                                                                                                                                                           |
| Graduate's degree (master or doctoral) | 29       | 18 |                                                                                                                                                                                                                                                                                                                                                                           |
| Employment Status                      | <i>n</i> | %  |                                                                                                                                                                                                                                                                                                                                                                           |
| Student                                | 25       | 16 |                                                                                                                                                                                                                                                                                                                                                                           |
| Full time employee                     | 84       | 53 |                                                                                                                                                                                                                                                                                                                                                                           |

|                    |    |    |
|--------------------|----|----|
| Part time employee | 23 | 14 |
| Unemployed         | 14 | 9  |
| Self-employed      | 9  | 6  |
| Other              | 5  | 3  |




---

Source: Author (2021)

Based on the participants' data, it shows that there are 67 males with a percentage value of 42% and Females as many as 93 people with a percentage value of 58%. According to the survey data, it shows that gender is dominated by Female. Moreover, it shows that age < 25 is 44 people (28%), age 25-34 is 59 people (37%), age 35-44 is 39 people (24%), age 45-54 is 12 people (8%) and age 55+ as many as 6 people (4%). According to the survey data, the age group is dominated by the age group of 25-34 years.

The data from the area of residence, it shows that the Asia Pacific region is 8 people (5%), Europe is 119 people (74%), Middle East & Africa is 10 people (6%), and North America is 23 people (14 %). According to the survey data, the area of residence is dominated by the European region. Based on education level, it shows that high school education is 47 people (29%), Associate degree is 16 people (10%), College degree is 67 people (42%), Bachelor's degree is 1 person (1%) and Graduate's degree (master or doctoral) as many as 29 people (18%). According to the survey data, it shows that education background is dominated by college degree education.

Furthermore, it shows that there are 25 students (16%), 84 full time employees (53%), 23 part time employees (14%), 14 unemployed employees (9%), Self -employed as many as 9 people (6%) and Other as many as 5 people (3%). According to the survey data, the employment status is dominated by full time employees.

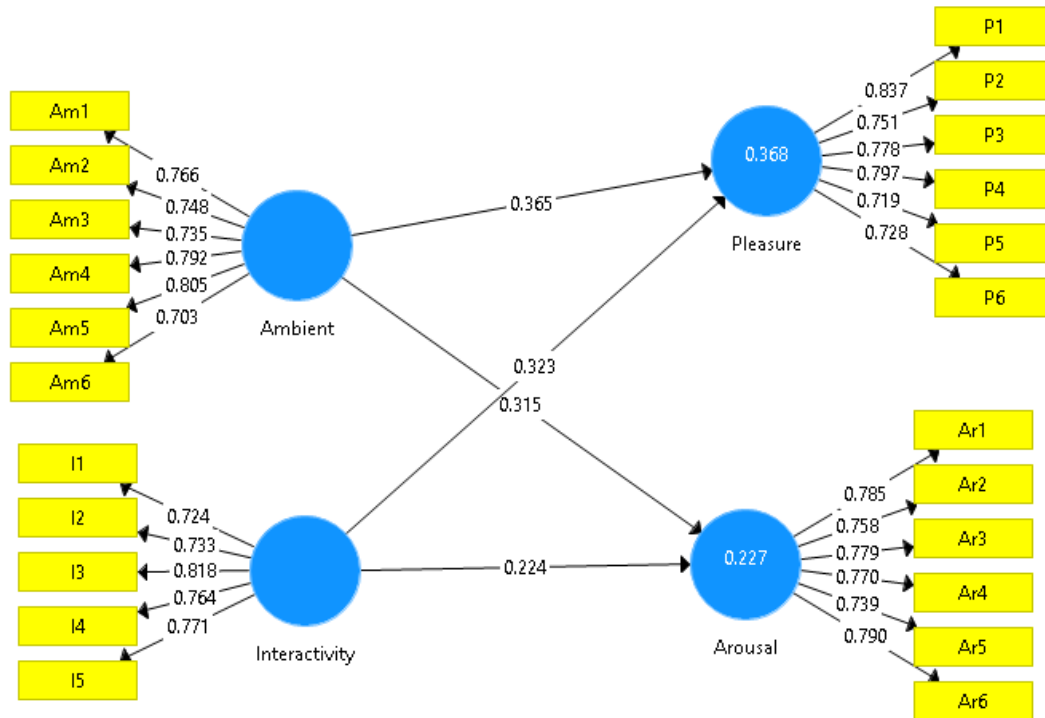
### 4.7.3. Test

#### 4.7.3.1. Outer Model Assessment

There are three criteria in the use of data analysis techniques with SmartPLS to assess the outer model, such as Validity and reliability.

**Figure 17.**

*Outer Model Structure*



Source: Author (2021)

The figure shows the result of the Outer Model Assessment that we did in Study IIb (quasi-experiment). The purpose of this assessment is to check 1) loading values, 2) internal consistency reliability and convergent reliability, and 3) discriminant validity according to the provisions in PLS-SEM. The expected values for each indicator in the Outer Model Assessment are explained as follows.

#### 4.7.3.1.1. Loading Values

It is a reliability of measurement indicators of latent variables is intended to determine whether or not the indicators are dependable (Wong, 2013; Sarstedt et al., 2017). Loading values looking for the criterion value which is more than 0.7. If the loading factor value is more than 0.7, the test is considered optimal and genuine. However, a loading factor more than 0.5 is allowed; however, if the loading factor is less than 0.5, the item must be deleted from the model (Hair et al., 2019a). The critical value of 0.7 was employed in this investigation.

**Table 23.***Outer Loadings Values*

|                                                                | Ambient | Interactivity | Pleasure | Arousal |
|----------------------------------------------------------------|---------|---------------|----------|---------|
| Spotify is visually attractive (Am1)                           | 0.766   |               |          |         |
| Spotify uses visually appealing graphics (Am2)                 | 0.748   |               |          |         |
| Spotify is aesthetically appealing (Am3)                       | 0.735   |               |          |         |
| Spotify design is innovative and creative (Am4)                | 0.792   |               |          |         |
| Spotify is very entertaining (Am5)                             | 0.805   |               |          |         |
| Spotify provides enjoyment (Am6)                               | 0.703   |               |          |         |
| Spotify enables me to view the music in different ways (I1)    |         | 0.724         |          |         |
| Spotify has a search tool which helps me find what I want (I2) |         | 0.733         |          |         |
| Spotify helps me to compare music and genres (I3)              |         | 0.818         |          |         |
| I feel that this is a very engaging app (I4)                   |         | 0.764         |          |         |
| I believe that Spotify is a very dynamic one (I5)              |         | 0.771         |          |         |
| Unhappy – Happy (P1)                                           |         |               | 0.837    |         |
| Annoyed – Pleased (P2)                                         |         |               | 0.751    |         |
| Unsatisfied - Satisfied (P3)                                   |         |               | 0.778    |         |
| Melancholic – Contented (P4)                                   |         |               | 0.797    |         |
| Despairing – Hopeful (P5)                                      |         |               | 0.719    |         |
| Bored – Relaxed (P6)                                           |         |               | 0.728    |         |
| Relaxed – Stimulated (Ar1)                                     |         |               |          | 0.785   |

|                           | Ambient | Interactivity | Pleasure | Arousal |
|---------------------------|---------|---------------|----------|---------|
| Calm – Excited (Ar2)      |         |               |          | 0.758   |
| Sluggish – Frenzied (Ar3) |         |               |          | 0.779   |
| Dull – Jittery (Ar4)      |         |               |          | 0.770   |
| Sleepy - Wide-awake (Ar5) |         |               |          | 0.739   |
| Unaroused – Aroused (Ar6) |         |               |          | 0.790   |
| Source: Author (2021)     |         |               |          |         |

Table 23 describes the value of the loading factor of each indicator. The loading factor value  $> 0.7$  can be said to be valid. In general, from the table, the loading factor values for Ambient, Interactivity, Pleasure, and Arousal items are greater than 0.7. This shows that the indicators are valid.

#### 4.7.3.1.2. Internal Consistency Reliability and Convergent Validity

Internal Consistency Reliability (Composite Reliability and Cronbach's Alpha) refers to the ability of an indicator to measure the latent concept (Memon et al., 2017). Meanwhile, Convergent Validity (AVE) is defined on the basis of the concept that the measurements of a construct should be strongly linked with one another (Sarstedt et al., 2017; Hair et al., 2019a; Ghozali and Latan, 2015). If the composite reliability value and Cronbach's alpha value are more than 0.70, the construct is considered reliable. In addition, an AVE value higher than 0.5 is strongly suggested for this application.

**Table 24.**

*Cronbach's Alpha, Composite Reliability, and AVE Value*

|               | Composite Reliability | Cronbach's Alpha | Average Variance Extracted (AVE) |
|---------------|-----------------------|------------------|----------------------------------|
| Ambient       | 0.89                  | 0.854            | 0.576                            |
| Interactivity | 0.874                 | 0.821            | 0.582                            |
| Pleasure      | 0.897                 | 0.862            | 0.592                            |
| Arousal       | 0.898                 | 0.863            | 0.594                            |

Source: Author (2021)

Because the AVE value for each of the four constructs is larger than 0.5, it can be stated that the measurement model assessment has a high degree of discriminant validity. Along with the construct validity test, a construct reliability test was conducted, which was quantified using the criterion test, namely composite reliability and Cronbach alpha. If the composite reliability and Cronbach's alpha values are more than 0.70, the constructs are considered reliable. As a result, it may be stated that the construct is very reliable.

#### 4.7.3.1.3. Discriminant Validity

Discriminant validity seeks to establish whether or not a reflective indicator is a valid measure of its construct. Different construct instruments should not have a significant degree of correlation with one another (Ghozali and Latan, 2015). By using cross-loading values

for each construct, it is possible to guarantee that the correlation between constructs and measurement items is higher than the correlation between other constructs (with value more than 0.7) (Ghozali and Latan, 2015).

**Table 25.**

*Cross Loadings*

|                                                                | Ambient      | Interactivity | Pleasure     | Arousal      |
|----------------------------------------------------------------|--------------|---------------|--------------|--------------|
| Spotify is visually attractive (Am1)                           | <b>0.766</b> | 0.233         | 0.309        | 0.32         |
| Spotify uses visually appealing graphics (Am2)                 | <b>0.748</b> | 0.312         | 0.328        | 0.294        |
| Spotify is aesthetically appealing (Am3)                       | <b>0.735</b> | 0.430         | 0.383        | 0.231        |
| Spotify design is innovative and creative (Am4)                | <b>0.792</b> | 0.553         | 0.495        | 0.459        |
| Spotify is very entertaining (Am5)                             | <b>0.805</b> | 0.468         | 0.489        | 0.389        |
| Spotify provides enjoyment (Am6)                               | <b>0.703</b> | 0.447         | 0.413        | 0.235        |
| Spotify enables me to view the music in different ways (I1)    | 0.437        | <b>0.724</b>  | 0.408        | 0.240        |
| Spotify has a search tool which helps me find what I want (I2) | 0.326        | <b>0.733</b>  | 0.331        | 0.227        |
| Spotify helps me to compare music and genres (I3)              | 0.433        | <b>0.818</b>  | 0.499        | 0.407        |
| I feel that this is a very engaging app (I4)                   | 0.495        | <b>0.764</b>  | 0.360        | 0.263        |
| I believe that Spotify is a very dynamic one (I5)              | 0.416        | <b>0.771</b>  | 0.370        | 0.336        |
| Unhappy – Happy (P1)                                           | 0.523        | 0.447         | <b>0.837</b> | 0.426        |
| Annoyed – Pleased (P2)                                         | 0.370        | 0.366         | <b>0.751</b> | 0.453        |
| Unsatisfied - Satisfied (P3)                                   | 0.415        | 0.471         | <b>0.778</b> | 0.387        |
| Melancholic – Contented (P4)                                   | 0.455        | 0.425         | <b>0.797</b> | 0.431        |
| Despairing – Hopeful (P5)                                      | 0.368        | 0.373         | <b>0.719</b> | 0.456        |
| Bored – Relaxed (P6)                                           | 0.349        | 0.316         | <b>0.728</b> | 0.370        |
| Relaxed – Stimulated (Ar1)                                     | 0.354        | 0.358         | 0.458        | <b>0.785</b> |
| Calm – Excited (Ar2)                                           | 0.322        | 0.300         | 0.351        | <b>0.758</b> |
| Sluggish – Frenzied (Ar3)                                      | 0.323        | 0.240         | 0.382        | <b>0.779</b> |
| Dull – Jittery (Ar4)                                           | 0.284        | 0.277         | 0.382        | <b>0.770</b> |
| Sleepy - Wide-awake (Ar5)                                      | 0.365        | 0.334         | 0.452        | <b>0.739</b> |
| Unaroused – Aroused (Ar6)                                      | 0.366        | 0.312         | 0.469        | <b>0.790</b> |

Source: Author (2021)

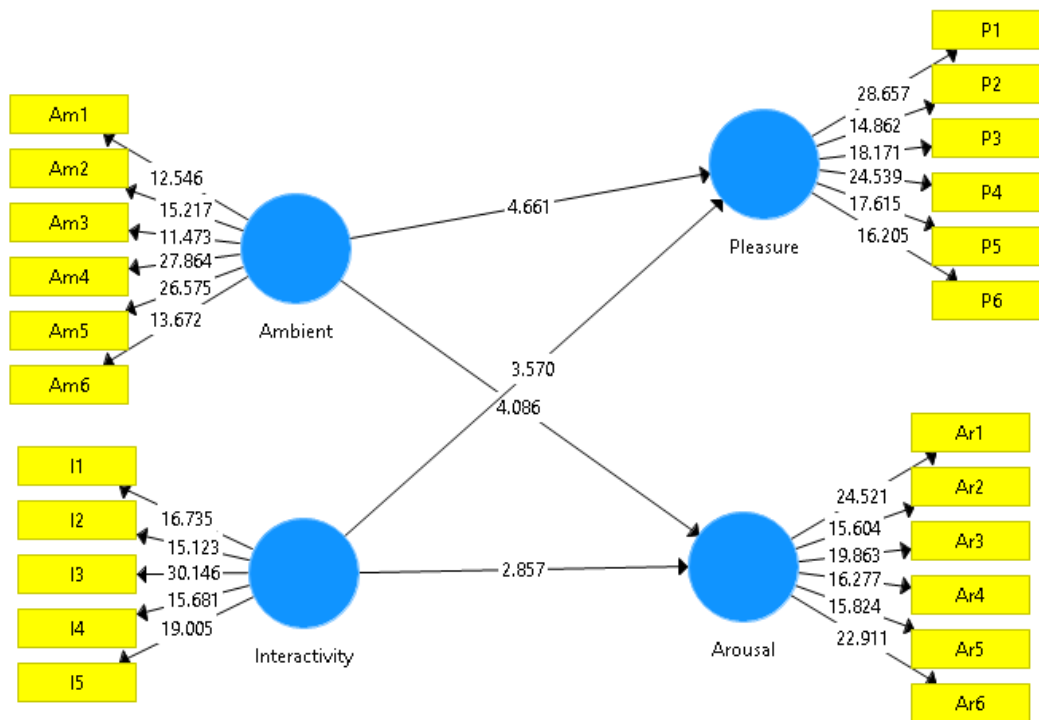
Based on the cross loadings value, it can be seen that all the indicators that compose each variable in this study (in bold) have met discriminant validity because they have the largest outer loading value for the variables they form and not for other variables. Thus, all indicators in each variable in this study have met discriminant validity.

#### 4.7.3.2. Inner Model Assessment

It is formative components that are incorporated in the structural model (Hair et al., 2019b). Moreover, it is vital to look at the link between constructs and the model's predictive ability. Then, using criteria, such as the coefficient of determination ( $R^2$ ) and cross-validated redundancy ( $Q^2$ ) (Sarstedt et al., 2017).

**Figure 18.**

*Inner Model Structure*



Source: Author (2020)

The figure depicts the result of the Inner Model Assessment that we did in Study IIB (quasi-experiment). The purpose of this assessment is to check 1) the coefficient of determination ( $R^2$ ), and 2) Cross-validated redundancy ( $Q^2$ ). The expected values for each indicator in the Inner Model Assessment are explained as follows.

##### 4.7.3.2.1. The Coefficient of Determination ( $R^2$ )

The  $R^2$  statistic is often referred to as the in-sample predictive power statistic (Rigdon, 2012). It is anticipated that the coefficient of determination ( $R^2$ ) will be between 0 and 1 in this case. Testing of the structural model is done by looking at the R-square value which is the goodness-fit test of the model.

**Table 26.***R-Square Value*

| Variable | R-Square |
|----------|----------|
| Pleasure | 0.368    |
| Arousal  | 0.227    |

Source: Author (2021)

In this study, we use two endogenous variables that are influenced by other variables; 1) the pleasure variable ( $Y_1$ ) which is influenced by the e-Servicescape variable (X), and 2) the arousal variable ( $Y_2$ ) which is influenced by the e-Servicescape variable (X).

Table 26 shows that the R-square value for the pleasure variable is 0.368. The R-square value indicates that 36.8% of the Pleasure ( $Y_1$ ) can be influenced by the e-Servicescape (X). While the remaining 63.1% is influenced by other variables outside the studied. Table 26 shows the R-square arousal value of 0.227, indicating that the Arousal ( $Y_2$ ) is influenced by the e-Servicescape (X) by 22.7%, while the remaining 77.3% is influenced by other variables outside the study.

#### 4.7.3.2.2. Cross-validated Redundancy ( $Q^2$ )

Cross-validated redundancy ( $Q^2$ ) or Q-square tests are used for rate predictive relevance (Geisser, 1974; Stone, 1974). As a guideline,  $Q^2$  values should be larger than zero for a specific endogenous construct to indicate predictive accuracy of the structural model for that construct (Hair et al., 2019b). In brief, the magnitude of  $Q^2$  has a value with a range of  $0 < Q^2 < 1$ , where the closer to 1 means the better the model. Based on Table 26, the calculation of predictive relevance is as follows:

$$Q^2 = 1 - (1 - R_1^2) \times (1 - R_2^2)$$

$$Q^2 = 1 - (1 - 0,368) \times (1 - 0,227)$$

$$= 0.5115$$

*Note:*

$Q^2$ : Predictive Relevance value

$R_1^2$ : value of R-Square variable pleasure

$R_2^2$ : value of R-Square variable arousal

From the results of these calculations, it is known that the  $Q^2$  value is 0.5115, meaning that the magnitude of the diversity of data from the study that can be explained by the designed structural model is 51.15%, while the remaining 48,85% is explained by other

factors outside the model. Based on these results, it can be said that the structural model in this study is sufficient.

#### 4.7.4. Result

In this section, we would like to inform the results of testing between variables used in this study. The research hypothesis test uses the estimated significance value of the parameter to provide very useful information about the relationship between the research variables. The PLS testing of each hypothesized relationship is carried out using simulation. In this case, the *bootstrap* method is applied. Testing with *bootstrap* is intended to minimize the problem of abnormal research data. The results of the *bootstrapping* test from the PLS analysis are as follows:

**Table 27.**

*T-Values and P-Values*

| Hypothesis     | Variable                 | Original<br>Sample (O) | T Statistics<br>( O/STDEV ) | p-value | Status      |
|----------------|--------------------------|------------------------|-----------------------------|---------|-------------|
| H <sub>1</sub> | Ambient → Pleasure       | 0.365                  | 4.661                       | 0.000   | Significant |
| H <sub>2</sub> | Interactivity → Pleasure | 0.323                  | 3.570                       | 0.000   | Significant |
| H <sub>3</sub> | Ambient → Arousal        | 0.315                  | 4.086                       | 0.000   | Significant |
| H <sub>4</sub> | Interactivity → Arousal  | 0.224                  | 2.857                       | 0.004   | Significant |

Source: Author (2021)

The structural equations obtained are:

$$Y_1 = 0,365 X_1 + 0,323 X_2$$

$$Y_2 = 0,315 X_1 + 0,224 X_2$$

*Note:*

X<sub>1</sub>: Ambient

X<sub>2</sub>: Interactivity

Y<sub>1</sub>: Pleasure

Y<sub>2</sub>: Arousal

The results of testing the hypothesis refer to the t-value by comparing it with the t-table. The t-table value obtained from 160 respondents in this study is 1,960. On the other hand, if you use the p-value then compare it with an error rate ( $\alpha$ ) of 5%. The results of testing the research hypothesis are as follows:

**a. Hypothesis 1 (H<sub>1</sub>): Ambient has a significant effect on Pleasure**

The results of the hypothesis testing the Ambient hypothesis on Pleasure obtained a path coefficient of 0.365 and a t-value of 4.661. The direction of a positive relationship shows that an increase in Ambient will give an increase in Pleasure. Because the t-value is greater than t-table (1.960) or p-value (0.000) < 0.05. Then the results obtained H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, thus Ambient has a direct and significant influence on Pleasure. It means that the first hypothesis is accepted.

**b. Hypothesis 2 (H<sub>2</sub>): Interactivity has a significant effect on Pleasure**

The results of the hypothesis testing the Interactivity hypothesis on Pleasure obtained a path coefficient of 0.323 and a t-value of 3.570. The direction of a positive relationship shows that an increase in Interactivity will give an increase in Pleasure. Because the t-value is greater than t-table (1.960) or p-value (0.000) < 0.05. Then the results obtained H<sub>0</sub> is rejected and H<sub>2</sub> is accepted, thus Interactivity has a direct and significant influence on Pleasure. It means that the second hypothesis is accepted.

**c. Hypothesis 3 (H<sub>3</sub>): Ambient has a significant effect on Arousal**

The results of the hypothesis testing the Ambient hypothesis on Arousal obtained a path coefficient of 0.315 and a t-value of 4.086. The direction of a positive relationship shows that an increase in Ambient will give an increase in Arousal. Because the t-value is greater than t-table (1.960) or p-value (0.000) < 0.05. Then the results obtained H<sub>0</sub> is rejected and H<sub>3</sub> is accepted, thus Ambient has a direct and significant influence on Arousal. It means that the third hypothesis is accepted.

**d. Hypothesis 4 (H<sub>4</sub>): Interactivity has a significant effect on Arousal**

The results of the hypothesis testing of the Interactivity on Arousal obtained a path coefficient of 0.224 and a t-value of 2.857. The direction of a positive relationship shows that increasing Interactivity will increase Arousal. Because the value of t-value is greater than t-table (1.960) or p-value (0.004) < 0.05. Then the results obtained are H<sub>0</sub> is rejected and H<sub>4</sub> is accepted, thus Interactivity has a direct and significant effect on Arousal. It means that the fourth hypothesis is accepted.

The test results with multigroup analysis (MGA) from the PLS analysis are as follows:

**Table 28.***Multigroup Analysis Testing Result*

| Hypothesis      | Variable                 | Path Coefficients | t-value | p-value |                 |
|-----------------|--------------------------|-------------------|---------|---------|-----------------|
|                 |                          | Group 1           | Group 1 | Group 1 |                 |
| H <sub>5</sub>  | Ambient → Pleasure       | 0.365             | 2.873   | 0.004   | Significant     |
| H <sub>6</sub>  | Interactivity → Pleasure | 0.224             | 1.657   | 0.098   | Not Significant |
| H <sub>7</sub>  | Ambient → Arousal        | 0.283             | 2.457   | 0.014   | Significant     |
| H <sub>8</sub>  | Interactivity → Arousal  | 0.180             | 1.533   | 0.126   | Not Significant |
|                 |                          | Group 2           | Group 2 | Group 2 |                 |
| H <sub>9</sub>  | Ambient → Pleasure       | 0.443             | 3.343   | 0.001   | Significant     |
| H <sub>10</sub> | Interactivity → Pleasure | 0.367             | 2.568   | 0.011   | Significant     |
| H <sub>11</sub> | Ambient → Arousal        | 0.326             | 2.504   | 0.013   | Significant     |
| H <sub>12</sub> | Interactivity → Arousal  | 0.280             | 2.132   | 0.033   | Significant     |

Source: Author (2021)

The results of testing the hypothesis refer to the t-value by comparing it with the t-table. The t-table value obtained from 160 respondents in this study is 1,960. On the other hand, if you use the p-value then compare it with an error rate ( $\alpha$ ) of 5%. The results of testing the research hypothesis are as follows:

❖ **Neutral Group (Group 1)**

**e. Hypothesis 5 (H<sub>5</sub>): Ambient has a significant effect on Pleasure**

The Ambient test result on Pleasure has a t-value of 2.873. Because t-value is greater than t-table (1.960) or p-value (0.004) < 0.05. Then the results obtained H<sub>0</sub> is rejected and H<sub>5</sub> is accepted, thus Ambient has a significant effect on Pleasure.

**f. Hypothesis 6 (H<sub>6</sub>): Interactivity has a significant effect on Pleasure**

The Interactivity test result on Pleasure has a t-value of 1.657. Because t-value is smaller than t-table (1.960) or p-value (0.098) > 0.05. Then the results obtained H<sub>0</sub> is accepted, thus Interactivity has no significant effect on Pleasure.

**g. Hypothesis 7 (H<sub>7</sub>): Ambient has a significant effect on Arousal**

The Ambient test result on Arousal has a t-value of 2.457. Because t-value is greater than t-table (1.960) or p-value (0.014) < 0.05. Then the results obtained are H<sub>0</sub> is rejected and H<sub>7</sub> is accepted, thus Ambient has a significant effect on Arousal.

**h. Hypothesis 8 (H<sub>8</sub>): Interactivity has a significant effect on Arousal**

The Interactivity test result on Arousal has a t-value of 1.533. Because t-value is greater than t-table (1.960) or p-value (0.126) > 0.05. Then the results obtained H<sub>0</sub> is accepted, thus Interactivity has no significant effect on Arousal.

**❖ Pleasant Group (Group 2)**

**i. Hypothesis 9 (H<sub>9</sub>): Ambient has a significant effect on Pleasure**

Our hypothesis “Ambient in pleasant group has a significant effect on Pleasure”. Based on the Ambient test result on Pleasure has a t-value of 3.343. Because t-value is greater than t-table (1.960) or p-value (0.001) < 0.05. Then the results obtained H<sub>0</sub> is rejected and H<sub>9</sub> is accepted, thus Ambient has a significant effect on Pleasure.

**j. Hypothesis 10 (H<sub>10</sub>): Interactivity has a significant effect on Pleasure**

Our hypothesis “Interactivity in pleasant group has a significant effect on Pleasure”. Based on the Interactivity test result on Pleasure has a t-value of 2.568. Because t-value is smaller than t-table (1.960) or p-value (0.011) < 0.05. Then the results obtained H<sub>0</sub> is rejected and H<sub>10</sub> is accepted, thus Interactivity has a significant effect on Pleasure.

**k. Hypothesis 11 (H<sub>11</sub>): Ambient has a significant effect on Arousal**

Our hypothesis “Ambient in pleasant group has a significant effect on Arousal”. Based on the Ambient test result on Arousal has a t-value of 2.504. Because t-value is greater than t-table (1.960) or p-value (0.013) < 0.05. Then the results obtained are H<sub>0</sub> is rejected and H<sub>11</sub> is accepted, thus Ambient has a significant effect on Arousal.

**l. Hypothesis 12 (H<sub>12</sub>): Interactivity has a significant effect on Arousal**

Our hypothesis “Interactivity in pleasant group has a significant effect on Arousal”. Based on the Interactivity test result on Arousal has a t-value of 2.132. Because t-value is greater than t-table (1.960) or p-value (0.033) < 0.05. Then the results obtained H<sub>0</sub> is rejected and H<sub>12</sub> is accepted, thus Interactivity has a significant effect on Arousal.

**4.7.5. Discussion**

Furthermore, we have another hypothesis about how groups with a pleasant approach have an effect on consumers' pleasure and arousal. In detail, this study describes how ambient and interactivity in the pleasant group have a significant effect on pleasure and

arousal. To explain this, we used a quasi-experiment to compare two groups that received different treatments. In accordance with the theory, the use of quasi-experiments in this study aims to assess the causal impact of one or more experimental manipulations on a dependent variable. Thus, for researchers, this allows drawing of conclusions about the causal relationships among variables (Stangor, 2011). In this study, the use of Multigroup analysis (MGA) was carried out to see the difference between the two groups of manipulations carried out in two different forms, neutral and pleasant.

From this contrast, the results of this study determine how much influence the responses in the two groups have. Thus, this can answer and provide a strengthening argument for why the researcher chose one of the groups to be studied. Clearly, this method contributes to provide more definitive conclusions about the causal relationships among the variables in a research hypothesis than what is available from correlational research.

#### **4.8. Summary**

In general, our study yielded several findings regarding the existence of a significant average difference between low-level and high-level ambient and interactivity on pleasure. We translate this condition as 1) believing that the manipulations that have been carried out in previous studies provide significant differences in further experimental tests; 2) distinguishing environmental situations in low-level and high-level conditions will have an influence on consumer behavior when in a certain environment. Moreover, this study reveals that there is an ambient interaction and interactivity in the same condition (high-level) with respect to pleasure. It proves that consumers exposed to an environment with High-level Ambient and High-level of Interactivity have higher levels of Pleasure.

Furthermore, in subsequent experimental studies, we examined the effects of different environmental stimuli. We divided the participants into two groups who would receive that of stimuli. Each of these groups did not know that there were other groups who were given stimuli from themselves. The test results prove that Ambient and interactivity have a significant effect on Pleasure and Arousal. This reinforces the arguments we presented earlier about a significant effect on the pleasant environment perceived by consumers.

## **CHAPTER 5**

### **STUDY III: STRUCTURAL EQUATION MODELING**

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#### **5.1. Introduction**

The problem to be solved in this stage is to prove how the consumer attitude process is formed visiting the website and whether emotions have a significant influence on the formation of attitude. In the previous studies, Study I in Chapter 3 and Study II in Chapter 4, we tried to test several hypotheses within studies that were related to Study III. The objectives are 1) to get a complete picture of research with e-servicescape issues, emotions, and attitudes; 2) testing a series of hypotheses before we decide and use an opinion; 3) using different research methods to open up space for perspectives, opinions, and arguments on a finding; and 4) provide justification, support, and strengthening of arguments regarding the selection of research and the theory we use. Therefore, we can get a description for a study. This is important to do, thus the procedures of a large study can be interpreted by going through the smaller procedures that preceded it.

This study focuses on testing the main model and hypothesis in the study, namely the e-servicescape of attitudes mediated by emotions. In previous chapters, we have explained how stimuli in an environment will affect emotions and attitudes. In theory, we interpret this phenomenon as a frequent occurrence in consumer behavior. As we understand that this phenomenon is closely related to environmental psychology where the environment plays a role in giving effect to human behavior in everyday life (Kumar et al., 2013). Furthermore, Fisk et al. (2011) and Lee and Jeong (2012) revealed that the environment affects emotional states and how to behave a consumer.

Mehrabian and Russell (1974a) revealed that consumer reactions from various stimuli are divided into avoidance or approach. However, the context of such reactions is still too general, because avoiding or approaching is still multi-interpreted and subjective. On the other hand, research on the basis of this phenomenon is widely used by researchers today and justifies what Mehrabian and Russell (1974a) put forward as an S-O-R framework. It is this framework that we use in this study, as Donovan and Rossiter (1982, p. 36) first applied empirically the theory proposed by Mehrabian and Russell (1974a). Nevertheless, reviewing and adjusting the S-O-R framework must be adapted to the current research conditions, where many scholars are still debating how the psychological process of consumers towards environmental stimuli can occur.

In particular, this study will take several relevant theories to support and explain the phenomena that occur. We have explained several related previous studies in the previous chapter, where researchers such as Harris and Goode (2010), Tankovic and Benazic (2018), Jeon and Jeong (2009), Tran and Strutton (2020), Tran et al. (2012), Mehrabian and Russell (1974a), Donovan and Rossiter (1982), Wu et al. (2014), Lee and Lee (2019) use it in different research contexts.

## **5.2. Research Design**

The descriptive technique was employed in this study, which is a way for describing a phenomenon or features connected with a certain topic group (Cooper and Schindler, 2008). We want to conduct this study in a cross-sectional manner, with data being gathered from members of the target group. In their paper, Saunders et al. (2016) assert that a cross-sectional design allows for the assessment of many variables at the same time and that this design is appropriate for a wide range of research projects. Described by Malhotra (2010) as follows: "The purpose of descriptive research is to characterize something – often market features or functions." It is often used in business and management contexts to describe the behaviors of stakeholders and their institutions, such as sales teams, customers, businesses, and market-related problems, among other things (Malhotra, 2010). This study is being performed in particular to determine the connection between the e-servicescape and emotions, as well as to determine whether or not it has an impact on customer attitudes.

### **5.2.1. Model Development**

As explained in Chapter II about the e-servicescape, emotions, and attitudes, in this Study III we use the proposed model using these variables. The reasons for choosing these three variables have been explained in the previous chapter, but this is important to summarize the logic behind the choice. In addition, we summarize the main factors in the e-servicescape namely ambient; spatial layout and functionality; signs, symbols, and artifacts; financial security; and interactivity as an observable variable. Likewise with emotions, which we divide into two variables, namely pleasure and arousal.

The ambient element of a website has the purpose of eliciting pleasant emotions from consumers when they interact with the website, such as when they are obtaining information or making an online purchase (Lee and Jeong, 2012). Furthermore, Ethier et al. (2006), Lin (2007), Kim and Lennon (2008), and Jeon and Jeong (2009) revealed that ambient

conditions in online environment settings include high-quality pictures, vibrant colors, animation effects, a virtual tour, and music/sound. In addition, Tran et al. (2012), Teng et al. (2018), and Tran and Strutton (2020) examined that factors include aesthetic and graphic elements as well as freshness, innovativeness, and entertainment.

Spatial layout and functionality factor in a website transformed into design aspects, which are functional aspects (Jeon and Jeong, 2009; Sahoo and Pillai, 2017; Tankovic and Benazic, 2018), useability (Kühn and Petzer, 2018), and relevance information (Bauer et al., 2002; Zeithaml et al., 2002; Montoya-Weiss et al., 2003; Griffin, 2007). This factor on the website can assist customers' needs.

Using signs, symbols, and artifacts, the service provider may interact with consumers either directly or implicitly (Bitner, 1992, p. 66-67); they can convey a specific message and increase a favorable image of the service provider (Wakefield and Blodgett, 1996). In the internet environment, some elements of a company's name, logo, or symbols that may increase consumer recognition can be utilized to attract new customers (Geissler, 2001). The use of search tools and slogans will be useful for potential customers when they will visit the website (Jeon and Jeong, 2009; Hakim and Deswindi, 2015).

Financial security factor means to extent to which consumers perceive the payment process and general website policies as safe (Harris and Goode, 2010; Thakur and Srivastava, 2014; Tankovic and Benazic, 2018). If the security of transactions can be guaranteed and run well, then consumers will feel emotionally comfortable. In addition, a customer will feel calm, not worried, and comfortable in virtual transactions. Some studies link it with trust, where high levels of trust stimulate more favorable consumer attitudes and behaviors (Gefen et al., 2003; Gefen and Straub, 2004; Pavlou, 2003).

The two-way contact between seller and customer in the online world is a key component of the website's interactivity element. Chen and Chang (2003), Fiore and Jin (2003), and Srinivasan et al. (2002) have all found that when consumers perceive higher levels of interactivity for a website, their online shopping experience is enhanced; and that interactivity is the most important factor influencing consumers' responses and behavioral outcomes when shopping online (Fiore and Jin, 2003; Li et al., 2001). Through the use of rich text content, customized greetings, and video, a number of technology advances have allowed consumers to feel socially linked with one another (Gefen and Straub, 2003; Kumar and Benbasat, 2002). This condition is particularly relevant in the internet world, where

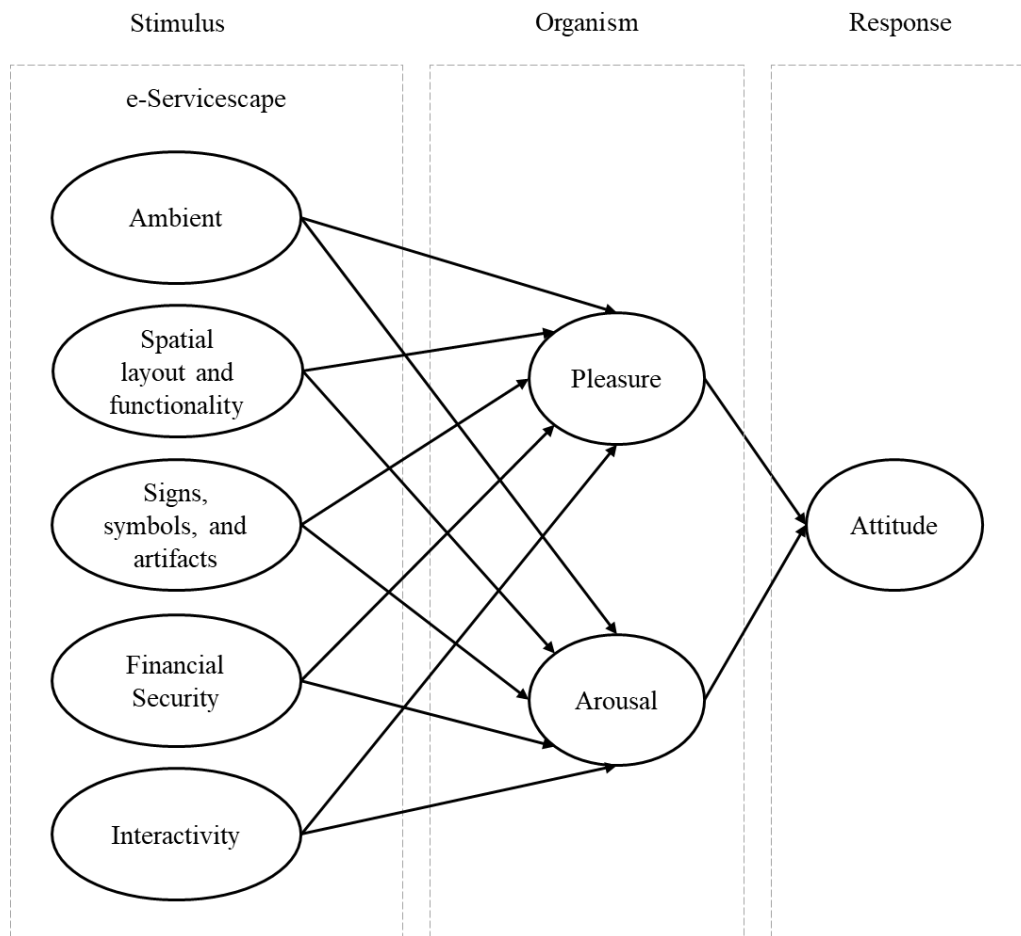
interactive, two-way interactions play a significant role in enhancing consumers' reactions (Cyr et al., 2007; Tran et al., 2012; Tran and Strutton, 2020).

When customers have an experience with a service provider, it is typical for them to form an opinion about that provider based on their cognitive, emotional, and physiological levels in their brains (Bitner, 1992; Zeithaml and Bitner, 2000). Transformation of observed environmental inputs into meaningful information that results in a shift in one's cognitive or emotional states (Loureiro and Ribeiro, 2011; Mehrabian and Russell, 1974a). Emotional states are the feelings (both good and negative) that people experience as they engage with external stimuli (Eroglu et al., 2001; Islam and Rahman, 2017).

Mehrabian and Russell (1974b) came to the conclusion that observed stimuli in an environment generate emotional states in a person, and that these emotional states in turn inspire a behavioral response from the individual. Mehrabian and Russell (1974b, p. 287) stated that the presence of certain fundamental response dimensions is shown in physiological research, where some effects are seen to be universal across all sensory modalities. Certainly, it covers types of behavior such as contentment, loyalty and commitment. It includes behaviors such as “intentions to stay, explore, and affiliate, while avoidance concerns the opposite” (Mehrabian and Russell, 1974a; Bitner, 1992; Eroglu et al., 2001, p. 182).

**Figure 19.**

*Proposed Model of Structural Equation Model*



Source: Author (2021)

Generally, the context of this study is about an online survey that compares the effects of website stimulation on consumer responses. The Spotify music website and music player were chosen as contexts for this study because they provide an opportunity to investigate the effects of different levels of response to the stimuli of the service environment. To see consumer responses, we use e-servicescape variables such as ambient; layout and functionality; signs, symbols and artifacts; financial security, and interactivity.

## 5.2.2. Hypothesis Development

### 5.2.2.1. Research Objective Two: The Interrelationship between e-Servicescape and Attitudes Mediated by Emotions

An individual's assessment of an e-servicescape is influenced by many factors, including the person, the environment, and the continuous interplay between these factors. Biochemistry, personality, sociocultural experience, aspirations, expectations, and other

internal and external variables may all influence how these judgments are made (Walsh et al., 2000). Any of the numerous characteristics of the environment may be included in the evaluation, which may require different degrees of emotional or mental effort. A form's content or meaning may cause it to appear; in this case, more mental effort is required to identify the content, put it into a conceptual framework, and then assess it.

Theories such as those proposed by Mehrabian and Russell (1974b), Mehrabian (1976), Donovan and Rossiter (1982), Bitner (1992), and Hoffman and Turley (2002) categorize consumer willingness to investigate as a reaction to the cognitive and emotional context of the environment. In practice, they stated that 1) a manner of desire or willingness to explore or look around the environment (approach) as opposed to a tendency to remain inanimate in the environment (avoid) and not interact with it; and 2) a manner of desire or willingness to communicate with others in the environment (approach) as opposed to a tendency to avoid or ignore communication attempts from others were all important characteristics (avoid). As a result, Donovan and Rossiter (1982, p. 45-54) established a connection between store settings, emotional states, and behavioral intentions, which was supported by the evidence presented.

Furthermore, there is a substantial amount of empirical data from retail and other service environment research that supports a favorable connection between customers' emotional experiences and purchasing decisions. Researchers Tai and Fung (1997) discovered that shoppers' emotional experiences influence in-store purchasing decisions. Customer willingness to spend more time and money when they have a good emotional experience with a shop or a product, according to Kumar and Kim (2014), is shown by the following: Ryu and Jang (2008) and Liu and Jang (2009) shown that a diner's emotional experience has an effect on his or her likelihood to return.

On the basis of these perceptions of the servicescape and related positive (negative) cognitions, Bitner (1992) hypothesized that positive (negative) beliefs and attributions connected with an organization's personnel and goods may be formed. The researchers at Donovan et al. (1994) discovered that pleasure and arousal are additional emotional responses that change depending on the surroundings. El Sayed et al. (2003) demonstrated the influence of store interior design on the emotional states of consumers. Consumers' views toward shops are improved by three fundamental emotions (PAD), according to Porat et al. (2007).

The PAD model, often known as the dimensional approach, is one of the most commonly utilized approaches to emotions. Mummalaneni (2005) and Koo and Ju (2010) used the S-O-R framework to examine the connections between the servicescape and the e-servicescape, as well as the emotional states and reactions of customers in the service environment. Koo and Ju (2010) discovered that connections between stimulus elements and feelings of pleasure and arousal are beneficial. It is been successfully applied to the analysis of aspects related to interface design (for example, colors, size and display of information, quantity of content, visuals), as well as others related to interactivity (Fiore et al., 2005; Oh et al., 2008), in order to determine the effects of these aspects on customer emotions and subsequent behaviors (Machleit and Eroglu, 2000; Machleit and Mantel, 2001).

According to Richard (2005) consumer impressions will emerge when they view material on a website that is useful and gives particular information about items or other relevant issues. As a result, specific information is positively associated with a good opinion about a certain website. Furthermore, Hong et al. (2004) assert that web interface design has a significant impact on customers' attitudes about a website, with a conducive website design resulting in consumers having a good attitude as users and a willingness to return to the site. According to the opinions of Ballantine (2005) and Manganari et al. (2009), aesthetics play an important role in the retail environment and should be considered.

Moreover, we use the assumption that emotional (pleasure and arousal) reactions as a reaction reflect the organism and have an impact on attitude. Specifically, according to Bitner (1992), the retail environment has the potential to influence customer emotions as well as perceptions, attitudes, and images, and may even lead to the activation of buy intentions. The researchers at Donovan et al. (1994) discovered that pleasure and arousal are additional emotional responses that change depending on the surroundings. According to Porat et al. (2007), pleasure, arousal, and dominance are the three fundamental emotions that help customers alter their views about retailers.

Martínez-López et al. (2005) revealed that customer attitude is defined as the proclivity to react consistently to a website. Farley and Stasson (2003) stated that attitude is a multi-component construct made up of emotional reactions, cognitive responses, and behavioral goals, and that it is a construct that can be measured. In response, other viewpoints have emerged, such as those offered by Agarwal and Malhotra (2005), who explain that affect-based attitudes are emotional evaluations composed of emotions and feelings; or those offered by Drolet and Aaker (2002), who explain that cognition-based

attitudes are beliefs consisting of judgments and thoughts associated with an attitude object. As defined before, attitude toward a website refers to an emotional appraisal that happens after visiting a website.

Because the word organism refers to the internal process that occurs between an external stimulus and a consumer's behavior in the S-O-R framework (Chang et al., 2014), understanding consumers' responses to a specific environment necessitates the investigation of emotional reactions (Beatty and Ferrell, 1998). Because customers' emotional reactions influence their purchasing decisions, it is critical to understand these emotions in order to create a successful shopping environment. If we examine the S-O-R framework from a psychological viewpoint, we can see those online environmental cues (i.e., stimuli) influence the emotional and cognitive reactions of online shoppers (i.e., the internal states of the organism), which in turn result in behavioral responses (i.e. the response). It is hypothesized that:

- a. Hypothesis 1 (H<sub>1</sub>): Ambient has a direct and significant influence on Pleasure.
- b. Hypothesis 2 (H<sub>2</sub>): Spatial layout and functionality has a direct and significant influence on Pleasure.
- c. Hypothesis 3 (H<sub>3</sub>): Signs, Symbols, and Artifacts has a direct and significant influence on Pleasure.
- d. Hypothesis 4 (H<sub>4</sub>): Financial Security has a direct and significant influence on Pleasure.
- e. Hypothesis 5 (H<sub>5</sub>): Interactivity has a direct and significant influence on Pleasure.
- f. Hypothesis 6 (H<sub>6</sub>): Ambient has a direct and significant influence on Arousal.
- g. Hypothesis 7 (H<sub>7</sub>): Spatial layout and functionality has a direct and significant influence on Arousal.
- h. Hypothesis 8 (H<sub>8</sub>): Signs, Symbols, and Artifacts has a direct and significant influence on Arousal.
- i. Hypothesis 9 (H<sub>9</sub>): Financial Security has a direct and significant influence on Arousal.
- j. Hypothesis 10 (H<sub>10</sub>): Interactivity has a direct and significant influence on Arousal.
- k. Hypothesis 11 (H<sub>11</sub>): Pleasure has a direct and significant influence on Attitudes.
- l. Hypothesis 12 (H<sub>12</sub>): Arousal has a direct and significant influence on Attitudes.
- m. Hypothesis 13 (H<sub>13</sub>): Ambient mediated by Pleasure has a significant effect on Attitudes.
- n. Hypothesis 14 (H<sub>14</sub>): Spatial layout and functionality mediated by Pleasure has a significant effect on Attitudes.

- o. Hypothesis 15 (H<sub>15</sub>): Signs, symbols, and artifacts mediated by Pleasure has a significant effect on Attitudes.
- p. Hypothesis 16 (H<sub>16</sub>): Financial security mediated by Pleasure has a significant effect on Attitudes.
- q. Hypothesis 17 (H<sub>17</sub>): Interactivity mediated by Pleasure has a significant effect on Attitudes.
- r. Hypothesis 18 (H<sub>18</sub>): Ambient mediated by Arousal has a significant effect on Attitudes.
- s. Hypothesis 19 (H<sub>19</sub>): Spatial layout and functionality mediated by Arousal has a significant effect on Attitudes.
- t. Hypothesis 20 (H<sub>20</sub>): Signs, symbols, and artifacts mediated by Arousal has a significant effect on Attitudes.
- u. Hypothesis 21 (H<sub>21</sub>): Financial security mediated by Arousal has a significant effect on Attitudes.
- v. Hypothesis 22 (H<sub>22</sub>): Interactivity mediated by Arousal has a significant effect on Attitudes.

### **5.3. Research Method**

#### **5.3.1. Object of Study**

We select consumers from a music streaming platform, specifically for non-user of object studies, in across nations. As a research technique, case studies include an in-depth and comprehensive analysis of a specific case that is conducted up close and personal. In addition, this research will examine a phenomenon in the context of its real-world occurrence. Such insights will seldom be obtained via case selection that is based on representativeness alone. The researchers will thus employ information-oriented selection rather than random sampling when choosing a case for a case study, rather than selecting cases at random (Flyvbjerg, 2006). As a result of researchers' extensive local knowledge, we chose global consumers as our case study. Fenno (2014) stated that when consumers have extensive local knowledge, they will offer a plausible line of explanation based on a rich knowledge of settings and circumstances.

New kinds of digital servicescape are being developed as a result of technological advancements and service creativity. On the basis of worldwide consumer behavior, this research will examine the transformation of the purchasing process from a physical store into an online store, which we refer to as the e-servicescape environment. This study aims

to explore the construct of the e-servicescape and its effect on emotions and attitudes by generating new connections and relationships in the virtual world. According to Mehrabian and Russell's (1974a) S-O-R framework, this article would contribute to the literature by giving a better knowledge of the e-servicescape and emotional states on customer behavior, in addition to providing a better understanding of consumer behavior.

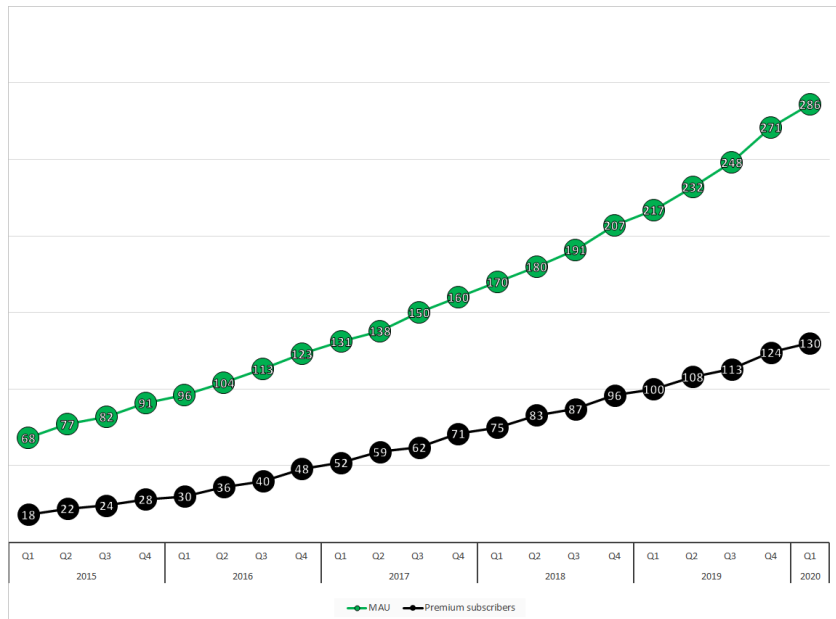
Nowadays, almost everyone must spend a significant amount of their time on the internet, whether it is for business or to listen to music, among other things. In addition to being the world's largest music streaming platform in terms of subscribers, Spotify is a straightforward service that requires users to register before subscribers can get access to one of the most extensive collections of music in history, as well as podcasts and other audio material. It is based on the freemium business model. The use of basic products and services provided free of charge can be increased by paying money (premium) if consumers want additional features, services, or virtual items that will enhance the functionality of the free version of the software (de la Iglesia and Gayo, 2009; Hayes, 2008). While free Spotify access is available, it comes with poorer music quality and advertising, and it is dependent on an active internet connection. The Spotify Premium subscription allows users to stream high-quality recordings without interruption and download music to any device on which they have the Spotify app installed (including smartphones and tablets).

#### **5.3.1.1. Spotify User Statistics**

According to the company's Q1 2020 report, there were 286 million monthly active users of the streaming service. Spotify Premium members accounted for 130 million of the total. In the fourth quarter of 2019, there were 271 monthly active Spotify users and 124 million Spotify Premium members, an increase. Year-on-year, there has been a 69 million rise in users (a 32 percent increase), as well as a 30 million increase in subscribers (30 percent increase) – a growth rate that has been quite constant in previous years.

**Figure 20.**

*Spotify MAU and Premium Subscribers Comparison*



Source: Spotify (January, 2021)

Users and subscribers in total fell within the ranges anticipated in the previous quarter, with 279-289 million and 126-131 million, respectively, being the highest and lowest figures. Spotify expects that overall monthly users will grow to 289-299 million, and Spotify Premium subscribers will increase to 133-138 million, in the first quarter of 2020, according to the company. Spotify expects to have 328-348 million monthly active users (MAU) and 143-153 Premium members by the end of the year.

Spotify said that these numbers are intentionally modest since the company's main podcast strategy is still in the early stages of implementation. Earlier this year, before the coronavirus epidemic and accompanying social distancing measures took root in Europe and North America, forecasters predicted that the year would be challenging. The coronavirus epidemic has thrown doubt over Spotify, as it has over a number of other businesses.

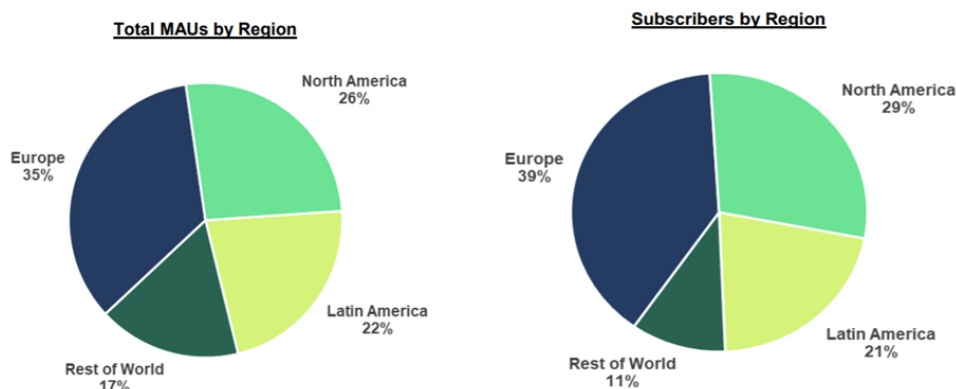
### 5.3.1.2. Spotify Users and Subscribers by Region

Spotify is accessible in 79 markets worldwide, according to the company. It seems that there isn't a significant difference between the geographies of Spotify users and those of Spotify members. In both instances, Europe is the largest market, followed by North America, which is the second largest market. In terms of subscribers, we observe a more skewed distribution towards these two more wealthy areas (39 percent European vs 35

percent of MAU and 29 percent North American vs 26 percent of MAU). According to Spotify, the fastest growth is happening in the less-established 'rest of the world' sector of the market (which encompasses Asia). It is true that Spotify gained 2 million subscribers in India within two months after the country's February 2019 debut of its service. In Q4 2019, user growth in the more established areas (a category into which Latin America was just recently included in Spotify's quarterly reports) increased, with North America seeing its greatest quarterly level of growth since the first quarter of 2018.

**Figure 21.**

*Spotify Users and Subscribers by Region, Q4 2019*



Source: Spotify (2020)

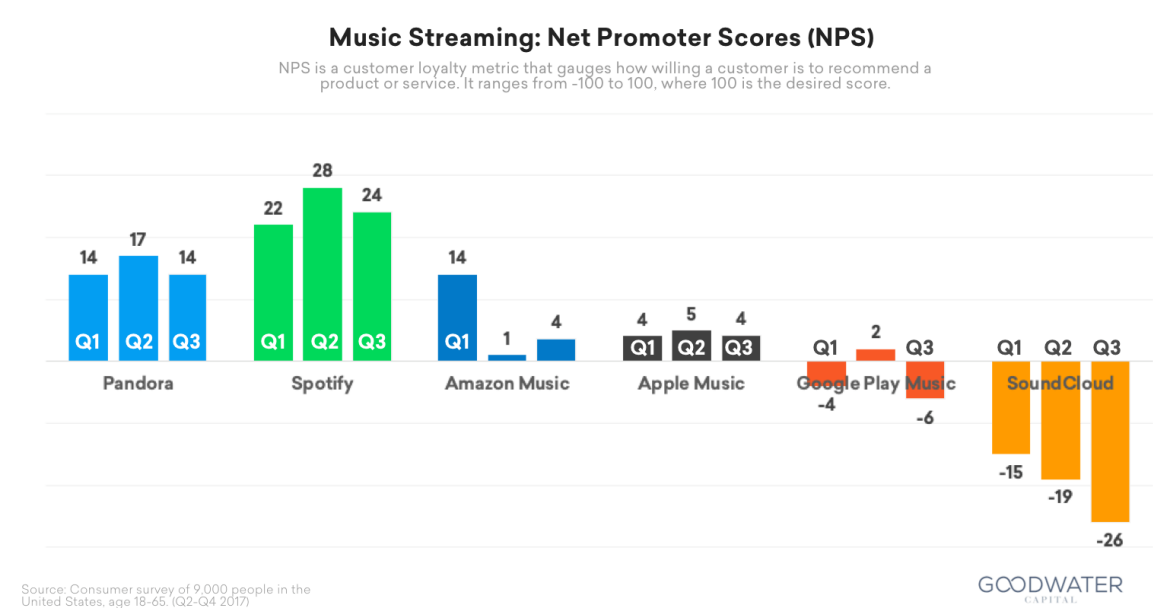
In looking at Spotify MAU growth in different areas, we can see that growth in the rest of globe and Latin America has picked up speed in recent years, while growth in North America has been much steadier over the last several years. This is hardly unexpected considering that Spotify is competing in the most competitive industry, with Apple Music and Pandora (both available in North America) encroaching on Spotify's turf. Europe, on the other hand, has seen rapid increase in MAUs, with the fourth quarter of 2019 standing out as a particularly strong quarter. While it is not out of the question that Latin America, or perhaps the rest of the globe, could ultimately surpass North America, Europe's position at the top of the heap seems to be secure for the foreseeable future.

### 5.3.1.3. Spotify User Satisfaction

Spotify is head and shoulders above the competition in term of customer happiness. The Net Promoter Score (NPS) determines how likely a consumer is to suggest a product or service. In the final three quarters of 2017, Goodwater Capital released a broad range of Net Promoter Scores (NPS) of competing music streaming services, dating back many years. Spotify is the clear leader in each quarter, with ratings ranging from 22-28 (this is not

comparable to PC Mag's results, since it was conducted at a different period and with a different respondent pool). As a result of this, neither Apple Music nor Google Play Music received a score greater than 5, and both were in the negative numbers. In second position is Pandora, which has a 14-17 range, while Amazon has a surprisingly low 14-17 range following a strong Q2 score of 14.

**Figure 22.**  
*Spotify User Satisfaction*

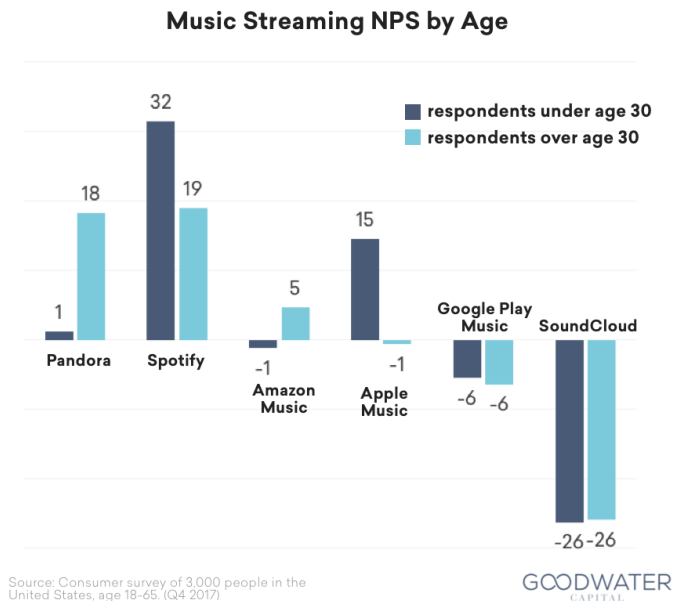


Source: Goodwater Capital (2017)

Among users under the age of 30, Spotify had a significant advantage over the competition. With the exception of Pandora, which seems to do very well with over-30s, the younger population typically provided better overall ratings across all platforms. These results reflect the fact that younger users have a much greater degree of comfort with streaming than older users. On the other hand, we could speculate that, during the intervening years, elder consumers may have gotten more comfortable with streaming services like Spotify since they have become a more known part of the music scene.

**Figure 23.**

*Spotify User Satisfaction by Age*



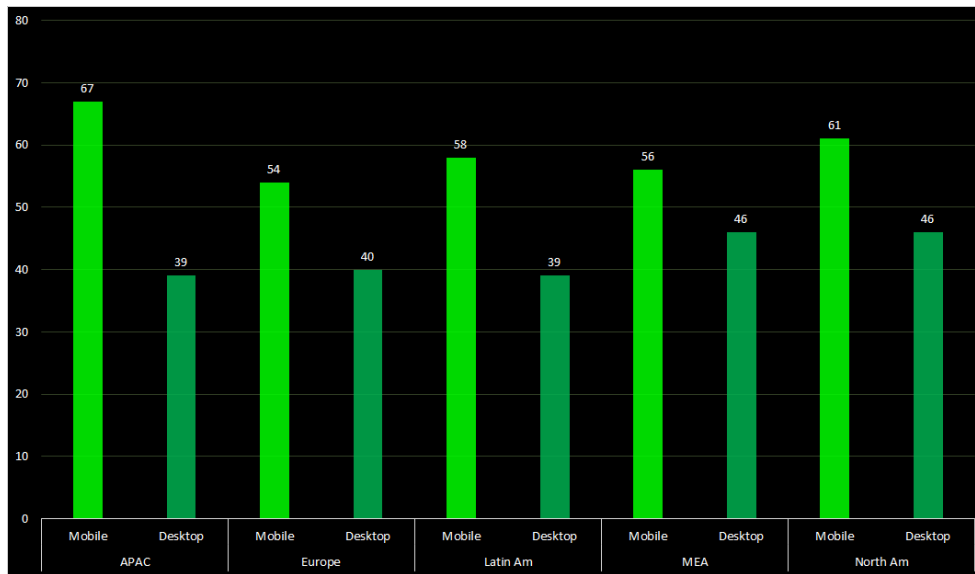
Source: Goodwater Capital (2017)

#### 5.3.1.4. Spotify User's Devices

The World Wide Web Index Spotify statistics from the second quarter of 2018 divide Spotify listening into two categories: mobile and desktop listening by area, with overlap when consumers use both. Spotify listening is dominated by mobile devices in each of the regions studied. The most prominent example of this can be seen in the APAC area, where mobile devices account for 67 percent of Spotify listening, compared to 39 percent on desktop computers. With 46 percent of all Spotify listening occurring on desktop computers, MEA and North America have the greatest proportion of desktop Spotify listening, with MEA also having the lowest proportion of mobile Spotify listening at 56 percent (compared to 61 percent in North America).

**Figure 24.**

*Spotify Devices by Region*



Source: GlobalWebIndex (2020)

When streaming services are broken down by operating system, the findings are not very unexpected. iOS users are more likely than Android users to have used Apple Music, while Android users are more likely than iOS users to have used Google Play Music, according to the data. According to US consumers in the past three quarters of 2017, Spotify is the most popular streaming service on both iOS and Android, behind only the native streaming services and Pandora in terms of popularity on either platform. In the intervening years, we've learned that Spotify has surpassed Pandora in terms of user numbers, and that Google Music has sunk to a position of relative insignificance. As a result, Spotify's ratings in these measures may have improved as a result of this.

### 5.3.2. Research Paradigm

As researchers, we shall explain our philosophical stance with regard to the research that we do in this part of the paper. The goal of our study method is to create fresh views on knowledge while deepening our grasp of a subject matter. Taking a philosophical position in research will position the researcher as the study's executor, who will define, investigate, analyze, discuss, and answer the problems that he or she is confronted with; and it is a commitment to how we can understand something, as stated by Johnson and Duberley (2000) and Saunders et al. (2016).

This study falls under the category of empirical research since it examines the viability of a solution using empirical data. Quantitative research is the kind of empirical study that we do. A research design for this kind of study is chosen in accordance with the research subject we want to explore and the research question we wish to answer. This research employs a quantitative approach that is concerned with quantifying the data gathering and analysis processes (Bryman, 2012). An empiricist and positivist philosophy, as well as a deductive method that emphasizes the testing of hypothesis, help to influence the development of this approach (Bryman, 2012).

As indicated by Babbie (2010), Muijs (2010), and Given (2008), our study advances the objective empirical examination of observable phenomena in order to test and explain connections. To put it another way, our quantitative study entails the systematic empirical examination of quantitative characteristics and phenomena, as well as their connections, by posing a specific question and collecting numerical data, which is then analyzed with the use of statistical methodologies. Experimental, correlational, and survey (or descriptive) research designs are among the quantitative research designs available (Creswell, 2008). Statistics obtained from quantitative research may be used to determine whether or not there is an association or a causal connection between two or more variables. Positivism is a philosophical and theoretical position that is closely associated with quantitative research.

Furthermore, quantitative data collecting techniques depend on random sampling and structured data collection devices that categorize a wide range of events into predefined response categories, which are then analyzed. If the data are gathered using appropriate sample and data collecting techniques, the findings of these approaches may be summarized, compared, and extrapolated to larger populations (Eyler, 2020). In quantitative research, it's all about evaluating hypotheses generated from theory or being able to assess the magnitude and scope of a phenomena of interest (Creswell, 2008; Eyler, 2020). This thesis takes a quantitative method and conforms to the positivist philosophy, which states that all knowledge is positive – and particularly originates from experience and patterns of connection with one another – and can be evaluated (Macionis and Gerber, 2010).

### **5.3.3. Survey Instrument Development**

To test the structural model, a survey of the ambient; spatial layout and functionality; signs, symbols, and artifacts; financial security, interactivity by consumers when browsing e-commerce websites and the attitudinal that results from emotions of the website will

carried out. Since the exact number of consumers of the website in this research is unknown, a random sampling approach, will be used to select the respondents.

The model employed in this study includes eleven observe variables (ambient; spatial layout and functionality; signs, symbols, and artifacts; financial security; interactivity; emotions; and attitudes). In order to measure those variables, the researcher needed to operationalize the construct. Hair et al. (2010) maintain that researchers should review the extant literature to find and adopt the individual constructs that have performed well in previous research. If no measurement items or scale are found, the measurement for new constructs must be developed based on the construct conceptualizations and definitions found in the literature (Hollebeek et al., 2014).

The following steps were taken to operationalize the constructs in this study. *First*, literature review ambient; spatial layout and functionality; signs, symbols, and artifacts; financial security; interactivity within e-servicescape, as this construct has been widely applied in marketing research (Harris and Goode, 2010; Tankovic and Benazic, 2018; Jeon and Jeong, 2009; Tran and Strutton, 2020; Tran et al., 2012). *Second*, e-servicescape for emotions is a construct according to a broad literature review uncovered a scale for emotions (Mehrabian and Russell, 1974a; Donovan and Rossiter, 1982; Wu et al., 2014) as internal response of consumers; and attitudes (Wu et al., 2014; Lee and Lee, 2019), which would adapt for this research and the pre-test of the questionnaire.

#### **5.3.3.1. e-Servicescape Scale**

In this study, e-servicescape is defined as Ambient which the items are drawn from Harris and Goode (2010) and Tankovic and Benazic (2018). According to Harris and Goode (2010, p. 234) consumers' perceptions of the aesthetic appeal of websites were quantified using three measures that assessed perceived visual appeal, design uniqueness, and entertainment value. Moreover, Tankovic and Benazic (2018, p. 1130) stated that Layout and Functionality include usability, relevance of information, customization/personalization. Jeon and Jeong (2009, p. 6) examined Signs, Symbols, and Artifacts as the keywords and meta-tags in expressing a company's image online that define the target market's qualities. On the other hands, Financial Security defined as was measured via gauges of ease of payment and perceived security (Harris and Goode, 2010, p. 235; Tankovic and Benazic (2018, p. 1130)). Tran and Strutton (2020, p. 3) revealed that financial security may operate as a deal breaker, preventing or delaying the execution of online transactions. Finally,

according to Tran and Strutton (2020, p. 14) Interactivity defines as consumers visitation on company's website and perceive themselves to be communicating directly with marketing companies through their technical interface.

**Table 29.**

*Ambient (X1) Measurement Items*

| Variable                                            | Items                                                                                                                                                                                                  |
|-----------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Ambient (X1)                                        | Harris and Goode (2010);<br>Tankovic and Benazic (2018)                                                                                                                                                |
| 1. Spotify is visually attractive (X1.1)            | The ambient factor consists of visual appeal, originality of design, entertainment value, sight sense, interesting graphics, fonts, quality photographs, website's design, color, style and freshness. |
| 2. Spotify uses visually appealing graphics (X1.2)  |                                                                                                                                                                                                        |
| 3. Spotify is aesthetically appealing (X1.3)        |                                                                                                                                                                                                        |
| 4. Spotify design is innovative and creative (X1.4) |                                                                                                                                                                                                        |
| 5. Spotify is very entertaining (X1.5)              |                                                                                                                                                                                                        |
| 6. Spotify provides enjoyment (X1.6)                |                                                                                                                                                                                                        |

**Table 30.**

*Spatial Layout and Functionality (X2) Measurement Items*

| Variable                                                               | Items                                                                                                                  |
|------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Spatial Layout and Functionality (X2)                                  | Tankovic and Benazic (2018)                                                                                            |
| 1. Spotify provides useful navigational aids (X2.1)                    | Overall structure, arrangement, organization, layout, wise use of space, and easy navigational functions on web pages. |
| 2. Spotify is easy to navigate (X2.2)                                  |                                                                                                                        |
| 3. Spotify's e functions on Spotify are easy to operate (X2.3)         |                                                                                                                        |
| 4. Spotify is user-friendly (X2.4)                                     |                                                                                                                        |
| 5. Spotify visual information is easily accessed (X2.5)                |                                                                                                                        |
| 6. All relevant information on Spotify is easily available (X2.6)      |                                                                                                                        |
| 7. Spotify technical details about menus can be easily accessed (X2.7) |                                                                                                                        |
| 8. Spotify is tailored towards me (X2.8)                               |                                                                                                                        |
| 9. I feel that Spotify is designed for me (X2.9)                       |                                                                                                                        |
| 10. Spotify's services are often personalized to me (X2.10)            |                                                                                                                        |

**Table 31.***Signs, Symbols, and Artifacts (X3) Measurement Items*

| Variable                                                                          | Items                                                                                                                                                  |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Signs, Symbols, and Artifacts (X3)                                                | Jeon and Jeong (2009)                                                                                                                                  |
| 1. If we type keywords, Spotify is easy to find in the search engine (X3.1)       | The use of search aids for internal purposes in order to assist customers in seeking some information or products within an online service environment |
| 2. If we type meta-tag words, we found Spotify easily in the search engine (X3.2) |                                                                                                                                                        |
| 3. If we type catch phrases, will draw internet browsers' attention (X3.3)        |                                                                                                                                                        |

**Table 32.***Financial Security (X4) Measurement Items*

| Variable                                                               | Items                                                                                                              |
|------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| Financial Security (X4)                                                | Harris and Goodie (2010);<br>Tankovic and Benazic (2018);<br>Tran and Strutton (2020)                              |
| 1. Payment procedures take a short time to complete on Spotify (X4.1)  | The extent to which consumers perceive the payment processes and general policies of a web site as secure or safe. |
| 2. Online payment process is reasonable (X4.2)                         |                                                                                                                    |
| 3. Paying for goods is straightforward on Spotify (X4.3)               |                                                                                                                    |
| 4. Spotify has efficient payment procedures (X4.4)                     |                                                                                                                    |
| 5. The payment facilities of Spotify are easy to use (X4.5)            |                                                                                                                    |
| 6. I have no security concerns about buying things from Spotify (X4.6) |                                                                                                                    |
| 7. Spotify seems security conscious (X4.7)                             |                                                                                                                    |

**Table 33.***Interactivity (X5) Measurement Items*

| Variable | Items |
|----------|-------|
|----------|-------|

|                                                                     |                                                                                                            |
|---------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|
| Interactivity (X5)                                                  | Keng and Ting (2009); Tran and Strutton (2020)                                                             |
| 1. Spotify enables me to view the music in different ways (X5.1)    | The degree to which users can participate in a website through browsing, searching, or providing feedback. |
| 2. Spotify has a search tool which helps me find what I want (X5.2) |                                                                                                            |
| 3. Spotify helps me to compare music and genres (X5.3)              |                                                                                                            |
| 4. I feel that this is a very engaging app (X5.4)                   |                                                                                                            |
| 5. I believe that Spotify is a very dynamic one (X5.5)              |                                                                                                            |

### 5.3.3.2. Emotions Scale

In this study, emotions toward the web/app are defined as a part of internal response from e-servicescape. At the emotional level, customers perceive the e-servicescape from various stimuli, such as ambient; spatial layout and functionality; signs, symbols, and artifacts; financial security; and interactivity. The items for emotions toward the web / app are drawn from Mehrabian and Russell (1974a, Appendix B and p. 47); Donovan and Rossiter (1982) stated that “an emotional state in an individual that can be characterized in terms of the three PAD dimensions, which are factorially orthogonal. Pleasure-displeasure refers to the degree to which the person feels good, joyful, happy, or satisfied in the situation; arousal-non-arousal refers to the degree to which a person feels excited, stimulated, alert, or active in the situation; and dominance-submissiveness refers to the extent to which the individual feels in control of, or free to act in, the situation” (p. 38). In this study, we did not use Dominance because it is not only redundant but also inappropriate for assessing emotions. Donovan and Rossiter (1982) stated that “although evidence for the suitability of the pleasure and arousal dimensions appears very convincingly over a broad spectrum of situations, evidence for the dominance dimension is more tenuous.... dominance requires a cognitive interpretation by the person and is therefore not purely applicable in situations calling for affective responses” (p. 38). In the context of current empirical research, Wu et al. (2014) apply the same definition of emotional states from Mehrabian and Russell's (1974a) which is “pleasure as the degree to which a person feels good, joyful, or happy, and arousal as the degree to which a person feels excited, stimulated, alert or active” (p. 11).

**Table 34.***Emotions toward the web / app (Z) Measurement Items*

| Variable                            | Items                                                                                     |
|-------------------------------------|-------------------------------------------------------------------------------------------|
| Pleasure (Z1)                       | Mehrabian and Russell (1974a); Donovan and Rossiter (1982); Wu et al. (2014)              |
| When I am using Spotify, I feel.... | The degree to which the person feels good, joyful, happy, or satisfied in the situation   |
| 1. Unhappy – Happy (Z1.1)           |                                                                                           |
| 2. Annoyed – Pleased (Z1.2)         |                                                                                           |
| 3. Unsatisfied - Satisfied (Z1.3)   |                                                                                           |
| 4. Melancholic – Contented (Z1.4)   |                                                                                           |
| 5. Despairing – Hopeful (Z1.5)      |                                                                                           |
| 6. Bored – Relaxed (Z1.6)           |                                                                                           |
| Arousal (Z2)                        | Mehrabian and Russell (1974a); Donovan and Rossiter (1982); Wu et al. (2014)              |
| When I am using Spotify, I feel.... | The degree to which a person feels excited, stimulated, alert, or active in the situation |
| 1. Relaxed – Stimulated (Z2.1)      |                                                                                           |
| 2. Calm – Excited (Z2.2)            |                                                                                           |
| 3. Sluggish – Frenzied (Z2.3)       |                                                                                           |
| 4. Dull – Jittery (Z2.4)            |                                                                                           |
| 5. Sleepy - Wide-awake (Z2.5)       |                                                                                           |
| 6. Unaroused – Aroused (Z2.6)       |                                                                                           |

**5.3.3.3. Attitudes Scale**

In this study, attitudes toward the web / app are defined as a cumulative response as a result of emotional processing from e-servicescape. The items for attitudes toward the web / app are drawn from Wu et al. (2014); and Lee and Lee (2019). Wu et al. (2014) examined that attitude toward the website is defined as an emotional evaluation that occurs after browsing a website. Correspondingly, Lee and Lee (2019) stated that “improving the aesthetics of the site can improve consumers’ attitudes” (p. 474) and “consumer attitudes lead to profits for retailers” (p. 465).

**Table 35.***Attitudes toward the web / app (Y) Measurement Items*

| Variable                                                    | Items                                                         |
|-------------------------------------------------------------|---------------------------------------------------------------|
| Attitudes (Y)                                               | Wu et al. (2014); and Lee and Lee (2019)                      |
| 1. I think that this app design is comfortable to me (Y1)   | An emotional evaluation that occurs after browsing a website. |
| 2. I like to spend time on exploring this app (Y2)          |                                                               |
| 3. I enjoy sharing this app with others (Y3)                |                                                               |
| 4. I feel good about this app (Y4)                          |                                                               |
| 5. This app is reliable (Y5)                                |                                                               |
| 6. This app provides a good music listening experience (Y6) |                                                               |
| 7. I prefer to listen music at this app (Y7)                |                                                               |

In order to prevent issues with the instructions, questionnaire design, and scale validation, the data for this research will be pre-tested prior to being used (Zikmund et al., 2011). For statistical data, such as descriptive statistics, reliability, and validity, pre-testing may be utilized as a preliminary pilot test (Zikmund and Babin, 2010). In marketing research, pre-testing is regarded to be an essential step in order to guarantee that the survey instrument will provide an acceptable result (van Teijlingen and Hundley, 2002).

During the following stage of the pre-test, a small-scale data collection will be conducted, in which 85 individuals will be asked to complete the questionnaire and encouraged to provide comments on items that they believe are unclear or might be improved upon. Based on the comments received during the pre-testing, only minor grammatical adjustments were made to the questionnaire, showing that the participants comprehend the questionnaire instruments.

Statistical tests will be conducted to determine the initial reliability of the scales that will be used in the questionnaire that will be pre-tested before the questionnaire is distributed. Cronbach's Alpha is the most commonly used measurement for assessing the consistency of an entire scale. Generally speaking, if the Cronbach's alpha values are higher than 0.70, the items are considered reliable measures of the construct (Hair et al., 2010).

#### **5.3.3.4. Design of Final Survey Instrument**

In the end, the questionnaire is divided into two parts. For example, the first part includes demographic information about the customer such as his or her age and gender, level of education, and ethnicity. The answers in this section will be assessed using nominal and ordinal scales, using fixed choice choices as the response categories. After identifying and categorizing each construct, the second section included items that were positively phrased and measured the e-servicescape and attitudes on a 5-point Likert scale, with 1 representing 'strongly disagree' and 5 representing 'strongly agree'. The third section included items that measured emotions on a 7-point Semantic scale and items that measured attitudes on a 5-point Likert scale, with 1 representing "strongly disagree" and 5 representing "strongly agree." A Likert scale is the most often used scale in marketing research, and it is widely regarded as the most straightforward scale for assessing customers' opinions because of its simplicity (Zikmund et al., 2011).

#### **5.4. Data Collection**

As with Study I, data collection for Study II took place on the Prolific website ([www.prolific.co](http://www.prolific.co)). To utilize the Google form as a tool, we must first enter the URL of the Google form into our Prolific account before distributing it to potential participants located around the world. Additionally, data retrieval is accessible online for one day (24 hours) and is neither time- or location-limited. If the information entered into the Prolific account matches the anticipated sample size, Prolific will suspend data collection for the balance of the time period.

We define our sample as Spotify non-users and explicitly indicate that this survey is for them. We examine parameters such as participants' active use of English while developing the Prolific service and have done a minimum of ten Prolific surveys without being rejected. The participants in Study I, II, and III are characterized by the fact that they have never participated in any of our previous studies. As a consequence, we ensure that each study includes a varied range of individuals.

Non-probability sampling considers appropriate for this research because the total population of global Spotify consumers is difficult to quantify, and there is lack of accuracy in public data (Reynolds et al., 2003; Zikmund et al., 2011). A number of conditions make it necessary to employ convenience sampling. First, as important component of this study, testing theory on the interrelationship between three important marketing constructs,

convenience sampling is regarded as a simple technique for limited budgets and time periods especially when the population data is unavailable (Zikmund and Babin, 2010).

The number of samples used in this study is 85 respondents for the pilot test and 390 respondents for the main test (De Vaus, 2002). The survey will be distributed online by using Google Form where the target population are represented in high proportions. We are collecting participants through Prolific. The sampling that we collect is convenience or accidental, where respondents are selected based on access that is relatively easier to reach by researchers. To sample friends, co-workers, or shoppers at a single mall, are all examples of convenience sampling.

## **5.5. Data Analysis Techniques**

### **5.5.1. Partial Least Squares Structural Equation Modeling (PLS-SEM)**

Several studies offer some evidence of the growing popularity of PLS route modeling among researchers in the scientific community (see Henseler et al., 2009). The results of the study provide insight into the researcher's rationale for using this specific statistical technique. The aim of many researchers' investigations is in accordance with the specific capabilities of PLS route modeling, according to these researchers. Since previously stated, the most significant motives are exploration and prediction, as PLS route modeling is suggested early in the theoretical development process in order to test and verify exploratory models (Henseler et al, 2009). The fact that PLS route modeling is appropriate for prediction-oriented research is yet another significant advantage of the technique (Henseler et al., 2009; Hair et al., 2021). The characteristics of PLS path modeling, which researchers regard as relevant for their studies on marketing, can be summarized (Henseler et al., 2009) as follows:

1. One of the main benefits of PLS is that it provides latent variable scores, which are proxies for the constructs that are assessed by one or more indicators (manifest variables).
2. PLS route modeling overcomes the difficulties associated with small sample sizes and, as a result, may be used in circumstances where other techniques are ineffective.
3. PLS path modeling is capable of estimating very complicated models that include a large number of latent and manifest variables.
4. PLS route modeling makes fewer assumptions about the distribution of variables and error terms than other path modeling methods.

5. PLS is capable of dealing with both reflective and formative assessment methods.

There are, however, a number of objections about the features of PLS route modeling that should be regarded with care, including the following. PLS route modeling does not make any less rigorous assumptions about the representativeness of the sample than other path modeling techniques do. It is often implied that PLS route modeling is the only approach capable of dealing with formative indicators (Chin, 1998) while in fact LISREL is capable of doing so as well (Jarvis et al., 2003). Although some evidence of PLS's positive behavior in the face of multicollinearity has been found in technique comparisons (Gustafsson and Johnson, 2004), PLS is not resistant to multicollinearity. As a result of the fact that PLS produces measurement models (formative) as well as structural models via the use of multiple regressions, PLS estimates are susceptible to multicollinearity issues.

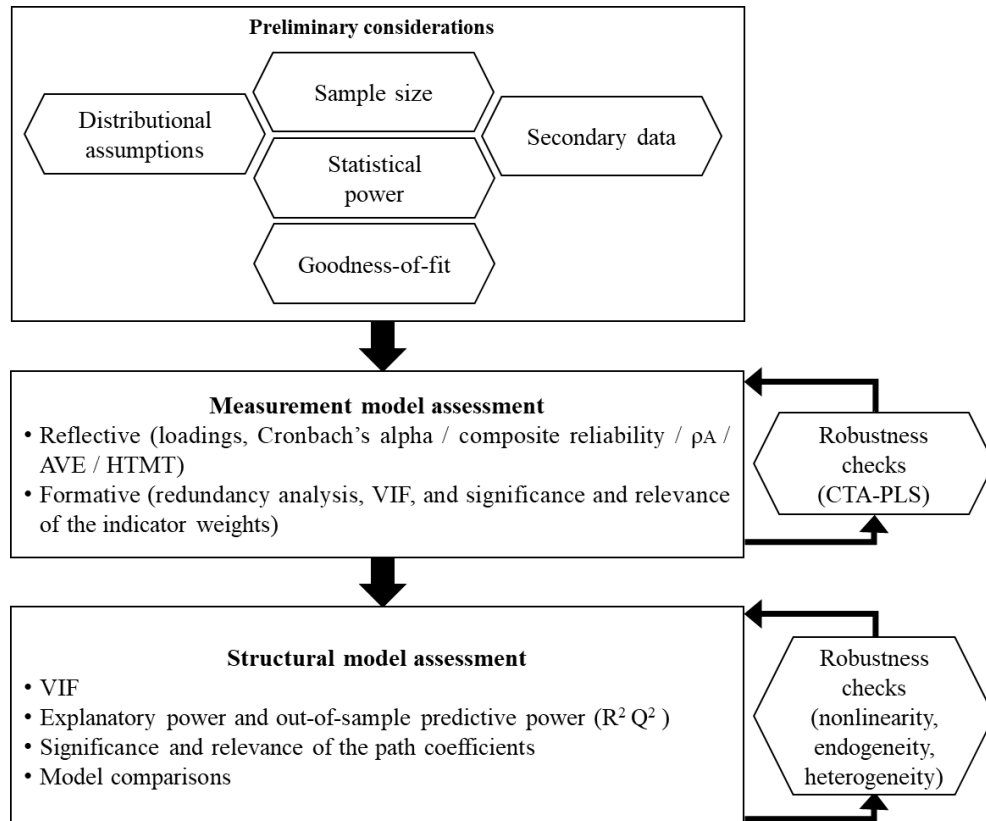
Comparing the number of papers published that used PLS-SEM to the number of articles published that used CB-SEM, the number of papers published that used PLS-SEM increased substantially in recent years (Hair et al., 2017). Hair and et al., (2012a) stated that a wide range of social science disciplines, including organizational management (Sosik et al., 2009), international management (Richter et al., 2015), operations management (Peng and Lai (2012), marketing management, and strategic management (Hair et al., 2012b), are now embracing the concept of PLS-SEM (Sosik et al., 2009).

When compared to the number of publications published using CB-SEM, the number of articles published using PLS-SEM has grown significantly in recent years (Hair et al., 2017). According to Hair et al. (2012a), PLS-SEM is currently being used in several social science fields, including organizational management (Sosik et al., 2009), international management (Richter et al., 2015), operations management (Peng and Lai, 2012), marketing management (Hair et al., 2012b).

Multiple researchers are attracted to the PLS-SEM approach in particular because it allows them to estimate large models with many constructs, indicator variables, and structural pathways without making assumptions about the underlying data distribution. For its part, PLS-SEM is a causal-predictive method to structural equation modeling that emphasizes prediction while estimating statistical models, whose structures are meant to provide causal explanations for the observed phenomena (Wold, 1982; Sarstedt et al., 2017). Through the use of this approach, it is able to overcome the seeming conflict between explanation and prediction, which is typically emphasized in academic research and serves as the basis for producing management implications in business (Hair et al., 2019b).

**Figure 25.**

*Preliminary consideration in PLS-SEM*



Source: Hair et al. (2019)

### 5.5.2. Preliminary Considerations

Using a combination of principle components analysis and ordinary least squares regressions, PLS-SEM predicts partial model structures in a given model (Mateos-Aparicio, 2011). This technique is often seen as a viable alternative to Jöreskog (1973). PLS-SEM is referred to as a variance-based method because it takes into consideration the entire variance and utilizes the total variance to estimate the parameters of the model (Hair et al., 2017). The following are the reasons why researchers are using PLS-SEM (Hair et al., 2019a):

- In cases when the analysis is concerned with the testing of a theoretical framework from a prediction viewpoint, this is known as a prediction perspective.
- The structural model is complicated when it has a large number of components, indicators, and/or model connections.

- In cases when the goal of the study is to better comprehend growing complexity by investigating theoretical extensions of existing theories (exploratory research for theory development).
- When the route model has one or more constructs that have been formatively assessed.
- In the case of financial ratios or other similar kinds of data artifacts, the study is considered quantitative.
- In cases when the study is dependent on secondary or archival data, it is possible that the findings will not be supported by thorough measurement theory.
- When the sample size is limited by a small population (for example, in business-to-business research); nevertheless, PLS-SEM is equally effective with high sample sizes.
- When there are concerns about distribution problems, such as a lack of normalcy.
- When the results of a study necessitate the use of latent variable scores for further analysis.

The above list provides an overview of points to consider when deciding whether PLS is an appropriate SEM method for a study.

Using a combination of principle components analysis and ordinary least squares regressions, PLS-SEM predicts partial model structures in a given model (Mateos-Aparicio, 2011). This technique is often seen as a viable alternative to Jöreskog (1973). PLS-SEM is referred to as a variance-based method because it takes into consideration the entire variance and utilizes the total variance to estimate the parameters of the model (Hair et al., 2017). The following are the reasons why researchers are using PLS-SEM (Hair et al., 2019):

- In cases when the analysis is concerned with the testing of a theoretical framework from a prediction viewpoint, this is known as a prediction perspective.
- The structural model is complicated when it has a large number of components, indicators, and/or model connections.
- In cases when the goal of the study is to better comprehend growing complexity by investigating theoretical extensions of existing theories (exploratory research for theory development).
- When the route model has one or more constructs that have been formatively assessed.

- In the case of financial ratios or other similar kinds of data artifacts, the study is considered quantitative.
- In cases when the study is dependent on secondary or archival data, it is possible that the findings will not be supported by thorough measurement theory.
- When the sample size is limited by a small population (for example, in business-to-business research); nevertheless, PLS-SEM is equally effective with high sample sizes.
- When there are concerns about distribution problems, such as a lack of normalcy.
- When the results of a study necessitate the use of latent variable scores for further analysis.

The criteria listed above offer an overview of the factors to consider when determining whether or not PLS is a suitable SEM technique for a certain investigation.

#### **5.5.2.1. Sample Size**

PLS-SEM may yield solutions with small sample sizes when models include a large number of constructs and objects (Willaby et al., 2015; Hair et al., 2017). Technically, the PLS-SEM approach does this by computing measurement and structural model connections separately, rather than simultaneously, as other algorithms do. PLS-SEM may be used to give solutions when other approaches, such as CB-SEM, provide excessively large findings or fail to converge with complicated models and limited sample sizes, according to many authors, including Reinartz et al. (2009), Henseler (2014), and Sarstedt et al. (2016b). Regardless of whether the data is from a common or composite model population, this is true. In general, the larger the sample size necessary to achieve an acceptable sampling error, the more varied a population is. Even if all other situational circumstances are same, this is true (Cochran, 1977). According to Akter et al. (2017), the majority of previous studies on sample size requirements in PLS-SEM failed to take into consideration the fact that the technique is equally useful for evaluating huge amounts of data. The PLS-SEM method, in reality, has significant potential for evaluating huge data sets, including secondary information that does not always include full justification on the basis of measurement theory (Rigdon, 2013).

However, PLS-SEM requires a big sample size to produce reliable result. Five issues are generally considered when determining the minimum and maximum sample size for structural equation modelling: 1) multivariate distribution, 2) estimation technique, 3) model complexity, 4) amount of missing data, and 5) the average error variance of the indicators

(Hair et al., 2010; Tabachnick and Fidell, 2007). Hair et al. (2010) suggest that if the model contains fewer than three constructs and the communalities are modest, then at least 200 completed questionnaires are required. Since this study contains five constructs with modest communalities, the sample size should be more than 200. However, Tabachnick and Fidell (2007) suggest that a large sample size ( $> 500$ ) tends to be more sensitive and makes goodness-of-fit measures suggest a poor fit. Thus, the sample size of this study preferably between 200 and 500 observations in order to meet the adequate requirement of PLS-SEM analysis.

#### **5.5.2.2. Distributional Assumptions**

Many researchers believe that the lack of distributional assumptions is the most important argument for adopting PLS-SEM over other methods (Hair et al., 2012b; Nitzl, 2016; do Valle and Assaker, 2016). Despite the fact that there is an obvious benefit of employing PLS-SEM in social science research, which nearly invariably depend on non-normal data, this alone does not serve as a sufficient justification for its use. The use of CBSEM may yield anomalous findings when data are non-normal when the size of the data set is restricted (Reinartz et al., 2009), while the use of PLS-SEM exhibits more resilience in similar circumstances (Sarstedt et al., 2016). It is worth noting that, in a small number of circumstances, non-normal data may also have an impact on PLS-SEM findings (Sarstedt et al., 2017). Because of this, selecting PLS-SEM alone for data distribution purposes is seldom sufficient; nevertheless, when combined with other reasons for adopting PLS-SEM, it is unquestionably advantageous.

#### **5.5.2.3. Statistical Power**

While comparing PLS-SEM to CB-SEM, researchers benefit from the higher degree of statistical power provided by the technique when utilizing PLS-SEM (Reinartz et al., 2009; Hair et al., 2017). This feature remains true even when estimating common factor model data, which is what CB-SEM assumes (Sarstedt et al., 2016). If a connection is present in the population and it has statistical significance, the PLS-SEM is more likely to recognize it as such if the association is significant (Sarstedt and Mooi, 2019). The increased statistical power provided by the PLS-SEM method is particularly helpful for exploratory research that investigates less established or still emerging theories. Furthermore, PLS-SEM is suitable

not only just for exploratory research, but also for confirmatory research in a variety of settings (Hair et al., 2021).

#### **5.5.2.4. Goodness-of-fit**

A statistical model's goodness-of-fit parameter quantifies how well it fits a collection of data (Hair et al., 2019). Measures of goodness-of-fit are often used to quantify the disparity between actual and anticipated values for a given model. Such measures can be used in statistical hypothesis testing, for example, to determine whether residuals are normal, to determine whether two samples are drawn from identical distributions (see Kolmogorov–Smirnov test), or to determine whether outcome frequencies follow a specified distribution (see Pearson's chi-square test) (Henseler et al., 2009; Hair et al., 2019). PLS-SEM is mainly concerned with the interaction between prediction and theory testing, and as such, findings should be verified appropriately (Shmueli, 2010). In this context, scientists have recently suggested novel assessment processes that are tailored to the predictive character of PLS-SEM (Shmueli et al., 2016).

#### **5.5.3. Evaluation of Partial Least Squares-Structural Equation Modeling Results**

To begin analyzing PLS-SEM findings, the first step is to look at the measurement models that were used. Reflective and formative conceptions are distinguished by the conditions that apply to them. After determining whether or not the measurement models satisfy all of the necessary requirements, researchers must next evaluate the structural model (Hair et al., 2021). As with other statistical techniques, PLS-SEM includes a set of rules of thumb that may be used to assess model findings (Chin, 2010; Götz et al., 2010; Henseler et al., 2009; Hair et al., 2021). Moreover, interpreting the outcomes, rules of thumb are general recommendations that vary based on the situation and situational context. Thus, the last stage in interpreting PLS-SEM findings consists in performing one or more robustness tests to ensure that the results are stable throughout the course of time. The applicability of these robustness tests is determined by the study environment, which includes factors such as the purpose of the analysis and the availability of data.

##### **5.5.3.1. Assessing Reflective Measurement Model or Outer Model**

A research approach that incorporates latent components as well as reflective and formative indicators may be used. Validity and reliability of these indicators need to be

established and verified. In the next section, we will examine the validity and dependability of models that all make use of reflective indicators. The PLS Algorithm in SmartPLS version 3.0 is used to get the following assessment of the measurement model, also known as the Outer Model. This procedure will simultaneously produce VIF,  $R^2$ ,  $f^2$ , and Path Coefficient values used in evaluating the Inner Model.

#### 1. Indicator Reliability (Loading Values)

The reliability of measurement indicators of latent variables is intended to determine whether or not the indicators are dependable. This is accomplished via the evaluation of the outcomes of the outer loading of each indicator. The presence of loading values greater than 0.7 indicates that constructs can explain more than 50% of the indicator variation (Hair et al., 2019a; Wong, 2013; Sarstedt et al., 2017; Hair et al., 2019b).

#### 2. Internal Consistency Reliability (Composite Reliability and Cronbach's Alpha)

It refers to the ability of an indicator to measure the latent concept (Memon et al., 2017). Composite dependability and Cronbach's alpha are two of the methods that are used to evaluate this. The method developed by Jöreskog (1971) is the one that is most often used to assess composite dependability. Composite reliability values between 0.6 and 0.7 are considered to have good reliability and "acceptable in exploratory research"; while values between 0.70 and 0.90 are considered to be "satisfactory to good" (Sarstedt et al., 2017). Unwanted response patterns (such as straight line) are possible when reliability levels of 0.95 and higher are obtained, which may result in inflated correlations between the indicators' error terms (Hair et al., 2019a). As a result, the anticipated Cronbach's alpha value is more than 0.9 (Ghozali and Latan, 2015).

#### 3. Convergent Validity (AVE and HTMT)

It is defined on the basis of the concept that the measurements of a construct should be strongly linked with one another (Ghozali and Latan, 2015). For each item on each construct, the Average Variance Extracted (AVE) for all items is used to determine the convergent validity of the construct using reflective indicators (Fornell and Larcker, 1981). The AVE value should be equal to or greater than 0.5. An AVE score of 0.5 or more indicates that the construct can explain 50% or more of the variation in the item under consideration (Wong, 2013, Sarstedt et al., 2017).

#### 4. Discriminant Validity

According to the concept that each indicator must be strongly linked to its construct, it seeks to establish whether or not a reflective indicator is a valid measure of its construct. Different construct instruments should not have a significant degree of correlation with one another (Ghozali and Latan, 2015). In the SmartPLS version 3.0 discriminant validity test application, Cross Loadings and Fornell-Larcker Criterion values, as well as Heterotrait-Monotrait (HTMT) values, are used to evaluate discriminant validity (Henseler et al., 2015).

a. Cross Loadings

Using cross-loading values for each construct, it is possible to guarantee that the correlation between constructs and measurement items is higher than the correlation between other constructs. In this case, the expected cross loading value is higher than 0.7 (Ghozali and Latan, 2015).

b. Fornell-Larcker Criterion

In addition to the Fornell-Larcker Criterion, which has been in use for more than 30 years, there is the Fornell-Larcker Criterion, which compares the square root values of each construct's Average Variance Extracted (AVE) to the correlation between the other constructs in the model (Henseler et al., 2015). In general, if the value of the square root AVE of each construct is higher than the value of the correlation between constructions with other constructs in the model, the model is said to have strong discriminant validity value (Fornell and Larker, 1981 in Wong, 2013).

c. Heterotrait - Monotrait Ratio (HTMT)

In order to determine discriminant validity, the HTMT technique is suggested as an alternate method. Furthermore, some experts believe that cross loading and the Fornell-Larcker Criterion are less sensitive in term of determining discriminant validity than other methods. Researchers Henseler et al. (2015) demonstrate that the Fornell-Larker criteria is ineffective, especially when the indicator loadings on a construct vary just marginally from one another (e.g. all the indicator loadings are between 0.65 and 0.85). The suggested HTMT values must be smaller than 0.9, according to Henseler et al. (2015), in order to guarantee discriminant validity between two reflective conceptions.

### 5.5.3.2. Assessing Formative Measurement Model or Inner Model

When formative components are incorporated in the structural model, the PLS-SEM method is the recommended option (Hair et al., 2019b). To begin, while analyzing a formative (structural model) measurement model, it is vital to look at the link between constructs and the model's predictive ability (Sarstedt et al., 2017). Then, using four criteria, such as the coefficient of determination ( $R^2$ ), cross-validated redundancy ( $Q^2$ ), effect size ( $f^2$ ), and path coefficients, assess the model's predictive abilities (Sarstedt et al., 2017).

#### 1. Variance Inflation Factor (VIF).

When evaluating collinearity, SmartPLS version 3.0 makes use of the Variance Inflation Factor (VIF). Multicollinearity is a phenomenon that occurs very often in statistics. In statistical modeling, multicollinearity is defined as a situation in which two or more independent variables or exogenous constructs are very strongly linked, resulting in the model's predictive performance being poor (Sekaran and Bougie, 2019). It is necessary that the VIF value be less than 5, since a value greater than 5 implies collinearity between constructions (Sarstedt et al., 2017). In an ideal situation, the VIF values would be close to 3 and even lower (Mason and Perreault, 1991; Becker et al., 2015).

#### 2. The coefficient of determination ( $R^2$ )

An exogenous construct may be used to evaluate how much of an endogenous construct can be explained by an exogenous construct, and the model's explanatory power is measured as a result of this (Shmueli and Koppius, 2011). The  $R^2$  statistic is often referred to as the in-sample predictive power statistic (Rigdon, 2012). It is anticipated that the coefficient of determination ( $R^2$ ) will be between 0 and 1 in this case. Models with  $R^2$  values of 0.75, 0.50, and 0.25 are considered strong, moderate, and weak, respectively (Sarstedt et al., 2017). Chin (1998) defined strong, moderate, and weak criteria as  $R^2$  values of 0.67, 0.33, and 0.19, respectively. It is possible to get  $R^2$  values of 0.90 when measuring a notion that is intrinsically predictable, such as physical processes. Similarly high  $R^2$  values in a model that predicts human attitudes, perceptions, and intentions are indicative of an overfitting situation (Hair et al., 2019b).

#### 3. Cross-validated Redundancy ( $Q^2$ )

Cross-validated redundancy ( $Q^2$ ) or Q-square tests are used for rate predictive relevance (Geisser, 1974; Stone, 1974). As a guideline,  $Q^2$  values should be larger than zero for a specific endogenous construct to indicate predictive accuracy of the structural model for

that construct (Hair et al., 2019b).  $Q^2 > 0$  indicates that the model has an accurate predictive relevance to certain constructs; while a  $Q^2$  value  $< 0$  indicates that the model lacks predictive relevance (Sarstedt et al., 2017). Cross-validated Redundancy ( $Q^2$ ) values are obtained by the Blindfolding procedure in SmartPLS version 3.0.

#### 4. Effect Size ( $f^2$ )

In addition to determining whether or not there is a statistically significant connection between variables, a researcher should determine the degree of impact between variables using the Effect Size or f-square method (Wong, 2013). F values of 0.02 are considered modest, 0.15 are considered moderate, and 0.35 are considered high. It is acceptable to ignore or disregard values smaller than 0.02 if they are deemed to have no impact (Sarstedt et al., 2017).

#### 5. Path coefficients

Then the path coefficients between constructs are measured to see the significance and strength of the relationship and to test the hypothesis. The path coefficients range from -1 to +1. As we get closer to +1, the relationship between the two constructs gets stronger. Relationships that are closer to -1 indicate that the relationship is negative (Sarstedt et al., 2017).

#### 5.5.4. Model Fit

SmartPLS version 3.0 evaluates the model's fit using the Standardized Root Mean Square Residual (SRMR). The SRMR is defined as the difference between the observed correlation and the implied correlation matrix model. SRMR allows assessing the average size of the differences between observed and predicted correlations as an absolute measure of the (model) fit criteria. Moreover, in order for the model to meet the model fit criteria, the SMSR value must be less than 0.05 (Cangur and Ercan, 2015).

#### 5.5.5. Robustness checks

Complementary techniques for evaluating the robustness of PLS-SEM findings have recently been suggested in recent research (Hair et al., 2018; Latan, 2018). These techniques are aimed at either the measurement model or the structural model, depending on the situation. Researchers, according to Sarstedt et al. (2019), should take into consideration

nonlinear effects, endogeneity, and unobserved heterogeneity while developing a structural model.

#### 1. Nonlinear effects

The Ramsey (1969) regression equation specification error test may be used to determine whether or not connections are nonlinear. The latent variable scores in the path model's partial regressions can be used to perform the test. When a test statistic is significant in any of the partial regressions, it suggests the possibility of a nonlinear impact. Additionally, using bootstrapping, researchers may create an interaction term to map a nonlinear impact in the model and determine whether or not it is statistically significant (Svensson et al., 2018).

#### 2. Unobserved heterogeneity

Unobserved heterogeneity arises when there are subsets of data that generate significantly different model estimates from one another. If this is the case, estimating the model using the whole data set is extremely guaranteed to provide erroneous results (Becker et al., 2013). To ascertain if the analysis of the whole data set is appropriate, each PLS-SEM investigation should include a regular check for unobserved heterogeneity as part of the procedure. A systematic method for detecting and addressing unobserved heterogeneity was suggested by Sarstedt et al. (2017b).

### 5.5.6. Testing for Mediation Effects

Several methods are used in the empirical testing of mediation effects, which may be divided into two main groups. The first category, labeled implicit Procedures, includes the more traditional and well-known methods such as the Baron and Kenny (1986) and James et al. (2006) Method, which both infer the presence (or absence) of mediation processes by examining the joint significance of various constituent paths connecting X to Y. The second category, explicit procedures include the Sobel Test (Sobel, 1982), the Distribution of Product Method (MacKinnon et al., 2002, 2007; Williams and MacKinnon, 2008), Bootstrapping (Bollen and Stine, 1990; Shrout and Bolger, 2002), Monte Carlo Simulation (Yuan and MacKinnon, 2009). We have used the explicit method approach in this research due to the fact that the mediator is clearly included in the model framework in this study. Thus, in mediating testing, we use two tests, namely Sobel Test and Bootstrapping. Certainly, there are positive and negative values in both tests, as shown in the following table:

**Table 36.***The Advantages and Disadvantages between Sobel Test and Bootstrapping*

| Method        | Advantages                                                                                                                                                                                                                                                                                     | Disadvantages                                                                                                                                                                                                                                                      |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Sobel Test    | <ul style="list-style-type: none"> <li>• Easily accomplished with the use of SEM software packages</li> <li>• Able to accommodate numerous mediators</li> <li>• Can be used to test contrasts<sup>1</sup></li> </ul>                                                                           | <ul style="list-style-type: none"> <li>• It has limited statistical power since it is based on the assumption that the sampling distribution of a particular indirect impact is normal, which is particularly true in small samples.</li> </ul>                    |
| Bootstrapping | <ul style="list-style-type: none"> <li>• Can accommodate multiple mediators in parallel or in a series</li> <li>• Corrects for the non-normality of the sampling distribution of a specific indirect effect</li> <li>• Offers a greater degree of flexibility to test for contrasts</li> </ul> | <ul style="list-style-type: none"> <li>• May result in elevated Type I error rates, in the case of Bias-Corrected Bootstrapping under specific conditions</li> <li>• Cannot be utilized to test for mediation effects in multi-level models<sup>2</sup></li> </ul> |

Source: Rungtusanatham et al. (2014)

*Note:* <sup>1</sup> Contrasts are statistical comparisons of specific indirect effects linking X to Y (MacKinnon, 2000; Preacher and Hayes, 2008); <sup>2</sup> Bias-Corrected Bootstrapping to test for mediation effects can result in elevated Type I error rates in small sample sizes when the magnitude of one path of a specific Indirect effect (e.g., the  $X \rightarrow M_1$ ).

#### 5.5.6.1. The Sobel Test

The Sobel Test (Sobel, 1982) has become the default or standard in a large number of SEM software programs, including AMOS, EQS, LISREL, and Mplus. The Sobel Test is a standardized procedure for measuring the magnitude of a mediation effect (MacKinnon, 2008). Zhou et al. (2011) provide an up-to-date illustration of how the Sobel Test was used to explore mediation effects. The link between the independent and dependent variables is assumed to be an indirect effect caused by the influence of a third variable (the mediator) on the relationship (Helm et al., 2010). Involving the mediator in a regression analysis model together with the independent variable, the influence of the independent variable will be reduced; however, the mediator's effect remains significant when just the independent variable is included in the model.

The Sobel test is essentially a specialized t-test that determines whether the reduction in the effect of the independent variable following the inclusion of the mediator is

statistically significant and, thus, whether the mediation effect following the inclusion of the mediator is statistically significant.

The Sobel test makes the assumption of a normal distribution, which is incongruent with the nonparametric PLS-SEM technique, which assumes a skewed distribution. The parametric assumptions of the Sobel test are seldom valid for the indirect effect  $p1$ , since the multiplication of two normally distributed coefficients leads in a nonnormal distribution of their product, contrary to the assumptions of the Sobel test. Furthermore, the Sobel test necessitates the use of unstandardized path coefficients as input for the test statistic, which results in a lack of statistical power, particularly when used with small sample sizes. As a result of these findings, the Sobel test has been discredited as a means of assessing mediation analyses, particularly in PLS-SEM investigations (e.g., Klärner et al., 2013; Sattler et al., 2010).

Beyond the fact that it is widely accessible in SEM software, the Sobel Test has the advantage of being able to handle models with several mediation processes occurring simultaneously or sequentially. More importantly, contrast tests can be used to determine whether the strength of one specific indirect effect (for example,  $a1b1$ ) is equal to or greater than the strength of another specific indirect effect (for example,  $a2b2$ ), as well as whether the magnitudes of the various specific indirect effects are equal or differ (MacKinnon, 2000; Preacher and Hayes, 2008). The Sobel Test, on the other hand, has an inherent disadvantage in that it is reliant on the assumption that the sample distribution of an indirect influence, whether  $a1b1$  or  $a2b2$ , is normally distributed (MacKinnon et al., 2002). This assumption is often violated in the case of small sample sizes (Aroian, 1947), resulting in statistically insignificant Sobel Test results, as several studies have shown (MacKinnon et al., 2002, 2004; Taylor et al., 2008; Cheung and Lau, 2008)

It is preferable to bootstrap the sample distribution of the indirect impact, rather than employing the Sobel test, when investigating indirect effects. This method has been proposed in the context of regression (Preacher and Hayes, 2004), and it has been implemented in Hayes' SPSS-based PROCESS macro (<http://www.processmacro.org/>) that is available online. Bootstrapping may be used with more confidence with small sample sizes since it makes no assumptions about the distribution of the variable or the sampling distribution of the statistics. As a consequence, the methodology is well-suited for use with the PLS-SEM method and has been included into the SmartPLS 3 software. Additionally,

as compared to the Sobel test, bootstrapping the indirect influence yields a higher degree of statistical power.

#### **5.5.6.2. Bootstrapping**

Bootstrapping is a technique for estimating the sampling distribution of an estimator by sampling from the original sample and replacing it with new samples. A population parameter such as the mean, median, percentage, odds ratio (or correlation coefficient), or regression coefficient is most typically employed to obtain robust estimates of standard errors and confidence ranges for the parameter in question (or a combination of these). Logan and Wolesensky (2009) used the term "plug-in principle" to describe the technique of estimating functions of a population distribution by assessing the same functionals at an empirical distribution based on a sample of the population distribution. In order to estimate the population mean, this technique utilizes the sample mean; in order to estimate the population median, it uses the sample median; in order to estimate the population regression line, it uses the sample regression line, and so on (Logan and Wolesensky, 2009).

This method may be utilized for the construction of hypothesis testing procedures. The technique is often employed as a more reliable alternative to inference based on parametric assumptions when such assumptions are in question, or when parametric inference is either impractical or involves the employment of very complex formulae for the computation of standard errors. As well as particle filters, genetic type algorithms, and similar resample/reconfiguration Monte Carlo methods utilized in computational physics, bootstrapping approaches are employed in the updating-selection transitions of genetic type algorithms and particle filters (Del Moral, 2004; 2013). This is accomplished by replacing progressively empirically weighted probability measures with empirical measurements using a bootstrap procedure. The bootstrap method allows for the replacement of samples with low weights with copies of samples with high weights in order to increase the power of the sample.

Bootstrapping is a flexible technique that may be used to solve a wide range of inferential issues that a researcher may encounter. If the behavior of a statistic during repeated sampling is unknown, too complex to construct from scratch, or very context-dependent, this technique may be quite helpful (Hayes, 2017). It will not delve into all of the finer intricacies of bootstrapping since there are excellent articles and whole books dedicated to this subject and its variants already available (Good, 2001; Lunneborg, 2000;

Mooney and Duval, 1993; Rodgers, 1999; and Wood, 2005) for excellent overviews. Bollen and Stine (1990) were the first to use Bootstrapping to study mediation processes. Moreover, MacKinnon et al. (2004), Preacher and Hayes (2004), and Shrout and Bolger (2002) have led to the widespread use of Bootstrapping as a technique for investigating mediation effects in the literature. Saldanha et al. (2013) research provides an excellent illustration of how to use bootstrapping to test for mediation effects in a research study.

Bootstrapping is a technique for testing mediation effects that offers a number of benefits over other methods. This method not only has the capability of correcting for non-normality in the sample distribution of a specific indirect impact, but also it has the capability of accommodating models with numerous mediation processes running in parallel or in succession. The core of bootstrapping stays consistent across applications, regardless of the inferential issue being addressed.  $n$  is the number of people in the original sample, and it is regarded as a tiny representation of the population that was initially sampled. This sample is then "resampled" with replacement, and a statistic of interest is computed in the new sample of size  $n$  that is created as a result of the resampling procedure.  $n$  = number of observations in the sample.

In mediation analysis, bootstrapping is used to create an empirically determined representation of the sample distribution of the indirect effect, and this empirical representation is then used to build a confidence interval for  $TaTb$  based on the sampling distribution of the indirect effect. It should be noted that, in contrast to the normal theory method, no assumptions are made regarding the form of  $ab$ 's sampling distribution. Bootstrap confidence intervals are more sensitive to the irregularity of the sample distribution of  $ab$  and, as a consequence, provide conclusions that are more likely to be correct than those obtained using the normal theory approach to sampling distributions. Using this method to test a hypothesis produces results that are more powerful than those obtained using the traditional theoretical approach.

Furthermore, bootstrapping allows for greater flexibility in testing for specific indirect effects as well as for contrasts (Lau and Cheung, 2012; MacKinnon, 2000; Preacher and Hayes, 2008). In fact, it has been shown that using Bootstrapping to test for mediation effects provides the best statistical power to identify significant mediation processes while yet retaining acceptable Type I error rates. (Cheung and Lau, 2008; MacKinnon, 2004; Taylor et al., 2008).

Hair et al. (2021) revealed that the use of Bootstrapping as a hypothesis testing method. In another way, the bootstrapping method generates a t-statistic value for each connection route that is utilized to test the hypothesis. The value of the t-statistic will be compared to the value of the t-table. When doing research with a 95 percent confidence level, the level of precision or inaccuracy limitations = 5 percent (0.05), and the value of the t-table is 1.96, the value of the t-table is 1.96. Because of this, when the t-statistic is lower than the t-table value (t-statistic < 1.96), the hypothesis of acceptance and the hypothesis of rejection are the same. If the t-statistic value is higher or equal to the t-table (t-statistic  $\geq$  1.96), then  $H_0$  is rejected and  $H_a$  is approved. If the t-statistic value is greater or equal to the t-table (t-statistic  $\geq$  1.96), then  $H_0$  is rejected and  $H_a$  is accepted (Ghozali and Latan, 2015). SmartPLS additionally generates coefficient values for each indication in addition to the indicator values. As a result, it can be determined which indications have the most impact and which indicators have the least influence.

#### 5.5.7. Validity and Reliability of Measurement

Validity and reliability are principles that are used to assess the overall quality of research studies. They provide an indication of how effectively a method, methodology, or test assesses something in terms of accuracy. Validity is concerned with the precision of a measure, while reliability is concerned with the consistency of a measure. It is critical to consider validity and dependability, particularly when doing quantitative research.

**Table 37.**

*Validity and Reliability in Differences*

|                        | Reliability                                                                                                                 | Validity                                                                                 |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| What does it tell you? | The degree to which the findings can be replicated when the experiment is repeated under identical circumstances.           | The degree to which the findings accurately reflect the variables being measured.        |
| How is it assessed?    | By examining the consistency of findings across time, between various observers, and across different sections of the test. | By comparing the findings to accepted theories and other measurements of the same topic. |
| How do they relate?    | However, a reliable measurement does not                                                                                    | A valid measurement is usually considered to be                                          |

| Reliability                                                                                          | Validity                                                                                       |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| automatically imply validity: the findings may be repeatable, but they do not always imply accuracy. | reliable: if a test provides correct findings, the results should be repeatable in the future. |

Source: Middleton (2019)

#### 5.5.7.1. Validity

In the most general sense, validity is the degree to which an idea, conclusion, or measurement is well-founded and likely correlates to the actual world in an accurate manner (Campbell, 1957; Brains et al., 2011). In the English language, the term "valid" comes from the Latin *validus*, which means "strong." Furthermore, the strength of a collection of various kinds of evidence, such as construct validity, is taken into consideration when determining validity. As stated by Cronbach and Meehl (1955), construct validity is the degree to which operationalizations of a construct (e.g., practical tests derived from a theory) are accurate measures of a construct as specified by a theoretical framework. Among other things, a measure of intelligence presumes that the measure is associated with things that it should be associated with (convergent validity), and that the measure is not linked with things that it should not be associated with (discriminant validity).

It is the degree to which a test measures what it says, or pretends to measure, that is known as construct validity (Kelley, 1927; Cronbach and Meehl, 1955; Brown, 1996; Polit and Beck, 2012). The construct validity is one of three major kinds of validity evidence, along with content validity and criterion validity, according to the classical paradigm (Guion, 1980; Brown, 1996). Modern validity theory describes construct validity as the overriding issue of validity research, which encompasses all other kinds of validity evidence and is the focus of all validity research (Messick, 1995; Schotte et al., 1997). Construct validity is the correctness of conclusions drawn from observations or measurements (typically test scores), and more specifically, whether a test measures the construct that was meant to be measured. In order to understand the latent variable, which is associated with scores on a particular measure, constructs are abstractions that are purposefully constructed by researchers to conceive the hidden variable (although it is not directly observable).

In the context of experimentation, Campbell (1957) describes the validity as a fundamental part of the scientific method and as a concern of research ethics. In accordance

with the general rules of statistics, in looking at the validity of the experiment, we agree with Cozby and Bates (2012) to see the validity through statistical methods. Statistical conclusion validity, according to Cozby and Bates (2012), is the degree to which conclusions regarding the connection between variables drawn from the data are accurate or 'reasonable.' Initially, the focus was primarily on whether the statistical conclusion regarding the connection between the variables was accurate, but there is currently a trend toward reaching 'reasonable' conclusions based on evidence from many sources including quantitative, statistical, and qualitative data (Cozby, 2009). The validity of statistical conclusions is ensured via the use of suitable sampling methods, appropriate statistical tests, and dependable measuring procedures, among other things (Cook et al., 1979; Cohen and Swerdlik, 2004; and Shadish et al., 2006).

#### **5.5.7.2. Reliability**

Reliability refers to the consistency of a measure. Another perspective, the consistency with which a technique measures something is referred to as its reliability. If the same result can be consistently obtained by applying the same techniques under the same conditions throughout time, the measurement is regarded to be reliable (Brown, 1996). In statistics, reliability is the overall consistency of a measure (Cronbach and Meehl, 1955; Trochim, 1993). A measure is believed to have a high reliability if it produces similar results under consistent conditions (Carlson et al., 2007):

*"It is the characteristic of a set of test scores that relates to the amount of random error from the measurement process that might be embedded in the scores. Scores that are highly reliable are precise, reproducible, and consistent from one testing occasion to another. That is, if the testing process were repeated with a group of test takers, essentially the same results would be obtained. Various kinds of reliability coefficients, with values ranging between 0.00 (much error) and 1.00 (no error), are usually used to indicate the amount of error in the scores."*

While reliability does not necessarily indicate validity, it can set a limit on the overall validity of a test when reliability is low. In order to be absolutely valid, a test must be perfectly dependable. A test that is not perfectly reliable cannot be perfectly valid, whether it is used to measure traits of an individual or predict results on a criterion. Even while a reliable test may provide helpful and legitimate information, a test that is not reliable cannot potentially yield valid information. (Carlson et al., 2007).

Internal consistency and external consistency were the kinds of dependability that we utilized in this research. The consistency of the measurement itself is evaluated using

this method, which is applied to the study questionnaire. A questionnaire to assess one's self-esteem, for example, was created by us. It is expected that if the findings are randomly divided into two halves, there would be a significant connection between the two sets of data. It shows a lack of internal consistency when the two findings are drastically different.

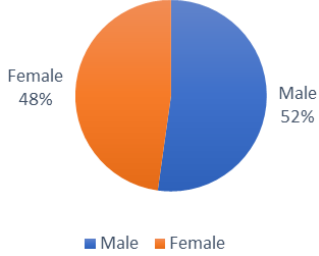
## 5.6. Pilot Test

### 5.6.1. Demographic Information of Participants

**Table 38.**

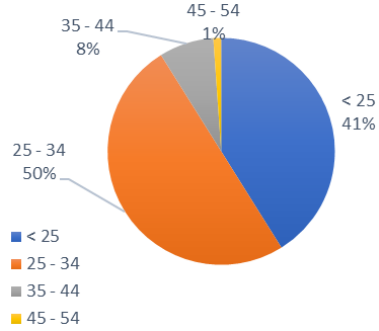
*Demographic Information of Participants*

| Gender | <i>n</i> | %  |
|--------|----------|----|
| Male   | 47       | 52 |
| Female | 43       | 48 |



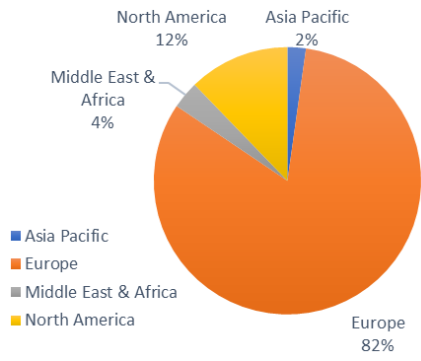
■ Male ■ Female

| Age     | <i>n</i> | %  |
|---------|----------|----|
| < 25    | 37       | 41 |
| 25 - 34 | 45       | 50 |
| 35 - 44 | 7        | 8  |
| 45 - 54 | 1        | 1  |



■ < 25 ■ 25 - 34 ■ 35 - 44 ■ 45 - 54

| Area of Residence    | <i>n</i> | %  |
|----------------------|----------|----|
| Asia Pacific         | 2        | 2  |
| Europe               | 74       | 82 |
| Middle East & Africa | 3        | 4  |
| North America        | 11       | 12 |

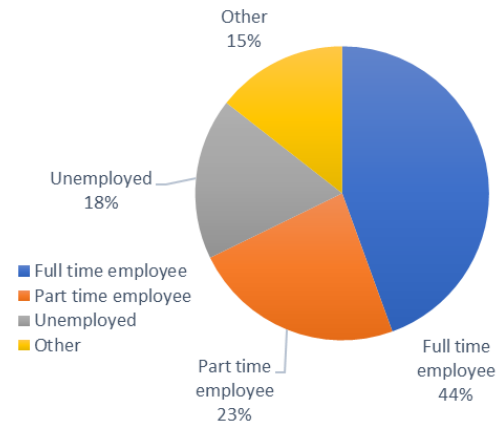


■ Asia Pacific ■ Europe ■ Middle East & Africa ■ North America

| Employment Status  | <i>n</i> | %  |
|--------------------|----------|----|
| Full time employee | 40       | 44 |
| Part time employee | 21       | 23 |
| Unemployed         | 16       | 18 |

Other

13 15



Source: Author (2021)

Participants' data based on gender is dominated by male gender as many as 47 people (52%). Meanwhile, the female gender is 43 people (48%). Moreover, based on age is dominated by age 25-34 as many as 45 people (50%). Meanwhile, age < 25 were 37 people (41%), age 35-44 were 7 people (8%), and age 45-54 were 1 person (1%).

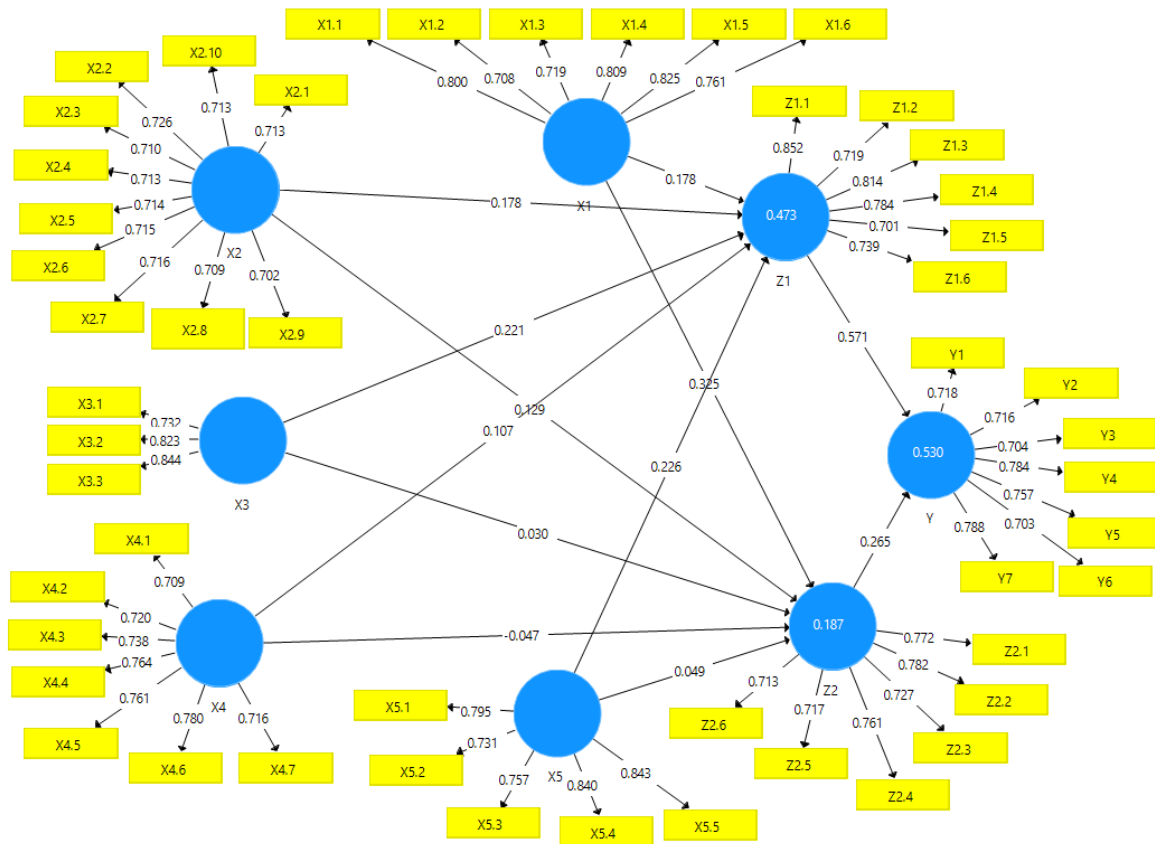
Based on area of residence was dominated by the European region as many as 74 people (82%). Meanwhile, in the Asia Pacific region there were 2 people (2%), Middle East & Africa as many as 3 people (4%), and North America as many as 11 people (12%). Meanwhile, based on employment status is dominated by full time employees as many as 40 people (44%). While Part time employees are 21 people (23%), Unemployed are 16 people (18%), and Other are 13 people (15%).

### 5.6.2. Outer Model Assessment

There are three criteria in the use of data analysis techniques with SmartPLS to assess the outer model, such as validity and reliability.

**Figure 26.**

*Outer Model Structure*



Source: Author (2021)

The figure shows the result of the Outer Model Assessment that we did in Study III (pilot test of SEM). The purpose of this assessment is to check 1) loading values, 2) internal consistency reliability and convergent reliability, and 3) discriminant validity according to the provisions in PLS-SEM. The expected values for each indicator in the Outer Model Assessment are explained as follows.

### 5.6.2.1. Loading Values

It is a reliability of measurement indicators of latent variables is intended to determine whether or not the indicators are dependable (Wong, 2013; Sarstedt et al., 2017). Loading values looking for the criterion value which is more than 0.7. If the loading factor value is more than 0.7, the test is considered optimal and genuine. However, a loading factor more than 0.5 is allowed; however, if the loading factor is less than 0.5, the item must be deleted from the model (Hair et al., 2019a). The critical value of 0.7 was employed in this investigation

**Table 39.***Outer Loadings Values*

|                                                                                | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|--------------------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Spotify is visually attractive (X1.1)                                          | 0.800           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify uses visually appealing graphics (X1.2)                                | 0.708           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify is aesthetically appealing (X1.3)                                      | 0.719           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify design is innovative and creative (X1.4)                               | 0.809           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify is very entertaining (X1.5)                                            | 0.825           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify provides enjoyment (X1.6)                                              | 0.761           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify provides useful navigational aids (X2.1)                               |                 | 0.713                                          |                                                |                               |                       |                  |                  |                 |
| Spotify's services are often personalized to me (X2.10)                        |                 | 0.713                                          |                                                |                               |                       |                  |                  |                 |
| Spotify is easy to navigate (X2.2)                                             |                 | 0.726                                          |                                                |                               |                       |                  |                  |                 |
| Spotify's e functions on Spotify are easy to operate (X2.3)                    |                 | 0.710                                          |                                                |                               |                       |                  |                  |                 |
| Spotify is user-friendly (X2.4)                                                |                 | 0.713                                          |                                                |                               |                       |                  |                  |                 |
| Spotify visual information is easily accessed (X2.5)                           |                 | 0.714                                          |                                                |                               |                       |                  |                  |                 |
| All relevant information on Spotify is easily available (X2.6)                 |                 | 0.715                                          |                                                |                               |                       |                  |                  |                 |
| Spotify technical details about menus can be easily accessed (X2.7)            |                 | 0.716                                          |                                                |                               |                       |                  |                  |                 |
| Spotify is tailored towards me (X2.8)                                          |                 | 0.709                                          |                                                |                               |                       |                  |                  |                 |
| I feel that Spotify is designed for me (X2.9)                                  |                 | 0.702                                          |                                                |                               |                       |                  |                  |                 |
| If we type keywords, Spotify is easy to find in the search engine (X3.1)       |                 |                                                | 0.732                                          |                               |                       |                  |                  |                 |
| If we type meta-tag words, we found Spotify easily in the search engine (X3.2) |                 |                                                | 0.823                                          |                               |                       |                  |                  |                 |
| If we type catch phrases, will draw internet browsers' attention (X3.3)        |                 |                                                | 0.844                                          |                               |                       |                  |                  |                 |
| Payment procedures take a short time to complete on Spotify (X4.1)             |                 |                                                |                                                | 0.709                         |                       |                  |                  |                 |

|                                                                     | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|---------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Online payment process is reasonable (X4.2)                         |                 |                                                |                                                | 0.720                         |                       |                  |                  |                 |
| Paying for goods is straightforward on Spotify (X4.3)               |                 |                                                |                                                | 0.738                         |                       |                  |                  |                 |
| Spotify has efficient payment procedures (X4.4)                     |                 |                                                |                                                | 0.764                         |                       |                  |                  |                 |
| The payment facilities of Spotify are easy to use (X4.5)            |                 |                                                |                                                | 0.761                         |                       |                  |                  |                 |
| I have no security concerns about buying things from Spotify (X4.6) |                 |                                                |                                                | 0.780                         |                       |                  |                  |                 |
| Spotify seems security conscious (X4.7)                             |                 |                                                |                                                | 0.716                         |                       |                  |                  |                 |
| Spotify enables me to view the music in different ways (X5.1)       |                 |                                                |                                                |                               | 0.795                 |                  |                  |                 |
| Spotify has a search tool which helps me find what I want (X5.2)    |                 |                                                |                                                |                               | 0.731                 |                  |                  |                 |
| Spotify helps me to compare music and genres (X5.3)                 |                 |                                                |                                                |                               | 0.757                 |                  |                  |                 |
| I feel that this is a very engaging app (X5.4)                      |                 |                                                |                                                |                               | 0.840                 |                  |                  |                 |
| I believe that Spotify is a very dynamic one (X5.5)                 |                 |                                                |                                                |                               | 0.843                 |                  |                  |                 |
| I think that this app design is comfortable to me (Y1)              |                 |                                                |                                                |                               |                       | 0.718            |                  |                 |
| I like to spend time on exploring this app (Y2)                     |                 |                                                |                                                |                               |                       | 0.716            |                  |                 |
| I enjoy sharing this app with others (Y3)                           |                 |                                                |                                                |                               |                       | 0.704            |                  |                 |
| I feel good about this app (Y4)                                     |                 |                                                |                                                |                               |                       | 0.784            |                  |                 |
| This app is reliable (Y5)                                           |                 |                                                |                                                |                               |                       | 0.757            |                  |                 |
| This app provides a good music listening experience (Y6)            |                 |                                                |                                                |                               |                       | 0.703            |                  |                 |
| I prefer to listen music at this app (Y7)                           |                 |                                                |                                                |                               |                       | 0.788            |                  |                 |
| Unhappy – Happy (Z1.1)                                              |                 |                                                |                                                |                               |                       |                  | 0.852            |                 |
| Annoyed – Pleased (Z1.2)                                            |                 |                                                |                                                |                               |                       |                  | 0.719            |                 |
| Unsatisfied - Satisfied (Z1.3)                                      |                 |                                                |                                                |                               |                       |                  | 0.814            |                 |
| Melancholic – Contented (Z1.4)                                      |                 |                                                |                                                |                               |                       |                  | 0.784            |                 |

|                             | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|-----------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Despairing – Hopeful (Z1.5) |                 |                                                |                                                |                               |                       |                  | 0.701            |                 |
| Bored – Relaxed (Z1.6)      |                 |                                                |                                                |                               |                       |                  | 0.739            |                 |
| Relaxed – Stimulated (Z2.1) |                 |                                                |                                                |                               |                       |                  |                  | 0.772           |
| Calm – Excited (Z2.2)       |                 |                                                |                                                |                               |                       |                  |                  | 0.782           |
| Sluggish – Frenzied (Z2.3)  |                 |                                                |                                                |                               |                       |                  |                  | 0.727           |
| Dull – Jittery (Z2.4)       |                 |                                                |                                                |                               |                       |                  |                  | 0.761           |
| Sleepy - Wide-awake (Z2.5)  |                 |                                                |                                                |                               |                       |                  |                  | 0.717           |
| Unaroused – Aroused (Z2.6)  |                 |                                                |                                                |                               |                       |                  |                  | 0.713           |
| Source: Author (2021)       |                 |                                                |                                                |                               |                       |                  |                  |                 |

Table 39 describes the value of the loading factor of each indicator. The loading factor value  $> 0.7$  can be said to be valid. From this table, it is known that all the loading factor values of the e-Servicescape (Ambient (X1); Spatial Layout and Functionality (X2); Signs, Symbols, and Artifacts (X3); Financial Security (X4); Interactivity (X5)), Pleasure (Z1), Arousal (Z2), and Attitude (Y) items are greater than 0.7. This shows that the items are valid.

#### 5.6.2.2. Internal Consistency Reliability and Convergent Validity

Internal Consistency Reliability (Composite Reliability and Cronbach's Alpha) refers to the ability of an indicator to measure the latent concept (Memon et al., 2017). Meanwhile, Convergent Validity (AVE) is defined on the basis of the concept that the measurements of a construct should be strongly linked with one another (Sarstedt et al., 2017; Hair et al., 2019a; Ghazali and Latan, 2015).

**Table 40.**

*Cronbach's Alpha, Composite Reliability, and AVE Value*

|                                       | Cronbach's<br>Alpha | Composite<br>Reliability | Average Variance<br>Extracted (AVE) |
|---------------------------------------|---------------------|--------------------------|-------------------------------------|
| Ambient (X1)                          | 0.868               | 0.898                    | 0.595                               |
| Spatial Layout and Functionality (X2) | 0.894               | 0.912                    | 0.509                               |
| Signs, Symbols, and Artifacts (X3)    | 0.721               | 0.842                    | 0.642                               |
| Financial Security (X4)               | 0.868               | 0.895                    | 0.550                               |
| Interactivity (X5)                    | 0.854               | 0.895                    | 0.631                               |
| Attitude (Y)                          | 0.862               | 0.894                    | 0.547                               |
| Pleasure (Z1)                         | 0.861               | 0.897                    | 0.593                               |
| Arousal (Z2)                          | 0.845               | 0.882                    | 0.556                               |

Source: Author (2021)

If the composite reliability value and Cronbach's alpha value are more than 0.70, the construct is considered reliable. In addition, an AVE value higher than 0.5 is strongly suggested for this application.

#### **5.6.2.3. Discriminant Validity**

Discriminant validity seeks to establish whether or not a reflective indicator is a valid measure of its construct. Different construct instruments should not have a significant degree of correlation with one another (Ghozali and Latan, 2015). By using cross-loading values for each construct, it is possible to guarantee that the correlation between constructs and measurement items is higher than the correlation between other constructs (with value more than 0.7) (Ghozali and Latan, 2015).

**Table 41.***Cross Loadings*

|                                                                                | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|--------------------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Spotify is visually attractive (X1.1)                                          | <b>0.800</b>    | 0.338                                          | 0.317                                          | 0.353                         | 0.478                 | 0.492            | 0.364            | 0.290           |
| Spotify uses visually appealing graphics (X1.2)                                | <b>0.708</b>    | 0.282                                          | 0.261                                          | 0.245                         | 0.415                 | 0.399            | 0.326            | 0.161           |
| Spotify is aesthetically appealing (X1.3)                                      | <b>0.719</b>    | 0.362                                          | 0.339                                          | 0.310                         | 0.424                 | 0.448            | 0.315            | 0.269           |
| Spotify design is innovative and creative (X1.4)                               | <b>0.809</b>    | 0.367                                          | 0.378                                          | 0.323                         | 0.529                 | 0.534            | 0.439            | 0.328           |
| Spotify is very entertaining (X1.5)                                            | <b>0.825</b>    | 0.471                                          | 0.433                                          | 0.456                         | 0.549                 | 0.601            | 0.535            | 0.444           |
| Spotify provides enjoyment (X1.6)                                              | <b>0.761</b>    | 0.432                                          | 0.379                                          | 0.429                         | 0.530                 | 0.589            | 0.541            | 0.325           |
| Spotify provides useful navigational aids (X2.1)                               | 0.272           | <b>0.713</b>                                   | 0.189                                          | 0.214                         | 0.371                 | 0.307            | 0.270            | 0.208           |
| Spotify's services are often personalized to me (X2.10)                        | 0.363           | <b>0.713</b>                                   | 0.148                                          | 0.202                         | 0.484                 | 0.498            | 0.390            | 0.261           |
| Spotify is easy to navigate (X2.2)                                             | 0.388           | <b>0.726</b>                                   | 0.256                                          | 0.320                         | 0.364                 | 0.455            | 0.352            | 0.212           |
| Spotify's e functions on Spotify are easy to operate (X2.3)                    | 0.317           | <b>0.710</b>                                   | 0.102                                          | 0.335                         | 0.208                 | 0.340            | 0.317            | 0.149           |
| Spotify is user-friendly (X2.4)                                                | 0.321           | <b>0.713</b>                                   | 0.109                                          | 0.358                         | 0.309                 | 0.399            | 0.327            | 0.121           |
| Spotify visual information is easily accessed (X2.5)                           | 0.330           | <b>0.714</b>                                   | 0.236                                          | 0.255                         | 0.362                 | 0.444            | 0.350            | 0.057           |
| All relevant information on Spotify is easily available (X2.6)                 | 0.459           | <b>0.715</b>                                   | 0.218                                          | 0.326                         | 0.350                 | 0.446            | 0.407            | 0.355           |
| Spotify technical details about menus can be easily accessed (X2.7)            | 0.290           | <b>0.716</b>                                   | 0.172                                          | 0.257                         | 0.417                 | 0.323            | 0.330            | 0.087           |
| Spotify is tailored towards me (X2.8)                                          | 0.346           | <b>0.709</b>                                   | 0.196                                          | 0.301                         | 0.507                 | 0.419            | 0.335            | 0.172           |
| I feel that Spotify is designed for me (X2.9)                                  | 0.391           | <b>0.702</b>                                   | 0.158                                          | 0.224                         | 0.447                 | 0.446            | 0.347            | 0.389           |
| If we type keywords, Spotify is easy to find in the search engine (X3.1)       | 0.242           | 0.157                                          | <b>0.732</b>                                   | 0.186                         | 0.208                 | 0.147            | 0.340            | 0.121           |
| If we type meta-tag words, we found Spotify easily in the search engine (X3.2) | 0.338           | 0.222                                          | <b>0.823</b>                                   | 0.367                         | 0.293                 | 0.306            | 0.389            | 0.161           |
| If we type catch phrases, will draw internet browsers' attention (X3.3)        | 0.507           | 0.220                                          | <b>0.844</b>                                   | 0.327                         | 0.495                 | 0.394            | 0.431            | 0.226           |
| Payment procedures take a short time to complete on Spotify (X4.1)             | 0.310           | 0.323                                          | 0.219                                          | <b>0.709</b>                  | 0.276                 | 0.287            | 0.223            | 0.045           |

|                                                                     | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|---------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Online payment process is reasonable (X4.2)                         | 0.285           | 0.355                                          | 0.273                                          | <b>0.720</b>                  | 0.265                 | 0.344            | 0.272            | 0.131           |
| Paying for goods is straightforward on Spotify (X4.3)               | 0.254           | 0.184                                          | 0.198                                          | <b>0.738</b>                  | 0.285                 | 0.220            | 0.231            | 0.083           |
| Spotify has efficient payment procedures (X4.4)                     | 0.320           | 0.151                                          | 0.268                                          | <b>0.764</b>                  | 0.216                 | 0.240            | 0.317            | -0.033          |
| The payment facilities of Spotify are easy to use (X4.5)            | 0.296           | 0.259                                          | 0.266                                          | <b>0.761</b>                  | 0.197                 | 0.324            | 0.332            | 0.109           |
| I have no security concerns about buying things from Spotify (X4.6) | 0.386           | 0.290                                          | 0.281                                          | <b>0.780</b>                  | 0.308                 | 0.467            | 0.390            | 0.254           |
| Spotify seems security conscious (X4.7)                             | 0.492           | 0.392                                          | 0.360                                          | <b>0.716</b>                  | 0.569                 | 0.511            | 0.407            | 0.238           |
| Spotify enables me to view the music in different ways (X5.1)       | 0.548           | 0.366                                          | 0.420                                          | 0.381                         | <b>0.795</b>          | 0.550            | 0.476            | 0.310           |
| Spotify has a search tool which helps me find what I want (X5.2)    | 0.355           | 0.369                                          | 0.308                                          | 0.353                         | <b>0.731</b>          | 0.513            | 0.428            | 0.091           |
| Spotify helps me to compare music and genres (X5.3)                 | 0.385           | 0.314                                          | 0.355                                          | 0.293                         | <b>0.757</b>          | 0.376            | 0.441            | 0.228           |
| I feel that this is a very engaging app (X5.4)                      | 0.590           | 0.503                                          | 0.204                                          | 0.388                         | <b>0.840</b>          | 0.615            | 0.440            | 0.268           |
| I believe that Spotify is a very dynamic one (X5.5)                 | 0.624           | 0.577                                          | 0.403                                          | 0.313                         | <b>0.843</b>          | 0.609            | 0.507            | 0.328           |
| I think that this app design is comfortable to me (Y1)              | 0.593           | 0.502                                          | 0.368                                          | 0.592                         | 0.531                 | <b>0.718</b>     | 0.520            | 0.316           |
| I like to spend time on exploring this app (Y2)                     | 0.540           | 0.459                                          | 0.239                                          | 0.283                         | 0.647                 | <b>0.716</b>     | 0.481            | 0.441           |
| I enjoy sharing this app with others (Y3)                           | 0.420           | 0.399                                          | 0.174                                          | 0.235                         | 0.469                 | <b>0.704</b>     | 0.470            | 0.449           |
| I feel good about this app (Y4)                                     | 0.515           | 0.545                                          | 0.312                                          | 0.309                         | 0.551                 | <b>0.784</b>     | 0.587            | 0.505           |
| This app is reliable (Y5)                                           | 0.502           | 0.320                                          | 0.269                                          | 0.435                         | 0.411                 | <b>0.757</b>     | 0.537            | 0.356           |
| This app provides a good music listening experience (Y6)            | 0.423           | 0.339                                          | 0.296                                          | 0.389                         | 0.404                 | <b>0.703</b>     | 0.466            | 0.221           |
| I prefer to listen music at this app (Y7)                           | 0.505           | 0.420                                          | 0.233                                          | 0.341                         | 0.453                 | <b>0.788</b>     | 0.482            | 0.345           |
| Unhappy – Happy (Z1.1)                                              | 0.460           | 0.392                                          | 0.375                                          | 0.395                         | 0.412                 | 0.588            | <b>0.852</b>     | 0.339           |
| Annoyed – Pleased (Z1.2)                                            | 0.452           | 0.452                                          | 0.334                                          | 0.270                         | 0.485                 | 0.568            | <b>0.719</b>     | 0.351           |
| Unsatisfied - Satisfied (Z1.3)                                      | 0.395           | 0.396                                          | 0.332                                          | 0.451                         | 0.454                 | 0.576            | <b>0.814</b>     | 0.327           |
| Melancholic – Contented (Z1.4)                                      | 0.408           | 0.357                                          | 0.399                                          | 0.286                         | 0.407                 | 0.518            | <b>0.784</b>     | 0.364           |

|                             | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|-----------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Despairing – Hopeful (Z1.5) | 0.480           | 0.332                                          | 0.374                                          | 0.330                         | 0.452                 | 0.462            | <b>0.701</b>     | 0.403           |
| Bored – Relaxed (Z1.6)      | 0.421           | 0.309                                          | 0.442                                          | 0.294                         | 0.462                 | 0.449            | <b>0.739</b>     | 0.266           |
| Relaxed – Stimulated (Z2.1) | 0.395           | 0.305                                          | 0.265                                          | 0.160                         | 0.324                 | 0.473            | 0.390            | <b>0.772</b>    |
| Calm – Excited (Z2.2)       | 0.297           | 0.284                                          | 0.181                                          | 0.124                         | 0.180                 | 0.380            | 0.299            | <b>0.782</b>    |
| Sluggish – Frenzied (Z2.3)  | 0.158           | 0.089                                          | 0.023                                          | 0.146                         | 0.133                 | 0.266            | 0.221            | <b>0.727</b>    |
| Dull – Jittery (Z2.4)       | 0.401           | 0.301                                          | 0.170                                          | 0.242                         | 0.340                 | 0.488            | 0.452            | <b>0.761</b>    |
| Sleepy - Wide-awake (Z2.5)  | 0.228           | 0.118                                          | 0.002                                          | 0.013                         | 0.151                 | 0.265            | 0.241            | <b>0.717</b>    |
| Unaroused – Aroused (Z2.6)  | 0.226           | 0.133                                          | 0.212                                          | 0.082                         | 0.177                 | 0.307            | 0.258            | <b>0.713</b>    |

Source: Author (2021)

Based on the cross loadings value, it can be seen that all the indicators that compose each variable in this study (**in bold**) have met discriminant validity because they have the largest outer loading value for the variables they form and not for other variables. Thus, all indicators in each variable in this study have met discriminant validity.

**Table 42.***Fornell-Larcker Criterion*

|                                       | Ambient<br>(X1) | Spatial Layout and<br>Functionality<br>(X2) | Signs, Symbols,<br>and Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|---------------------------------------|-----------------|---------------------------------------------|------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Ambient (X1)                          | <b>0.771</b>    |                                             |                                          |                               |                       |                  |                  |                 |
| Spatial Layout and Functionality (X2) | 0.500           | <b>0.713</b>                                |                                          |                               |                       |                  |                  |                 |
| Signs, Symbols, and Artifacts (X3)    | 0.466           | 0.252                                       | <b>0.801</b>                             |                               |                       |                  |                  |                 |
| Financial Security (X4)               | 0.473           | 0.390                                       | 0.373                                    | <b>0.742</b>                  |                       |                  |                  |                 |
| Interactivity (X5)                    | 0.641           | 0.542                                       | 0.430                                    | 0.433                         | <b>0.795</b>          |                  |                  |                 |
| Attitude (Y)                          | 0.677           | 0.582                                       | 0.366                                    | 0.495                         | 0.674                 | <b>0.739</b>     |                  |                 |
| Pleasure (Z1)                         | 0.566           | 0.487                                       | 0.486                                    | 0.441                         | 0.579                 | 0.688            | <b>0.770</b>     |                 |
| Arousal (Z2)                          | 0.412           | 0.307                                       | 0.217                                    | 0.189                         | 0.320                 | 0.518            | 0.444            | <b>0.746</b>    |

Source: Author (2021)

In general, if the value of the square root AVE of each construct is higher than the value of the correlation between constructions with other constructs in the model, the model is said to have strong discriminant validity value (Fornell and Larker, 1981 in Wong, 2013). Based on Table 42, it was found that the correlation value between variables is still below the square root value of the AVE (in bold), thus all indicators in each variable in this study have met discriminant validity.

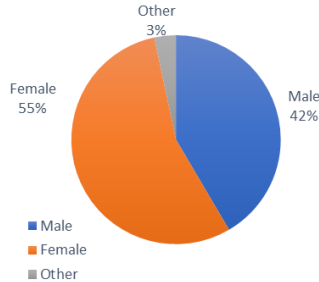
## 5.7. Main Test

### 5.7.1. Demographic Information of Participants

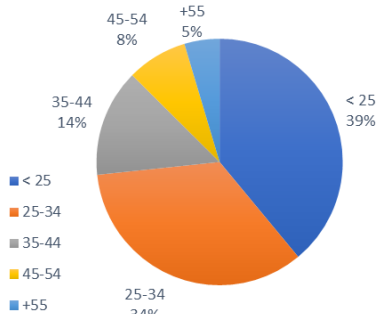
**Table 43.**

*Demographic Information of Participants*

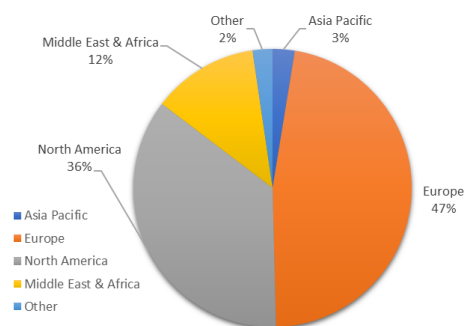
| <b>Gender</b> | <b>n</b> | <b>%</b> |
|---------------|----------|----------|
| Male          | 162      | 42       |
| Female        | 215      | 55       |
| Other         | 13       | 3        |



| <b>Age</b> | <b>n</b> | <b>%</b> |
|------------|----------|----------|
| < 25       | 152      | 39       |
| 25-34      | 133      | 34       |
| 35-44      | 55       | 14       |
| 45-54      | 31       | 8        |
| +55        | 19       | 5        |

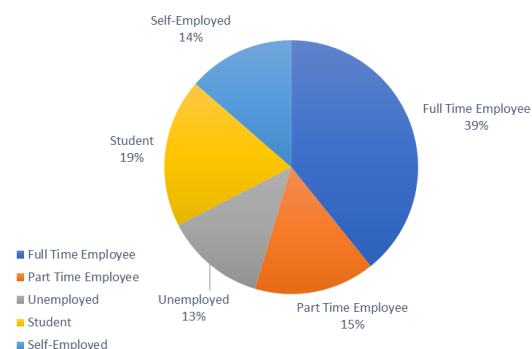


| <b>Area of Residence</b> | <b>n</b> | <b>%</b> |
|--------------------------|----------|----------|
| Asia Pacific             | 10       | 3        |
| Europe                   | 183      | 47       |
| North America            | 139      | 36       |
| Middle East & Africa     | 48       | 12       |
| Other                    | 9        | 2        |



| <b>Employment Status</b> | <b>n</b> | <b>%</b> |
|--------------------------|----------|----------|
| Full Time Employee       | 153      | 39       |
| Part Time Employee       | 60       | 15       |

|               |    |    |
|---------------|----|----|
| Unemployed    | 50 | 13 |
| Student       | 74 | 19 |
| Self-Employed | 53 | 14 |




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Source: Author (2021)

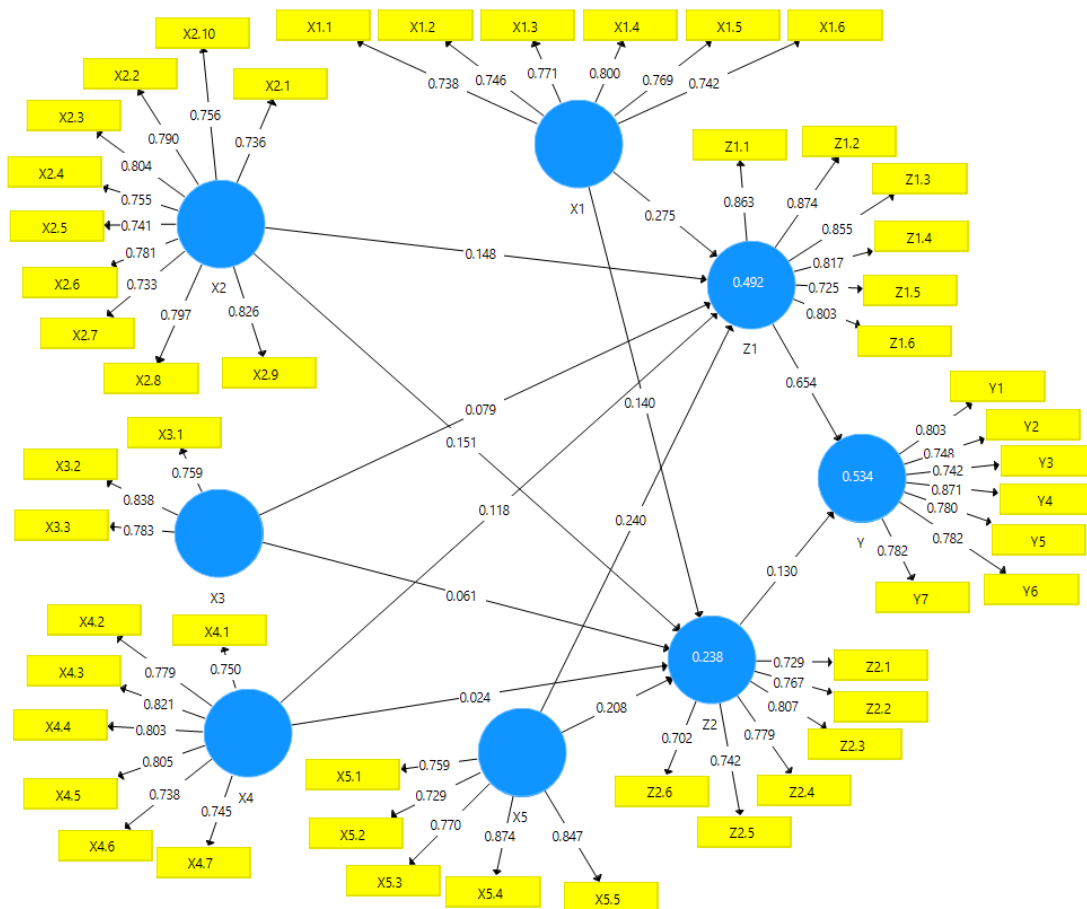
Based on the participants' data, it shows that male is 162 people (42%), female is 215 people (55%), and there are respondents' that does not mention the gender as much as 13 people (3%). This data is dominated by Female. In addition, the data also shows that age < 25 is 152 people (39%), age 25-34 is 133 people (34%), age 35-44 is 55 people (14%), age 45-54 is 31 people (8%), and age +55 as many as 19 people (5%). Respondent data by age is dominated by age 25-34.

Furthermore, it shows that the Asia Pacific region is 10 people (3%), Europe is 183 people (47%), North America is 139 people (36%), Middle East & Africa is 48 people (12%), and respondents did not mention their region as many as 9 people (2%). Participants' data by area of residence is dominated by the European region. Also, based on participants' data according to employment status, it shows that Full Time Employees are 153 people (39%), Part Time Employees are 60 people (15%), Unemployed are 50 people (13%), Students are 74 people (19%), and Self-Employed as many as 53 people (14%). Respondent data according to employment status is dominated by Full time employee.

### 5.7.2. Outer Model Assessment

There are three criteria in the use of data analysis techniques with SmartPLS to assess the outer model, such as Validity and Reliability.

**Figure 27.**  
*Outer Model Structure*



Source: Author (2021)

The figure depicts the result of the Outer Model Assessment that we did in Study III (main test of SEM). The purpose of this assessment is to check 1) loading values, 2) internal consistency reliability and convergent reliability, and 3) discriminant validity according to the provisions in PLS-SEM. The expected values for each indicator in the Outer Model Assessment are explained as follows.

### 5.7.2.1. Loading Values

It is a reliability of measurement indicators of latent variables is intended to determine whether or not the indicators are dependable (Wong, 2013; Sarstedt et al., 2017). Loading values looking for the criterion value which is more than 0.7. If the loading factor value is more than 0.7, the test is considered optimal and genuine. However, a loading factor more than 0.5 is allowed; however, if the loading factor is less than 0.5, the item must be deleted from the model (Hair et al., 2019a). The critical value of 0.7 was employed in this investigation.

**Table 44.***Outer Loadings Values*

|                                                                                | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|--------------------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Spotify is visually attractive (X1.1)                                          | 0.738           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify uses visually appealing graphics (X1.2)                                | 0.746           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify is aesthetically appealing (X1.3)                                      | 0.771           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify design is innovative and creative (X1.4)                               | 0.800           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify is very entertaining (X1.5)                                            | 0.769           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify provides enjoyment (X1.6)                                              | 0.742           |                                                |                                                |                               |                       |                  |                  |                 |
| Spotify provides useful navigational aids (X2.1)                               |                 | 0.736                                          |                                                |                               |                       |                  |                  |                 |
| Spotify's services are often personalized to me (X2.10)                        |                 | 0.756                                          |                                                |                               |                       |                  |                  |                 |
| Spotify is easy to navigate (X2.2)                                             |                 | 0.790                                          |                                                |                               |                       |                  |                  |                 |
| Spotify's e functions on Spotify are easy to operate (X2.3)                    |                 | 0.804                                          |                                                |                               |                       |                  |                  |                 |
| Spotify is user-friendly (X2.4)                                                |                 | 0.755                                          |                                                |                               |                       |                  |                  |                 |
| Spotify visual information is easily accessed (X2.5)                           |                 | 0.741                                          |                                                |                               |                       |                  |                  |                 |
| All relevant information on Spotify is easily available (X2.6)                 |                 | 0.781                                          |                                                |                               |                       |                  |                  |                 |
| Spotify technical details about menus can be easily accessed (X2.7)            |                 | 0.733                                          |                                                |                               |                       |                  |                  |                 |
| Spotify is tailored towards me (X2.8)                                          |                 | 0.797                                          |                                                |                               |                       |                  |                  |                 |
| I feel that Spotify is designed for me (X2.9)                                  |                 | 0.826                                          |                                                |                               |                       |                  |                  |                 |
| If we type keywords, Spotify is easy to find in the search engine (X3.1)       |                 |                                                | 0.759                                          |                               |                       |                  |                  |                 |
| If we type meta-tag words, we found Spotify easily in the search engine (X3.2) |                 |                                                | 0.838                                          |                               |                       |                  |                  |                 |
| If we type catch phrases, will draw internet browsers' attention (X3.3)        |                 |                                                | 0.783                                          |                               |                       |                  |                  |                 |
| Payment procedures take a short time to complete on Spotify (X4.1)             |                 |                                                |                                                | 0.750                         |                       |                  |                  |                 |

|                                                                     | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|---------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Online payment process is reasonable (X4.2)                         |                 |                                                |                                                | 0.779                         |                       |                  |                  |                 |
| Paying for goods is straightforward on Spotify (X4.3)               |                 |                                                |                                                | 0.821                         |                       |                  |                  |                 |
| Spotify has efficient payment procedures (X4.4)                     |                 |                                                |                                                | 0.803                         |                       |                  |                  |                 |
| The payment facilities of Spotify are easy to use (X4.5)            |                 |                                                |                                                | 0.805                         |                       |                  |                  |                 |
| I have no security concerns about buying things from Spotify (X4.6) |                 |                                                |                                                | 0.738                         |                       |                  |                  |                 |
| Spotify seems security conscious (X4.7)                             |                 |                                                |                                                | 0.745                         |                       |                  |                  |                 |
| Spotify enables me to view the music in different ways (X5.1)       |                 |                                                |                                                |                               | 0.759                 |                  |                  |                 |
| Spotify has a search tool which helps me find what I want (X5.2)    |                 |                                                |                                                |                               | 0.729                 |                  |                  |                 |
| Spotify helps me to compare music and genres (X5.3)                 |                 |                                                |                                                |                               | 0.770                 |                  |                  |                 |
| I feel that this is a very engaging app (X5.4)                      |                 |                                                |                                                |                               | 0.874                 |                  |                  |                 |
| I believe that Spotify is a very dynamic one (X5.5)                 |                 |                                                |                                                |                               | 0.847                 |                  |                  |                 |
| I think that this app design is comfortable to me (Y1)              |                 |                                                |                                                |                               |                       | 0.803            |                  |                 |
| I like to spend time on exploring this app (Y2)                     |                 |                                                |                                                |                               |                       | 0.748            |                  |                 |
| I enjoy sharing this app with others (Y3)                           |                 |                                                |                                                |                               |                       | 0.742            |                  |                 |
| I feel good about this app (Y4)                                     |                 |                                                |                                                |                               |                       | 0.871            |                  |                 |
| This app is reliable (Y5)                                           |                 |                                                |                                                |                               |                       | 0.780            |                  |                 |
| This app provides a good music listening experience (Y6)            |                 |                                                |                                                |                               |                       | 0.782            |                  |                 |
| I prefer to listen music at this app (Y7)                           |                 |                                                |                                                |                               |                       | 0.782            |                  |                 |
| Unhappy – Happy (Z1.1)                                              |                 |                                                |                                                |                               |                       |                  | 0.863            |                 |
| Annoyed – Pleased (Z1.2)                                            |                 |                                                |                                                |                               |                       |                  | 0.874            |                 |
| Unsatisfied - Satisfied (Z1.3)                                      |                 |                                                |                                                |                               |                       |                  | 0.855            |                 |
| Melancholic – Contented (Z1.4)                                      |                 |                                                |                                                |                               |                       |                  | 0.817            |                 |

|                             | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|-----------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Despairing – Hopeful (Z1.5) |                 |                                                |                                                |                               |                       |                  | 0.725            |                 |
| Bored – Relaxed (Z1.6)      |                 |                                                |                                                |                               |                       |                  | 0.803            |                 |
| Relaxed – Stimulated (Z2.1) |                 |                                                |                                                |                               |                       |                  |                  | 0.729           |
| Calm – Excited (Z2.2)       |                 |                                                |                                                |                               |                       |                  |                  | 0.767           |
| Sluggish – Frenzied (Z2.3)  |                 |                                                |                                                |                               |                       |                  |                  | 0.807           |
| Dull – Jittery (Z2.4)       |                 |                                                |                                                |                               |                       |                  |                  | 0.779           |
| Sleepy - Wide-awake (Z2.5)  |                 |                                                |                                                |                               |                       |                  |                  | 0.742           |
| Unaroused – Aroused (Z2.6)  |                 |                                                |                                                |                               |                       |                  |                  | 0.702           |
| Source: Author (2021)       |                 |                                                |                                                |                               |                       |                  |                  |                 |

Table 44 describes the value of the loading factor of each indicator. The loading factor value  $> 0.7$  can be said to be valid. From this table, it is known that all the loading factor values of the e-Servicescape, pleasure, and arousal indicators are greater than 0.7. This shows that the indicators are valid.

#### 5.7.2.2. Internal Consistency Reliability and Convergent Validity

Internal Consistency Reliability (Composite Reliability and Cronbach's Alpha) refers to the ability of an indicator to measure the latent concept (Memon et al., 2017). Meanwhile, Convergent Validity (AVE) is defined on the basis of the concept that the measurements of a construct should be strongly linked with one another (Sarstedt et al., 2017; Hair et al., 2019a; Ghozali and Latan, 2015).

**Table 45.**

*Cronbach's Alpha, Composite Reliability, and AVE Value*

|                                       | Cronbach's<br>Alpha | Composite<br>Reliability | Average Variance<br>Extracted (AVE) |
|---------------------------------------|---------------------|--------------------------|-------------------------------------|
| Ambient (X1)                          | 0.856               | 0.892                    | 0.579                               |
| Spatial Layout and Functionality (X2) | 0.925               | 0.937                    | 0.597                               |
| Signs, Symbols, and Artifacts (X3)    | 0.707               | 0.836                    | 0.631                               |
| Financial Security (X4)               | 0.892               | 0.915                    | 0.605                               |
| Interactivity (X5)                    | 0.856               | 0.897                    | 0.636                               |
| Attitude (Y)                          | 0.898               | 0.920                    | 0.621                               |
| Pleasure (Z1)                         | 0.905               | 0.927                    | 0.680                               |
| Arousal (Z2)                          | 0.849               | 0.888                    | 0.570                               |

Source: Author (2021)

Table 45 shows that the composite reliability value and Cronbach's alpha value are more than 0.70, the construct is considered reliable. In addition, an AVE value higher than 0.5 is strongly suggested for this application.

#### 5.7.2.3. Discriminant Validity

Discriminant validity seeks to establish whether or not a reflective indicator is a valid measure of its construct. Different construct instruments should not have a significant degree of correlation with one another (Ghozali and Latan, 2015). By using cross-loading values for each construct, it is possible to guarantee that the correlation between constructs and measurement items is higher than the correlation between other constructs (with value more than 0.7) (Ghozali and Latan, 2015).

**Table 46.***Cross Loadings*

|                                                                                | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|--------------------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Spotify is visually attractive (X1.1)                                          | <b>0.738</b>    | 0.489                                          | 0.366                                          | 0.402                         | 0.548                 | 0.530            | 0.476            | 0.341           |
| Spotify uses visually appealing graphics (X1.2)                                | <b>0.746</b>    | 0.508                                          | 0.163                                          | 0.332                         | 0.369                 | 0.532            | 0.388            | 0.249           |
| Spotify is aesthetically appealing (X1.3)                                      | <b>0.771</b>    | 0.506                                          | 0.245                                          | 0.343                         | 0.418                 | 0.518            | 0.393            | 0.260           |
| Spotify design is innovative and creative (X1.4)                               | <b>0.800</b>    | 0.558                                          | 0.275                                          | 0.329                         | 0.523                 | 0.581            | 0.457            | 0.351           |
| Spotify is very entertaining (X1.5)                                            | <b>0.769</b>    | 0.572                                          | 0.303                                          | 0.334                         | 0.501                 | 0.575            | 0.499            | 0.310           |
| Spotify provides enjoyment (X1.6)                                              | <b>0.742</b>    | 0.524                                          | 0.305                                          | 0.373                         | 0.497                 | 0.567            | 0.548            | 0.337           |
| Spotify provides useful navigational aids (X2.1)                               | 0.442           | <b>0.736</b>                                   | 0.202                                          | 0.396                         | 0.410                 | 0.425            | 0.393            | 0.241           |
| Spotify's services are often personalized to me (X2.10)                        | 0.565           | <b>0.756</b>                                   | 0.314                                          | 0.446                         | 0.616                 | 0.612            | 0.564            | 0.388           |
| Spotify is easy to navigate (X2.2)                                             | 0.475           | <b>0.790</b>                                   | 0.216                                          | 0.402                         | 0.431                 | 0.482            | 0.390            | 0.269           |
| Spotify's e functions on Spotify are easy to operate (X2.3)                    | 0.555           | <b>0.804</b>                                   | 0.261                                          | 0.462                         | 0.465                 | 0.534            | 0.436            | 0.322           |
| Spotify is user-friendly (X2.4)                                                | 0.498           | <b>0.755</b>                                   | 0.314                                          | 0.478                         | 0.497                 | 0.495            | 0.409            | 0.326           |
| Spotify visual information is easily accessed (X2.5)                           | 0.521           | <b>0.741</b>                                   | 0.384                                          | 0.494                         | 0.520                 | 0.512            | 0.441            | 0.304           |
| All relevant information on Spotify is easily available (X2.6)                 | 0.544           | <b>0.781</b>                                   | 0.308                                          | 0.418                         | 0.556                 | 0.499            | 0.464            | 0.368           |
| Spotify technical details about menus can be easily accessed (X2.7)            | 0.483           | <b>0.733</b>                                   | 0.209                                          | 0.385                         | 0.432                 | 0.452            | 0.366            | 0.275           |
| Spotify is tailored towards me (X2.8)                                          | 0.614           | <b>0.797</b>                                   | 0.310                                          | 0.435                         | 0.620                 | 0.640            | 0.546            | 0.350           |
| I feel that Spotify is designed for me (X2.9)                                  | 0.604           | <b>0.826</b>                                   | 0.294                                          | 0.430                         | 0.586                 | 0.634            | 0.520            | 0.386           |
| If we type keywords, Spotify is easy to find in the search engine (X3.1)       | 0.216           | 0.199                                          | <b>0.759</b>                                   | 0.370                         | 0.341                 | 0.230            | 0.325            | 0.208           |
| If we type meta-tag words, we found Spotify easily in the search engine (X3.2) | 0.277           | 0.285                                          | <b>0.838</b>                                   | 0.333                         | 0.329                 | 0.260            | 0.274            | 0.211           |
| If we type catch phrases, will draw internet browsers' attention (X3.3)        | 0.382           | 0.387                                          | <b>0.783</b>                                   | 0.344                         | 0.398                 | 0.359            | 0.335            | 0.231           |
| Payment procedures take a short time to complete on Spotify (X4.1)             | 0.334           | 0.391                                          | 0.448                                          | <b>0.750</b>                  | 0.369                 | 0.380            | 0.355            | 0.220           |

|                                                                     | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|---------------------------------------------------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Online payment process is reasonable (X4.2)                         | 0.298           | 0.391                                          | 0.365                                          | <b>0.779</b>                  | 0.306                 | 0.356            | 0.341            | 0.201           |
| Paying for goods is straightforward on Spotify (X4.3)               | 0.314           | 0.414                                          | 0.314                                          | <b>0.821</b>                  | 0.314                 | 0.395            | 0.371            | 0.208           |
| Spotify has efficient payment procedures (X4.4)                     | 0.335           | 0.405                                          | 0.316                                          | <b>0.803</b>                  | 0.403                 | 0.403            | 0.350            | 0.198           |
| The payment facilities of Spotify are easy to use (X4.5)            | 0.328           | 0.386                                          | 0.380                                          | <b>0.805</b>                  | 0.390                 | 0.342            | 0.354            | 0.226           |
| I have no security concerns about buying things from Spotify (X4.6) | 0.387           | 0.457                                          | 0.269                                          | <b>0.738</b>                  | 0.411                 | 0.502            | 0.395            | 0.288           |
| Spotify seems security conscious (X4.7)                             | 0.480           | 0.567                                          | 0.321                                          | <b>0.745</b>                  | 0.550                 | 0.553            | 0.451            | 0.303           |
| Spotify enables me to view the music in different ways (X5.1)       | 0.485           | 0.533                                          | 0.349                                          | 0.413                         | <b>0.759</b>          | 0.566            | 0.462            | 0.319           |
| Spotify has a search tool which helps me find what I want (X5.2)    | 0.389           | 0.419                                          | 0.385                                          | 0.410                         | <b>0.729</b>          | 0.438            | 0.448            | 0.302           |
| Spotify helps me to compare music and genres (X5.3)                 | 0.435           | 0.485                                          | 0.316                                          | 0.344                         | <b>0.770</b>          | 0.452            | 0.449            | 0.310           |
| I feel that this is a very engaging app (X5.4)                      | 0.616           | 0.636                                          | 0.355                                          | 0.462                         | <b>0.874</b>          | 0.656            | 0.561            | 0.414           |
| I believe that Spotify is a very dynamic one (X5.5)                 | 0.573           | 0.602                                          | 0.400                                          | 0.421                         | <b>0.847</b>          | 0.594            | 0.506            | 0.392           |
| I think that this app design is comfortable to me (Y1)              | 0.689           | 0.674                                          | 0.338                                          | 0.508                         | 0.620                 | <b>0.803</b>     | 0.632            | 0.391           |
| I like to spend time on exploring this app (Y2)                     | 0.595           | 0.578                                          | 0.267                                          | 0.413                         | 0.554                 | <b>0.748</b>     | 0.518            | 0.397           |
| I enjoy sharing this app with others (Y3)                           | 0.549           | 0.559                                          | 0.252                                          | 0.373                         | 0.501                 | <b>0.742</b>     | 0.545            | 0.429           |
| I feel good about this app (Y4)                                     | 0.631           | 0.605                                          | 0.297                                          | 0.475                         | 0.626                 | <b>0.871</b>     | 0.624            | 0.439           |
| This app is reliable (Y5)                                           | 0.522           | 0.488                                          | 0.310                                          | 0.477                         | 0.501                 | <b>0.780</b>     | 0.552            | 0.341           |
| This app provides a good music listening experience (Y6)            | 0.514           | 0.461                                          | 0.298                                          | 0.411                         | 0.505                 | <b>0.782</b>     | 0.605            | 0.309           |
| I prefer to listen music at this app (Y7)                           | 0.480           | 0.442                                          | 0.209                                          | 0.361                         | 0.442                 | <b>0.782</b>     | 0.483            | 0.306           |
| Unhappy – Happy (Z1.1)                                              | 0.547           | 0.521                                          | 0.355                                          | 0.413                         | 0.531                 | 0.631            | <b>0.863</b>     | 0.456           |
| Annoyed – Pleased (Z1.2)                                            | 0.520           | 0.495                                          | 0.299                                          | 0.385                         | 0.517                 | 0.639            | <b>0.874</b>     | 0.422           |
| Unsatisfied - Satisfied (Z1.3)                                      | 0.545           | 0.549                                          | 0.343                                          | 0.478                         | 0.562                 | 0.664            | <b>0.855</b>     | 0.414           |
| Melancholic – Contented (Z1.4)                                      | 0.495           | 0.452                                          | 0.327                                          | 0.379                         | 0.500                 | 0.573            | <b>0.817</b>     | 0.486           |

|                             | Ambient<br>(X1) | Spatial Layout<br>and<br>Functionality<br>(X2) | Signs,<br>Symbols,<br>and<br>Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|-----------------------------|-----------------|------------------------------------------------|------------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Despairing – Hopeful (Z1.5) | 0.469           | 0.454                                          | 0.314                                          | 0.356                         | 0.448                 | 0.506            | <b>0.725</b>     | 0.448           |
| Bored – Relaxed (Z1.6)      | 0.450           | 0.472                                          | 0.319                                          | 0.390                         | 0.451                 | 0.543            | <b>0.803</b>     | 0.401           |
| Relaxed – Stimulated (Z2.1) | 0.357           | 0.333                                          | 0.183                                          | 0.209                         | 0.334                 | 0.387            | 0.398            | <b>0.729</b>    |
| Calm – Excited (Z2.2)       | 0.319           | 0.312                                          | 0.230                                          | 0.222                         | 0.289                 | 0.350            | 0.386            | <b>0.767</b>    |
| Sluggish – Frenzied (Z2.3)  | 0.311           | 0.348                                          | 0.205                                          | 0.273                         | 0.354                 | 0.364            | 0.433            | <b>0.807</b>    |
| Dull – Jittery (Z2.4)       | 0.302           | 0.372                                          | 0.221                                          | 0.270                         | 0.380                 | 0.372            | 0.410            | <b>0.779</b>    |
| Sleepy - Wide-awake (Z2.5)  | 0.274           | 0.262                                          | 0.166                                          | 0.212                         | 0.317                 | 0.345            | 0.400            | <b>0.742</b>    |
| Unaroused – Aroused (Z2.6)  | 0.292           | 0.289                                          | 0.235                                          | 0.210                         | 0.310                 | 0.334            | 0.369            | <b>0.702</b>    |

Source: Author (2021)

Based on the cross loadings value, it can be seen that all the indicators that compose each variable in this study (**in bold**) have met discriminant validity because they have the largest outer loading value for the variables they form and not for other variables. Thus, all indicators in each variable in this study have met discriminant validity.

**Table 47.***Fornell-Larcker Criterion*

|                                       | Ambient<br>(X1) | Spatial Layout and<br>Functionality<br>(X2) | Signs, Symbols,<br>and Artifacts<br>(X3) | Financial<br>Security<br>(X4) | Interactivity<br>(X5) | Attitudes<br>(Y) | Pleasure<br>(Z1) | Arousal<br>(Z2) |
|---------------------------------------|-----------------|---------------------------------------------|------------------------------------------|-------------------------------|-----------------------|------------------|------------------|-----------------|
| Ambient (X1)                          | <b>0.761</b>    |                                             |                                          |                               |                       |                  |                  |                 |
| Spatial Layout and Functionality (X2) | 0.694           | <b>0.772</b>                                |                                          |                               |                       |                  |                  |                 |
| Signs, Symbols, and Artifacts (X3)    | 0.371           | 0.369                                       | <b>0.794</b>                             |                               |                       |                  |                  |                 |
| Financial Security (X4)               | 0.465           | 0.564                                       | 0.441                                    | <b>0.778</b>                  |                       |                  |                  |                 |
| Interactivity (X5)                    | 0.634           | 0.677                                       | 0.451                                    | 0.515                         | <b>0.798</b>          |                  |                  |                 |
| Attitude (Y)                          | 0.726           | 0.695                                       | 0.36                                     | 0.55                          | 0.685                 | <b>0.788</b>     |                  |                 |
| Pleasure (Z1)                         | 0.614           | 0.597                                       | 0.396                                    | 0.488                         | 0.611                 | 0.723            | <b>0.824</b>     |                 |
| Arousal (Z2)                          | 0.411           | 0.425                                       | 0.274                                    | 0.309                         | 0.439                 | 0.476            | 0.529            | <b>0.755</b>    |

Source: Author (2021)

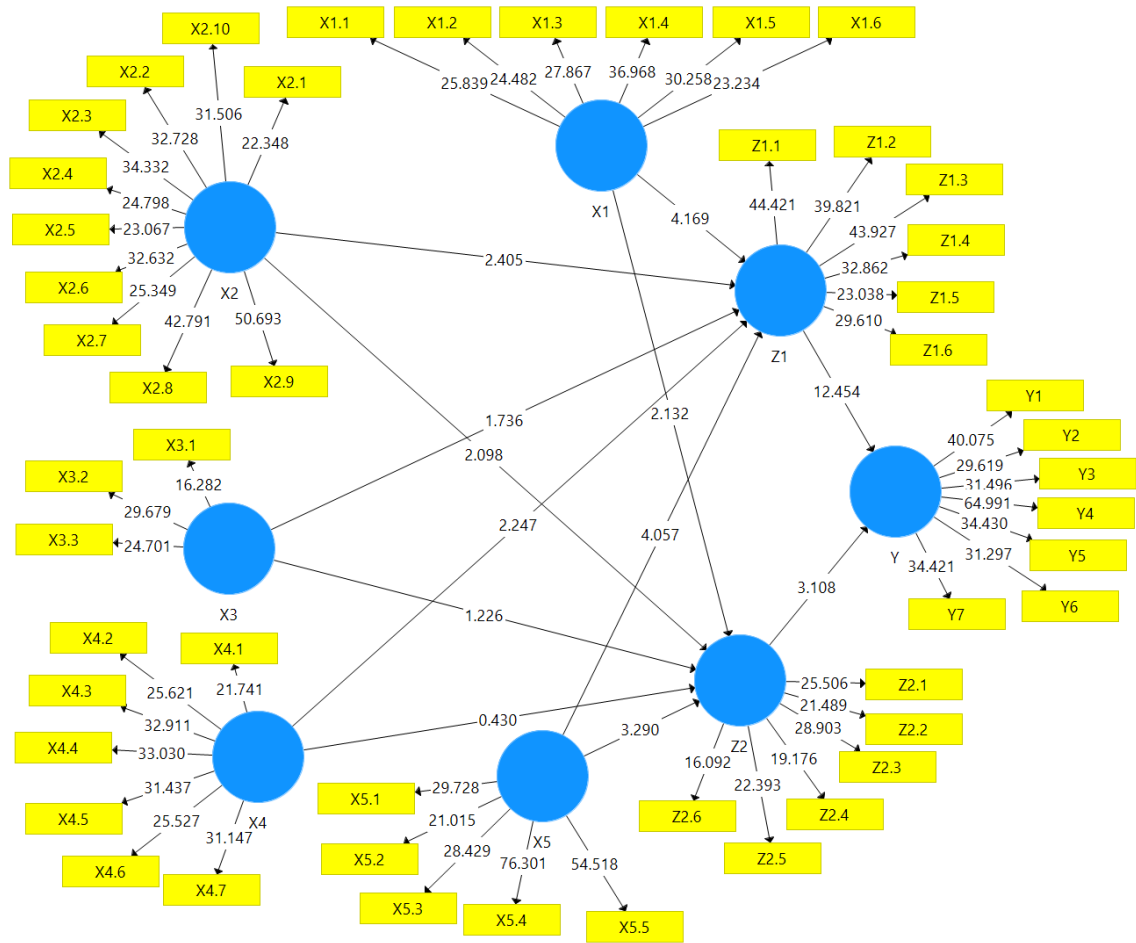
In general, if the value of the square root AVE of each construct is higher than the value of the correlation between constructions with other constructs in the model, the model is said to have strong discriminant validity value (Fornell and Larker, 1981 in Wong, 2013). Based on Table 47, it was found that the correlation value between variables is still below the square root value of the AVE (in bold), thus all indicators in each variable in this study have met discriminant validity.

### 5.7.3. Inner Model Assessment

It is formative components that are incorporated in the structural model (Hair et al., 2019b). Moreover, it is vital to look at the link between constructs and the model's predictive ability. Then, using criteria, such as the coefficient of determination ( $R^2$ ) and cross-validated redundancy ( $Q^2$ ) (Sarstedt et al., 2017).

**Figure 28.**

*Inner Model Structure*



Source: Author (2020)

The figure shows the result of the Inner Model Assessment that we did in Study III (main test of SEM). The purpose of this assessment is to check 1) the coefficient of determination ( $R^2$ ), and 2) Cross-validated redundancy ( $Q^2$ ). The expected values for each indicator in the Inner Model Assessment are explained as follows.

#### 5.7.3.1. The Coefficient of Determination ( $R^2$ )

The  $R^2$  statistic is often referred to as the in-sample predictive power statistic (Rigdon, 2012). It is anticipated that the coefficient of determination ( $R^2$ ) will be between 0 and 1 in this case. Testing of the structural model is done by looking at the R-square value which is the goodness-fit test of the model.

**Table 48.**  
*R-Square Value*

|    | R-Square |
|----|----------|
| Y  | 0.534    |
| Z1 | 0.492    |
| Z2 | 0.238    |

Source: Author (2021)

In this study, we use two endogenous variables that are influenced by other variables; 1) the pleasure variable ( $Z_1$ ) which is influenced by the e-Servicescape variable (X), and 2) the arousal variable ( $Z_2$ ) which is influenced by the e-Servicescape variable (X).

Table 48 shows that the R-square value for the pleasure variable is 0.492. The R-square value indicates that 49.2% of the Pleasure ( $Y_1$ ) can be influenced by the e-Servicescape (X). While the remaining 50.8% is influenced by other variables outside the studied. Table 48 shows the R-square arousal value of 0.238, indicating that the Arousal ( $Y_2$ ) is influenced by the e-Servicescape (X) by 23.8%, while the remaining 76.2% is influenced by other variables outside the study.

#### 5.7.3.2. Cross-validated Redundancy ( $Q^2$ )

Cross-validated redundancy ( $Q^2$ ) or Q-square tests are used for rate predictive relevance (Geisser, 1974; Stone, 1974). As a guideline,  $Q^2$  values should be larger than zero for a specific endogenous construct to indicate predictive accuracy of the structural model for that construct (Hair et al., 2019b). Clearly, the magnitude of  $Q^2$  has a value with a range

of  $0 < Q^2 < 1$ , where the closer to 1 means the better the model. Based on Table 48, the calculation of predictive relevance is as follows:

$$\begin{aligned} Q^2 &= 1 - (1 - R1^2) \times (1 - R2^2) \\ Q^2 &= 1 - (1 - 0.492) \times (1 - 0.238) \\ &= 0.62 \end{aligned}$$

*Note:*

$Q^2$ : Predictive Relevance value

$R1^2$ : value of R-Square variable pleasure

$R2^2$ : value of R-Square variable arousal

From the results of these calculations, it is known that the  $Q^2$  value is 0.62, meaning that the magnitude of the diversity of data from the study that can be explained by the designed structural model is 62%, while the remaining 38% is explained by other factors outside the model. Based on these results, it can be said that the structural model in this study is sufficient.

## **5.8. Result**

Research hypothesis testing uses the estimated parameter significance values to provide very useful information about the relationship between research variables. In this test we use Bootstrapping, a technique for estimating the sampling distribution of an estimator by sampling from the original sample and replacing it with new samples. Bootstrapping is a flexible technique that may be used to solve a wide range of inferential issues that a researcher may encounter (Hayes, 2017). The use of Bootstrapping was carried out by MacKinnon et al. (2004), Preacher and Hayes (2004), and Shrout and Bolger (2002) in investigating the effects of mediation.

**Table 49.***T-Values and P-Values*

| Hypothesis      | Variable                                              | Original<br>Sample (O) | T Statistics<br>( O/STDEV ) | P-Value | Status          |
|-----------------|-------------------------------------------------------|------------------------|-----------------------------|---------|-----------------|
| H <sub>1</sub>  | Ambient (X1) → Pleasure (Z1)                          | 0.275                  | 4.378                       | 0.000   | Significant     |
| H <sub>2</sub>  | Spatial Layout and Functionality (X2) → Pleasure (Z1) | 0.148                  | 2.452                       | 0.015   | Significant     |
| H <sub>3</sub>  | Signs, Symbols, and Artifacts (X3) → Pleasure (Z1)    | 0.079                  | 1.809                       | 0.071   | Non-significant |
| H <sub>4</sub>  | Financial Security (X4) → Pleasure (Z1)               | 0.118                  | 2.205                       | 0.028   | Significant     |
| H <sub>5</sub>  | Interactivity (X5) → Pleasure (Z1)                    | 0.240                  | 4.121                       | 0.000   | Significant     |
| H <sub>6</sub>  | Ambient (X1) → Arousal (Z2)                           | 0.140                  | 2.083                       | 0.038   | Significant     |
| H <sub>7</sub>  | Spatial Layout and Functionality (X2) → Arousal (Z2)  | 0.151                  | 2.127                       | 0.034   | Significant     |
| H <sub>8</sub>  | Signs, Symbols, and Artifacts (X3) → Arousal (Z2)     | 0.061                  | 1.275                       | 0.203   | Non-significant |
| H <sub>9</sub>  | Financial Security (X4) → Arousal (Z2)                | 0.024                  | 0.455                       | 0.649   | Non-significant |
| H <sub>10</sub> | Interactivity (X5) → Arousal (Z2)                     | 0.208                  | 3.259                       | 0.001   | Significant     |
| H <sub>11</sub> | Pleasure (Z1) → Attitudes (Y)                         | 0.654                  | 12.915                      | 0.000   | Significant     |
| H <sub>12</sub> | Arousal (Z2) → Attitudes (Y)                          | 0.130                  | 3.060                       | 0.002   | Significant     |

Source: Author (2021)

Table 49 shows the result of our hypothesis testing. We use p-value to see the significance level with the error rate ( $\alpha$ ) of 5%. The results of testing the research hypothesis are as follows:

**a. Hypothesis 1 (H<sub>1</sub>): Ambient has a direct and significant influence on Pleasure.**

The results of testing H<sub>1</sub> obtained a path coefficient of 0.275 and a t-value of 4.378. The direction of a positive relationship shows that an increase in Ambient will give an increase in Pleasure. Because the value of t-value is greater than t-table (1.960) or p-value ( $< 0.05$ ) 0.000. Then the results obtained are H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, therefore, Ambient has a direct and significant influence on Pleasure.

**b. Hypothesis 2 (H<sub>2</sub>): Spatial layout and functionality has a direct and significant influence on Pleasure.**

The results of testing H<sub>2</sub> obtained a path coefficient of 0.148 and a t-value of 2.452. The direction of the positive relationship shows that by increasing the Spatial Layout and Functionality, it will provide an increase in Pleasure. Because the value of t-value is greater than t-table (1.960) or p-value ( $< 0.05$ ) 0.015. Then the results obtained are H<sub>0</sub> rejected and H<sub>1</sub> accepted, therefore, Spatial Layout and Functionality has a direct and significant influence on Pleasure.

**c. Hypothesis 3 (H<sub>3</sub>): Signs, Symbols, and Artifacts has a direct and significant influence on Pleasure.**

The results of testing H<sub>3</sub> obtained a path coefficient of 0.079 and a t-value of 1.809. The direction of the positive relationship shows that the increase in Signs, Symbols, and Artifacts will provide an increase in Pleasure. Because the value of t-value is greater than t-table (1.960) or p-value ( $> 0.05$ ) 0.071. Then the results obtained are H<sub>0</sub> is accepted and H<sub>1</sub> is rejected, therefore, Signs, Symbols, and Artifacts have a direct and non-significant influence on Pleasure.

**d. Hypothesis 4 (H<sub>4</sub>): Financial Security has a direct and significant influence on Pleasure.**

The results of testing H<sub>4</sub> obtained a path coefficient of 0.118 and a t-value of 2.205. The direction of the positive relationship shows that the increase in Financial Security will provide an increase in Pleasure. Because the value of t-value is greater than t-table (1.960) or p-value ( $< 0.05$ ) 0.028. Then the results obtained are H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, therefore, Financial Security has a direct and significant influence on Pleasure.

**e. Hypothesis 5 (H<sub>5</sub>): Interactivity has a direct and significant influence on Pleasure.**

The results of testing  $H_5$  obtained a path coefficient of 0.240 and a t-value of 4.121. The direction of the positive relationship shows that increasing Interactivity will give an increase in Pleasure. Because the value of t-value is greater than t-table (1.960) or p-value ( $< 0.05$ ) 0.000. Then the results obtained are  $H_0$  is rejected and  $H_1$  is accepted, therefore, that Interactivity has a direct and significant effect on Pleasure.

**f. Hypothesis 6 ( $H_6$ ): Ambient has a direct and significant influence on Arousal.**

The results of testing  $H_6$  obtained a path coefficient of 0.140 and a t-value of 2.083. The direction of a positive relationship shows that an increase in Ambient will give an increase in Arousal. Because the value of t-value is greater than t-table (1.960) or p-value ( $< 0.05$ ) 0.038. Then the results obtained are  $H_0$  is rejected and  $H_1$  is accepted, therefore, Ambient has a direct and significant influence on Arousal.

**g. Hypothesis 7 ( $H_7$ ): Spatial layout and functionality has a direct and significant influence on Arousal.**

The results of testing  $H_7$  obtained a path coefficient of 0.151 and a t-value of 2.127. The direction of the positive relationship shows that by increasing the Spatial Layout and Functionality, it will provide an increase in Arousal. Because the value of t-value is greater than t-table (1.960) or p-value ( $< 0.05$ ) 0.034. Then the results obtained are  $H_0$  rejected and  $H_1$  accepted, therefore, Spatial Layout and Functionality has a direct and significant influence on Arousal.

**h. Hypothesis 8 ( $H_8$ ): Signs, Symbols, and Artifacts has a direct and significant influence on Arousal.**

The results of testing  $H_8$  obtained a path coefficient of 0.061 and a t-value of 1.275. The direction of the positive relationship shows that the increase in Signs, Symbols, and Artifacts will provide an increase in Arousal. Because the value of t-value is greater than t-table (1.960) or p-value ( $> 0.05$ ) 0.203. Then the results obtained are  $H_0$  is accepted and  $H_1$  is rejected, therefore, Signs, Symbols, and Artifacts have a direct and non-significant influence on Arousal.

**i. Hypothesis 9 ( $H_9$ ): Financial Security has a direct and significant influence on Arousal.**

The results of testing  $H_9$  obtained a path coefficient of 0.024 and a t-value of 0.455. The direction of the positive relationship shows that the increase in Financial Security will provide an increase in Arousal. Because the value of t-value is greater than t-table (1.960)

or p-value ( $> 0.05$ ) 0.649. Then the results obtained are  $H_0$  is accepted and  $H_1$  is rejected, therefore, Financial Security has a direct and non-significant influence on Arousal.

**j. Hypothesis 10 ( $H_{10}$ ): Interactivity has a direct and significant influence on Arousal.**

The results of testing  $H_{10}$  obtained a path coefficient of 0.208 and a t-value of 3.259. The direction of the positive relationship shows that increasing Interactivity will give an increase in Arousal. Because the value of t-value is greater than t-table (1.960) or p-value ( $< 0.05$ ) 0.001. Then the results obtained are  $H_0$  is rejected and  $H_1$  is accepted, therefore, Interactivity has a direct and significant effect on Arousal.

**k. Hypothesis 11 ( $H_{11}$ ): Pleasure has a direct and significant influence on Attitudes.**

The results of testing  $H_{11}$  obtained a path coefficient of 0.654 and a t-value of 12.915. The direction of the positive relationship shows that increasing Pleasure will provide an increase in Attitudes. Because the value of t-value is greater than t-table (1.960) or p-value ( $< 0.05$ ) 0.000. Then the results obtained  $H_0$  is rejected and  $H_1$  is accepted, therefore, Pleasure has a direct and significant influence on Attitudes.

**l. Hypothesis 12 ( $H_{12}$ ): Arousal has a direct and significant influence on Attitudes.**

The results of testing  $H_{12}$  obtained a path coefficient of 0.130 and a t-value of 3.060. The direction of a positive relationship shows that increasing Arousal will provide an increase in Attitudes. Because the value of t-value is greater than t-table (1.960) or p-value ( $< 0.05$ ) 0.002. Then the results obtained are  $H_0$  is rejected and  $H_1$  is accepted, therefore, Arousal has a direct and significant influence on Attitudes.

To find out the indirect effect of independent variables on the Attitudes variable through Pleasure and Arousal with Sobel calculations, it can be seen below:

**Table 50. Indirect Effect Assessment**

| Hypothesis      | Variable                                                              | Original Sample (O) | T Statistics ( O/STDEV ) | P-Value | Status          |
|-----------------|-----------------------------------------------------------------------|---------------------|--------------------------|---------|-----------------|
| H <sub>13</sub> | Ambient (X1) → Pleasure (Z1) → Attitudes (Y)                          | 0.180               | 3.949                    | 0.000   | Significant     |
| H <sub>14</sub> | Spatial Layout and Functionality (X2) → Pleasure (Z1) → Attitudes (Y) | 0.097               | 2.385                    | 0.017   | Significant     |
| H <sub>15</sub> | Signs, Symbols, and Artifacts (X3) → Pleasure (Z1) → Attitudes (Y)    | 0.051               | 1.828                    | 0.068   | Non-significant |
| H <sub>16</sub> | Financial Security (X4) → Pleasure (Z1) → Attitudes (Y)               | 0.077               | 2.196                    | 0.029   | Significant     |
| H <sub>17</sub> | Interactivity (X5) → Pleasure (Z1) → Attitudes (Y)                    | 0.157               | 3.551                    | 0.000   | Significant     |
| H <sub>18</sub> | Ambient (X1) → Arousal (Z2) → Attitudes (Y)                           | 0.018               | 1.663                    | 0.097   | Non-significant |
| H <sub>19</sub> | Spatial Layout and Functionality (X2) → Arousal (Z2) → Attitudes (Y)  | 0.020               | 1.693                    | 0.091   | Non-significant |
| H <sub>20</sub> | Signs, Symbols, and Artifacts (X3) → Arousal (Z2) → Attitudes (Y)     | 0.008               | 1.113                    | 0.266   | Non-significant |
| H <sub>21</sub> | Financial Security (X4) → Arousal (Z2) → Attitudes (Y)                | 0.003               | 0.424                    | 0.672   | Non-significant |
| H <sub>22</sub> | Interactivity (X5) → Arousal (Z2) → Attitudes (Y)                     | 0.027               | 2.037                    | 0.042   | Significant     |

Source: Author (2021)

Based on Table 50, the following indirect effects can be obtained:

**m. Hypothesis 13 (H<sub>13</sub>): Ambient mediated by Pleasure has a significant effect on Attitudes.**

Because p-value ( $< 0.05$ ) 0.000, then the results obtained are H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, as a result, Pleasure has an indirect effect between Ambient and significant influence on Attitudes.

**n. Hypothesis 14 (H<sub>14</sub>): Spatial layout and functionality mediated by Pleasure has a significant effect on Attitudes.**

Because p-value ( $< 0.05$ ) 0.017, then the results obtained are H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, as a result, Pleasure has an indirect effect between Spatial layout and functionality and significant influence on Attitudes.

**o. Hypothesis 15 (H<sub>15</sub>): Signs, symbols, and artifacts mediated by Pleasure has a significant effect on Attitudes.**

Because p-value ( $> 0.05$ ) 0.068, then the results obtained are H<sub>0</sub> is accepted and H<sub>1</sub> is rejected, as a result, Pleasure has an indirect effect between Signs, symbols, and artifacts and non-significant influence on Attitudes.

**p. Hypothesis 16 (H<sub>16</sub>): Financial security mediated by Pleasure has a significant effect on Attitudes.**

Because p-value ( $< 0.05$ ) 0.029, then the results obtained are H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, as a result, Pleasure has an indirect effect between Financial security and significant influence on Attitudes.

**q. Hypothesis 17 (H<sub>17</sub>): Interactivity mediated by Pleasure has a significant effect on Attitudes.**

Because p-value ( $< 0.05$ ) 0.000, then the results obtained are H<sub>0</sub> is rejected and H<sub>1</sub> is accepted, as a result, Pleasure has an indirect effect between Interactivity and significant influence on Attitudes.

**r. Hypothesis 18 (H<sub>18</sub>): Ambient mediated by Arousal has a significant effect on Attitudes.**

Because p-value ( $> 0.05$ ) 0.097, then the results obtained are H<sub>0</sub> is accepted and H<sub>1</sub> is rejected, as a result, Arousal has an indirect effect between Ambient and non-significant influence on Attitudes.

**s. Hypothesis 19 (H<sub>19</sub>): Spatial layout and functionality mediated by Arousal has a significant effect on Attitudes.**

Because p-value ( $> 0.05$ ) 0.091, then the results obtained are  $H_0$  is accepted and  $H_1$  is rejected, as a result, Arousal has an indirect effect between Spatial layout and functionality and non-significant influence on Attitudes.

- t. Hypothesis 20 ( $H_{20}$ ): Signs, symbols, and artifacts mediated by Arousal has a significant effect on Attitudes.**

Because p-value ( $> 0.05$ ) 0.266, then the results obtained are  $H_0$  is accepted and  $H_1$  is rejected, as a result, Arousal has an indirect effect between Signs, symbols, and artifacts and non-significant influence on Attitudes.

- u. Hypothesis 21 ( $H_{21}$ ): Financial security mediated by Arousal has a significant effect on Attitudes.**

Because p-value ( $> 0.05$ ) 0.672, then the results obtained are  $H_0$  is accepted and  $H_1$  is rejected, as a result, Arousal has an indirect effect between Financial security and non-significant influence on Attitudes.

- v. Hypothesis 22 ( $H_{22}$ ): Interactivity mediated by Arousal has a significant effect on Attitudes.**

Because p-value ( $< 0.05$ ) 0.042, then the results obtained are  $H_0$  is rejected and  $H_1$  is accepted, as a result, Arousal has an indirect effect between Interactivity and significant influence on Attitudes.

In general, our conclusions are:

1. Pleasure is able to mediate e-servicescape to Attitudes significantly because Ambient, Spatial layout and functionality, Financial security, and Interactivity variables have p-value less than 0.05; while, Signs, Symbols, and Artifacts has non-significant effect.
2. Arousal has not been able to mediate all e-servicescape variables to Attitudes significantly because almost all variables have a p-value of more than 0.05. Arousal is only able to mediate Interactivity to Attitudes significantly, while the other variables are not significant.

In the SEM model, the basic concept of analysis involves a mediator variable if the exogenous (independent) variable is able to influence the endogenous (dependent) variable through another variable called the mediator variable (Z). This means that the independent variable (X) can affect the mediator variable and the mediator variable (Z) can affect the dependent variable (Y). The role of the variable as a mediator occurs when:

1. The independent variable is able to significantly explain the mediator variable ( $X \rightarrow Z$ ).
2. The mediator variable is able to significantly explain the dependent variable ( $Z \rightarrow Y$ ).

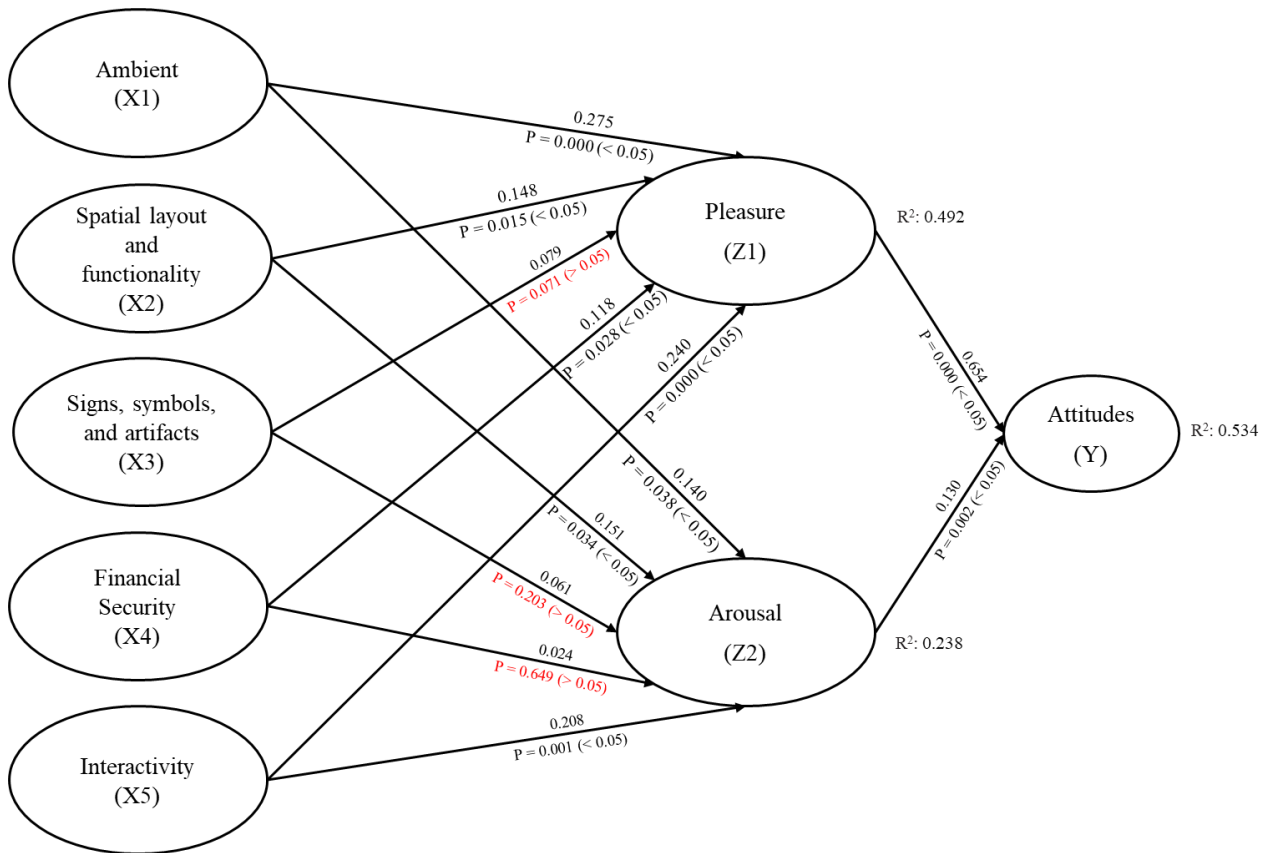
- When the mediator variable is controlled ( $X \rightarrow Z$  and  $Z \rightarrow Y$ ), the relationship between the independent variable and the dependent variable is not significant.

There are two types of categories of mediator variables (Sobel, 1982):

- Full Mediation**, meaning that the independent variable is not able to significantly influence the dependent variable without going through the mediator variable. In this study, Ambient, Spatial Layout and Functionality, Financial Security, and Interactivity full mediation the effect of Pleasure on Attitudes. Also, Ambient, Spatial Layout and Functionality, and Interactivity full mediation the effect of Arousal on Attitudes.
- Partial Mediation**, meaning that the independent variable is able to directly influence the dependent variable without going through/involving the mediator variable. In this study, Signs, Symbols, and Artifacts partial mediation the effect of Pleasure on Attitudes. Also, Signs, Symbols, and Artifacts, and Financial Security partial mediation the effect of Arousal on Attitudes.

**Figure 29.**

*PLS Path Results*



Source: Author (2021)

Using regression and bootstrap analysis, we employed SmartPLS. The analysis was carried out to determine the statistical significance of the path coefficients. The original model consisted of a link between all latent variables. Overall, the results of the SEM calculation can be seen in the following table:

**Table 51. Recapitulation of PLS-SEM Results**

|                                                                       | Path coefficient | T Statistics | P Values | Status          |
|-----------------------------------------------------------------------|------------------|--------------|----------|-----------------|
| Ambient (X1) → Pleasure (Z1)                                          | 0.275            | 4.378        | 0.000    | Significant     |
| Spatial Layout and Functionality (X2) → Pleasure (Z1)                 | 0.148            | 2.452        | 0.015    | Significant     |
| Signs, Symbols, and Artifacts (X3) → Pleasure (Z1)                    | 0.079            | 1.809        | 0.071    | Non-significant |
| Financial Security (X4) → Pleasure (Z1)                               | 0.118            | 2.205        | 0.028    | Significant     |
| Interactivity (X5) → Pleasure (Z1)                                    | 0.240            | 4.121        | 0.000    | Significant     |
| Ambient (X1) → Arousal (Z2)                                           | 0.140            | 2.083        | 0.038    | Significant     |
| Spatial Layout and Functionality (X2) → Arousal (Z2)                  | 0.151            | 2.127        | 0.034    | Significant     |
| Signs, Symbols, and Artifacts (X3) → Arousal (Z2)                     | 0.061            | 1.275        | 0.203    | Non-significant |
| Financial Security (X4) → Arousal (Z2)                                | 0.024            | 0.455        | 0.649    | Non-significant |
| Interactivity (X5) → Arousal (Z2)                                     | 0.208            | 3.259        | 0.001    | Significant     |
| Pleasure (Z1) → Attitudes (Y)                                         | 0.654            | 12.915       | 0.000    | Significant     |
| Arousal (Z2) → Attitudes (Y)                                          | 0.130            | 3.060        | 0.002    | Significant     |
| Ambient (X1) → Pleasure (Z1) → Attitudes (Y)                          | 0.180            | 3.949        | 0.000    | Significant     |
| Spatial Layout and Functionality (X2) → Pleasure (Z1) → Attitudes (Y) | 0.097            | 2.385        | 0.017    | Significant     |
| Signs, Symbols, and Artifacts (X3) → Pleasure (Z1) → Attitudes (Y)    | 0.051            | 1.828        | 0.068    | Non-significant |
| Financial Security (X4) → Pleasure (Z1) → Attitudes (Y)               | 0.077            | 2.196        | 0.029    | Significant     |
| Interactivity (X5) → Pleasure (Z1) → Attitudes (Y)                    | 0.157            | 3.551        | 0.000    | Significant     |
| Ambient (X1) → Arousal (Z2) → Attitudes (Y)                           | 0.018            | 1.663        | 0.097    | Non-significant |
| Spatial Layout and Functionality (X2) → Arousal (Z2) → Attitudes (Y)  | 0.020            | 1.693        | 0.091    | Non-significant |
| Signs, Symbols, and Artifacts (X3) → Arousal (Z2) → Attitudes (Y)     | 0.008            | 1.113        | 0.266    | Non-significant |
| Financial Security (X4) → Arousal (Z2) → Attitudes (Y)                | 0.003            | 0.424        | 0.672    | Non-significant |
| Interactivity (X5) → Arousal (Z2) → Attitudes (Y)                     | 0.027            | 2.037        | 0.042    | Significant     |

Source: Author (2021)

In conclusion, based on Table 51 it was found that:

1. Ambient has a significant effect on Pleasure and Arousal.
2. Spatial Layout and Functionality have significant effect on Pleasure and Arousal.
3. Signs, Symbols, and Artifacts have no significant effect on Pleasure and Arousal.
4. Financial Security has a significant effect on the Pleasure and no significant on Arousal.
5. The Interactivity has a significant effect on the Pleasure and Arousal.
6. Pleasure mediates significantly among Ambient, Spatial Layout and Functionality, Financial Security and Interactivity to Attitude.
7. Arousal mediates significantly from Interactivity to Attitude.

## **5.9. Discussion**

In the tests carried out, we found several important things related to the theory that we used in this study. *First*, in the Path Coefficients test, it was found that the Signs, Symbols, and Artifacts factors had no effect on Pleasure and Arousal because both P-values were below 0.05 to be said to be significant. This means that Signs, Symbols, and Artifacts which Jeon and Jeong (2009) in their conceptual paper use to explain company identity in internet search engines are not proven to have an effect on emotions (pleasure and arousal). Although the steps of Jeon and Jeong (2009) were also followed by Hopkins et al. (2009) with similar arguments. We try to take a more detailed look at both studies and compare them with research from the last decade and conclude that Signs, Symbols, and Artifacts are no longer used in e-servicescape research (Williams and Dargel, 2004; Harris and Goode, 2010; Lee and Jeong, 2012; Tran et al., 2012; Sahoo and Pillai, 2017; Tankovic and Benazic, 2018; Teng et al., 2018; and Tran and Strutton, 2020). Thus, we have the assumption that the Signs, Symbols, and Artifacts factors are used by researchers to find out the identity and characteristics of companies in search engines because consumers have not heard or know anything about the targeted company. However, this factor becomes important when consumers feel suspicious and want to know more details about the company profile as Jeon and Jeong (2009) used in their research. *Second*, in testing the path coefficients, it was found that Financial Security had no effect on Arousal. Referring to the opinions expressed by Schachter and Singer (1962), Titchener (1914, Cornelius (1991), and Barrett (2017) who refer to the James-Lange theory, it is difficult to explain that the display of images can directly increase the emotional side of consumers' arousal. It takes a time-consuming process, in-touch, or consumer experience of stimuli produced by the environment, as stated by

Iwańczuk and Guźniczak (2015), Malenka et al. (2009), and Pfaff (2009). While in this study, we only use images as a test of environmental stimuli for non-user consumers.

We conducted other tests to see the mediating effect of emotions (pleasure and arousal) on the relationship between e-servicescape and attitudes. From this test, we conclude that the influence of e-servicescape with attitudes is better explained with Pleasure as the mediator variable. While on the other hand, a similar relationship cannot be explained by Arousal. This refers to the theory that to increase a person's arousal it takes more effort than having to watch the display of images (Iwańczuk and Guźniczak, 2015; Malenka et al., 2009).

According to Shrout and Bolger (2002) a mediator is a third variable that explains the relationship between two other variables. The mediation model is a three-variable model in which an independent variable (X) predicts a mediator variable (Z), and the result (Y). The mediator intervenes in the relationship between X and Y, illustrating how the two variables are connected. The researcher may breakdown the bivariate relationship between the two variables into direct and indirect (i.e., mediated) effects by modeling an intermediate variable in the X-Y connection. The fit of an observed covariance matrix to a model-implied covariance matrix is evaluated in SEM, and goodness-of-fit statistics are generated to identify inconsistencies between the two. While these models allow for the estimation of many mediated effects, the procedures provided for the single mediator model may be used to examine individual mediated effects. Tests of the model's overall fit may potentially give evidence for a proposed mediation relationship, or relationships (James et al., 2006; MacKinnon, 2008).

The role of emotions as a moderator variable, the link between the e-servicescape and attitudes has a key role in how stimulation can be formed through information processing in consumers. The processes that occur in emotions and the influence of stimulation in forming attitudes are important to explain to get a view about the role of variables in predicting the occurrence of an influence or the results of a study.

It clarifies that emotions also influence the creation of attitudes, where psychological processes, information processing, information and decisions, and affect as information are the keys to the success of the influence of stimulation in consumers. This is as stated by Zajonc (1980, 1984), Pham et al. (2001), Clore and Storbeck (2006), and Storbeck and Clore (2008). This point also confirms the research position that departs from the opinion of previous research which says that cognitive precedes emotions, as stated by Lazarus (1999,

p. 127) that "cognitive activity causally precedes an emotion in the flow of psychological events, and subsequent cognitive activity is also later affected by that emotion"; and Oliver (1980, 1981).

Furthermore, Zimbardo and Leippe (1991) discovered that one kind of attitude is the result of an emotional reaction. Emotions are critical in persuasion, social influence, and changing attitudes. Much of the research on attitudes has emphasized the critical role of affective or emotion components (Breckler and Wiggins, 1992). There is substantial empirical evidence that emotions such as fear arousal (Leventhal, 1970; Maddux and Rogers, 1980), empathy (Shelton and Rogers, 1981), or a pleasant mood (Janis et al., 1965) might facilitate attitude change under particular situations (Leventhal, 1970).

The role of emotions is seen in explaining that e-servicescape as a stimulus factor affects consumer attitudes towards an object. Fishbein (1963) stated that attitude is described as a combination of one's perceptions of an object, or belief; together with an evaluative component of those perceptions when applied to that object (Fishbein and Raven, 1962). Thus, in order to ascertain if a person has a negative or positive attitude toward an object, he or she must first examine their own beliefs about the item and then make an evaluation of it based on a set of criteria (Ajzen and Fishbein, 1977). In addition, Hong et al. (2004, p. 150) claimed that web interface design plays an important role in affecting customers' attitude toward the website and improve their willingness to revisit the website. This is in line with the research conducted by Ajzen and Fishbein (1975) and Lutz (1975) about emotional experiences that can create trust and attitude of a consumer. Kim et al. (2009) emphasized the importance of online retailers to make the website pleasurable to increase attitude towards the website and purchase intent.

#### **5.10. Summary**

In conclusion, the testing in Study 3 resulted in two major points, namely: 1) the relationship between e-servicescape and pleasure-arousal; and 2) the relationship between e-servicescape and attitude through pleasure-arousal. These two points make the results of study 3 have strength in proving the hypotheses and assumptions that we made earlier. From the test results, we conclude that pleasure plays a greater role in mediating the e-servicescape and attitude, rather than arousal. This is inseparable from the differences between the two emotions characters in consumers. We hope that these results can provide insight into the

psychological processes that occur in consumers, as a result, that they will determine themselves in the online environment.

## CHAPTER 6

### OVERALL FINDINGS

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#### 6.1. Introduction

In general, our study examines the effect of e-servicescape and attitudes with emotions as a mediator variable. We started this study by observing the phenomena that occur related to consumer behavior and the accompanying studies. *First*, the phenomena related to consumer behavior. These phenomena are driven by changes in consumer buying behavior and the function of the retail environment in fostering this behavior. Two aspects become critical: 1) the context in which behavior is formed; and 2) the kind of environment that impacts it. This is reinforced by several findings, including an increase in the phenomenon of consumers making purchases through online shopping websites (Vazquez and Xu, 2009); Delafrooz et al. (2010) and Tabassum et al. (2017) make similar references to online shopping and marketing activities via the internet. These phenomena cannot be divorced from the growing rivalry in e-commerce, which places a premium on creating excellent websites that serve as a stimulant to the buying environment; as research indicates (Parasuraman et al., 2005; Mukhopadhyay et al., 2008; Hopkins et al., 2009). Additionally, the reasons why online shoppers have a distinct consumer attitude (Darley et al., 2010) and how customer perceptions and attitudes are created through the internet (Lee and Kozar, 2009) remain a mystery. As a consequence, merchants are investing in distinctive shop ambient signals to attract customers' attention (Venter de Villiers et al., 2018).

Second, phenomena related to research conducted by previous researchers. It was discovered the phenomena of customer experience research, which tries to enhance the customer experience by incorporating service encounter components into the design of service offerings. The literature on experiential marketing has a tendency to treat the experience as if it were the product or service. Customers' behaviors and responses to specific stimuli, on the other hand, are seen as the most frequent perspective in other industries, according to the most prevalent view (Becker and Jaakkola, 2020).

This tendency has prompted a number of studies to react by concentrating their research on consumer responses to stimuli occurring inside the firm–customer interaction. For example, the research conducted by Patricio et al. (2011) on the purchase process; Grace and O'Cass (2004) on service marketing on service encounter stimuli; Verhoef et al. (2009) dan Lo et al. (2013) on retail elements such as assortment and price; and Rose et al. (2012)

on virtual environments. Customers' reactions to stimuli and evaluations of their experience are influenced by contextual elements connected to the consumer and the larger environment.

From the findings, we conclude that the current phenomenon of consumer behavior is important to be associated with the phenomenon of research, where consumers spend more time and expenditure in the online shopping environment. Not only they will get a change in attitude from these behavioral patterns, but also, they want to experience more in a different shopping environment. Indirectly they experience stimulation, where the company puts forward this to bring in more consumers.

## **6.2. Research Question One**

Before answering the first research question, we conducted a series of tests to arrive at a complete conclusion. First, we manipulate the stimulus factors that we want to provide to consumers. We manipulate the factors of e-servicescape stimuli in order to obtain information and confidence that stimuli in a service environment (e-servicescape) have an influence on consumers. In research related to psychology, manipulation checks are important things that are often overlooked (Sigall and Mills, 1998). Thus, we included this procedure as part of our first study; as Fayant et al. (2017) put forward the well-design experiment.

In manipulating e-servicescape stimuli factors, we refer to the opinion of Redish (2012) and Yang et al. (2005) about the manipulation of web content such as the length of the information provided, the clarity of the information, the complexity of the sentences. Lee and Koubek (2010) and Williams (2015) proposed the terms proximity, alignment, repetition, and contrast (PARC) which will change and distinguish the appearance of websites.

There are situations where it is important to perform manipulation checks. *First*, we wanted to get consumers to know whether they are emotionally affected by stimuli in their shopping environment. *Second*, the manipulations carried out are subtle or in this study a neutral approach; which does not give too much difference from the actual conditions before the manipulation was carried out. We investigated wanting to determine whether participants even paid attention to manipulation. *Third*, the placebo condition; where researchers such as Gustafson (1986) use it to control the treatment given to a person. Explicitly, this study does not apply it but uses a quasi-experiment (study II) similar to placebo, dividing participants into two groups (neutral and pleasant approach group).

According to the results of the manipulation that we did, several things we can confirm are: first, stimuli in two different environmental conditions result in different perceptions of consumers. By describing the stimulus approach in a neutral and pleasant way, they think that stimuli with a pleasant approach give different results with a neutral approach. Second, with manipulation we verify and prove our hypothesis which states that the pleasant website gives better results than the neutral website. From these two points, we conclude that our manipulation is working well.

In the research question, we ask the question of our research “in what extent will e-servicescape affect emotions of consumers?” which is adjusted to the research objective one, namely “the Interrelationship between e-Servicescape and Emotions (Pleasure and Arousal). These questions and objectives are interpreted as our efforts to find out the relationship between variables, make hypotheses, test them, and explain them theoretically. Currently, transactions and meetings between buyers and sellers are not only carried out in the physical world, but also in the virtual world; as well as the accompanying services Abbott et al. (2000) and Vrechopoulos (2010). As stated by Karimov et al. (2011) if the company creates a shopping environment on the website, then there are aspects that must be considered such as the system, appearance, content, and social cues. As in this study, we agree with Caballero-Luque et al. (2010) and El Gazzar and Mourad (2012) that website design is intended to create competitive value in the market. The relationship between e-servicescape and the emotions of consumers is explained by Mehrabian and Russell (1974a) about the environment and the reactions of organisms that are caused. To test this opinion, we conducted experiments on two factors in the e-servicescape (Ambient and Interactivity) and emotions (Pleasure and Arousal).

*First*, creating High-Level and Low-Level Ambient and Interactivity as stimuli, and looking at consumer reactions to the difference between the two conditions that we created. We use Analysis of variance (ANOVA) as a statistical tool used to see differences in variation in experiments; as suggested by Fisher (1935, 1992). The test results prove our hypothesis that: 1) there is a significant average difference between Low and High Ambient on Pleasure; 2) that there is a significant average difference between Low and High Interactivity on Pleasure; and there is a significant average difference between Ambient\*Interactivity on Pleasure.

*Second*, we conducted a multigroup test by dividing the participants in the experiment into two groups; 1) a group that received e-servicescape stimuli with a neutral

approach, and 2) a group that received e-servicescape stimuli with a pleasant approach. The purpose of this research is to see and test the effect of e-Servicescape stimuli both in neutral group and in pleasant group of participants on Pleasure and Arousal. Thus, we use the Multigroup Analysis (MGA) test where this analysis is intended to see the differences between two or more groups (Sarstedt and Ringle, 2010; Cheah et al., 2020). From this test, we get several important points, namely: 1) in the neutral group, ambient has a significant effect on Pleasure and Arousal, while Interactivity has no significant effect on Pleasure and Arousal; however, 2) in the pleasant group, Ambient and Interactivity had a significant effect on Pleasure and Arousal. These results prove that by using a pleasant approach, the results obtained by stimuli in the e-servicescape are better than using a neutral approach.

In conclusion, the relationship between e-servicescape (Ambient and Interactivity) and emotions (Pleasure and Arousal) is in accordance with the opinion of Roy and Tai (2003) and Cheng et al. (2009) which stated that a person's emotions will respond to environmental stimuli where moods and emotional states appear in him/her; such as something positive or negative (Isen and Daubman, 1984), excitement, movement, activity, and alertness (Beatty and Ferrell, 1998; Chang et al., 2014). Thus, it can be said that consumers who accept or are in a high-level e-servicescape environment can have a positive impact on their level of pleasure. The emergence of internal states in consumers is the result of an evaluation of perceived value that is received emotionally due to stimuli (Mehrabian and Russell, 1974a; Liu et al. (2013). This basis is a psychological consideration for consumers to carry out further processes such as intentions (Parboteeah et al. al., 2009).

### **6.3. Research Question Two**

To answer the research question, we asked the second question, namely "in what extent e-servicescape will affect attitudes of consumers?". We align this question with research objective two where we want to explore "the interrelationship between e-Servicescape and Attitudes mediated by Emotions. In this section, we will specifically discuss more studies III that we have done, reflecting on the previous study I and study II.

We return to the proposed model which discusses the e-servicescape, emotions, and attitudes. Opinions expressed by Lee and Jeong (2012), Teng et al. (2018), and Tran and Strutton (2020) indicate that the ambient in the e-servicescape can affect consumers' emotions, if displayed in a pleasant side. Likewise, the opinion of Sahoo and Pillai (2017, Tankovic and Benazic (2018), Kühn and Petzer (2018) about ease, useability, or in e-

servicescape is called spatial layout and functionality which will make consumers comfortable in skating on a website. On the other hand, signs, symbols, and artifacts have useful values in the search for information and company profiles by consumers (Jeon and Jeong, 2009; Hakim and Deswindi, 2015) as well as financial security (Harris and Goode, 2010; Tankovic and Benazic, 2015). 2018) who want to provide a sense of comfort and ease of transaction; and interaction (Tran et al., 2012; Tran and Strutton, 2020) which aims to establish consumer interaction with the technology and services provided by the company. Stimuli that appear in the e-servicescape will affect consumers' emotions (Bitner, 1992; Zeithaml and Bitner, 2000) as a result that emotional states appear in them (Loureiro and Ribeiro, 2011; Mehrabian and Russell, 1974a), which can be negative or positive (Eroglu et al., 2001; Islam and Rahman, 2017).

The results of our study indicate that **Ambient** has a direct and significant influence on Pleasure and Arousal. Ambient is the condition of the website and is part of the e-servicescape stimuli that are required to display something attractive and alluring. On the Spotify website, ambient factors play an important role in displaying images, videos, colors, animations, and overall presentation as the main consideration for consumers in assessing an attractive website. This is important to create the characteristics, visual appeal, aesthetic value, quality design, and perceived originality of a website. This research is supported by previous empirical research (Ekhaml, 1996; Harris and Goode, 2010) which mentions a lot about the important role of ambient in online shopping settings. The same thing is confirmed by Callahan (2001), Ekhaml (1996), and Flanders (1996) whose research focuses on website appearance such as background, typography, and appropriate colors.

Furthermore, on **the Spatial Layout and Functionality** factor, our research shows that it has a direct and significant influence on Pleasure and Arousal. Consumers in our study had emotions that were either pleasure or arousal. This proves that the Spotify website has a good arrangement, organization, structure, adaptability, facilities, and menu service. Previous empirical research supports this result as done by Hopkins et al. (2009), Jeon and Jeong (2009), Tankovic and Benazic (2018), and Kühn and Petzer (2018) which specifically include spatial layout and functionality factors as an important part of e-servicescape stimuli. This factor in our research covers technical matters on the website, such as webpage design, navigation, menus, space usage, functions, and features. These features need web designers to create websites that are easy for consumers to operate. Thus, webpages that are structured

and easy to use by consumers are the mainstay of consumers in surfing the website; and can increase consumer involvement and comfort (Giessler, 2001).

**Signs, Symbols, and Artifacts**, in our research, have a direct and non-significant influence on Pleasure and Arousal. Although it helps consumers identify locations, positive impressions, and messages on the website, in the study these factors were not the most important and significant. Signs, Symbols, and Artifacts are debatable considering that this factor is rarely used in e-servicescapes. This result strengthens the view that there are contrast of opinion in including Signs, Symbols, and Artifacts into e-servicescape research or virtual environments. On the one hand, studies such as Hopkins et al. (2009), Jeon and Jeong (2009), and Hakim and Deswindi (2015) still consider it important; while on the other hand, researchers such as Williams and Dargel (2004), Harris and Goode (2010), Lee and Jeong (2012), Tran et al. (2012), Sahoo and Pillai (2017), Tankovic and Benazic (2018), Teng et al. (2018), and Tran and Strutton (2020) have started to leave it in the context of online shopping studies. From the beginning, our initial goal of using this factor was to evaluate whether it is still appropriate for use in research or has been deliberately overlooked by other researchers. Because, we view that there are still benefits and correlations in the research where Geissler (2001) revealed that this is the company's efforts to communicate with consumers and help consumers identify the company (Jeon and Jeong, 2009; Hakim and Deswindi, 2015). However, it should be noted that Jeon and Jeong (2009) and Hopkins et al. (2009) used this factor in their conceptual and empirical paper, it seems irrelevant in this study.

Respondents in our study interpret **Financial Security** as a stimulus factor in the e-servicescape that provides a sense of secured when shopping. It has a direct and significant influence on Pleasure and Arousal. The emotional side arises on the basis of their acceptance of the ease of payment, acceptance of security, security policies, and the payment process that consumers will do. The results of this study are supported by empirical from Harris and Goode (2010), Thakur and Srivastava (2014), Tankovic and Benazic (2018); where a sense of calm, trust, and security will emerge along with the company's efforts to maintain the security quality of consumer transactions. In today's virtual world, consumers spend more time shopping online, where financial transactions have many risks. Clearly, consumers concerned about internet security, privacy issues, and financial transactions must always be improved. As a result, when Spotify wants to improve the emotional side of consumers, the

company creates financial security as a stimulus invoice through the ease and security of transactions.

In addition, respondents in our study responded to e-servicescape stimuli on Spotify through positive emotions, either pleasure or arousal. **The Interactivity** in Spotify has a direct and significant effect on Pleasure and Arousal. It should be remembered and emphasized that the interaction in the e-servicescape is an interaction relationship between consumers and the company through virtual interaction services. In brief, interactivity is defined as consumer interaction with technology and the company's website which is measured by how fast, responsive, and engaged communication is between the two parties. The interaction factor appears in Bitner's model as a part that can leverage two-way communication in the shopping environment. In contrast to the offline environment, online interactions are carried out without face-to-face meetings, prioritizing live chat, or opening a message room for consumers who want to ask questions about the company's services or products. This is what Chen and Chang (2003) and Srinivasan et al. (2002) as an important variable in the online shopping experience of consumers. This research is in line with other research on the importance of financial security by Bauer et al. (2002), Srinivasan et al. (2002), and Tankovic and Benazic (2018).

### **Emotion based on PAD**

In our research, it can be seen that consumers' emotions are formed in a relatively short time, based on the object image of a website that they have never met before. This reminds us of the research conducted by Frederickson (2001) where emotions arise as a result of the tendency of multi-component responses in a short time span. Emotions arise from how consumers judge the environment according to their personal interpretation of an event; either consciously or unconsciously. Nevertheless, consumers who are not Spotify users consider that the object or image of the website they see is a representation of the real thing in their mind. This opinion is expressed in studies by Oatley and Jenkins (1996), and Russell and Barrett (1999) about emotions that arise towards an object; and measured by anger, fear, pleasure, or happiness (Frederickson, 2001).

Furthermore, the formation of consumer emotions from e-servicescape stimuli complements the previous research on emotions; where the research focuses on evaluating service quality predicting repeat purchase behavior, service provider selection, and brand loyalty formation (Chen and Lin, 2018; Hamelin et al., 2017; Lee et al., 2008; McKechnie

et al., 2018). Our research focuses on looking at how a stimulus in the environment causes emotions in the form of pleasure and arousal of a consumer. This is the basis for consideration of attitudes that will later appear towards a virtual environment or shopping website.

Then, how do we assess consumer emotions on an environment? Since four to three decades ago, this assessment becomes interesting because there are various versions of measuring these emotions. However, holistically on an empirical level, our assessment is in line with research conducted by Mehrabian and Russell (1974a), Plutchik (1980), and Chebat and Slusarczyk (2005) where identified the types of emotional states. We deliberately target non-Spotify users as respondents in assessing a Spotify website to avoid bias that will occur if the research is conducted on Spotify users. Although the emotions that arise are feelings that do not directly consume, use the service, and the shopping experience, but only see the image of the virtual environment of a service, this is the forerunner of how an environment will be built by the company, accordingly, that even non-regular users will find it interesting within the website environment. This brief experience that we want to see about the difference in perception and acceptance of an environmental stimulus in a consumer. This is existing because the emotional experience depends on the personal suitability of the situation with the consumer (Huang, 2001). That is why emotions are considered important when consumers recognize situations and experiences of an environment (Richins, 1997).

There is an interesting thing in the research findings, namely how Pleasure dominates Arousal in the emotional states of a consumer. Theoretically, this research reveals that when we try to connect the e-servicescape with emotions, consumers cannot give the relationship significantly, especially the Signs, Symbols, and Artifacts factors on Pleasure and Arousal; as appropriate with Financial Security against Arousal. These results show that the relationship that occurs in these variables does not have a significant effect. However, keep in mind that companies must be aware that not all stimuli will have the effect and results as expected. Some have a big impact; some are small or cannot be felt by consumers. Nevertheless, it is important for companies to be able to present a pleasant and arousing shopping environment for consumers. On the producer side, creating an environment for consumers to feel at home means creating opportunities for them to shop, or at least be interested in the products, services, or information that we provide. On the consumer side, spending more time on a website can be interpreted as exploring experiences and getting as

much information as possible about a product or service. This is in accordance with the opinion of Eroglu et al. (2003), Hu and Jasper (2006), and Menon and Kahn (2002) about consumer behavior that will desire to explore and desire to shop due to a high level of pleasure and arousal retail stores and websites in the S-O-R framework.

### **The S-O-R Framework**

In general, e-Servicescape has an effect on Pleasure and Arousal, but there is a Spatial layout and functionality factor that has no significant effect on this relationship. Furthermore, as a whole, we conclude that Pleasure and Arousal also have a direct and significant influence on Attitudes; although the variation in the results in it varies. In brief, Pleasure is able to mediate e-servicescape (Ambient, Spatial layout and functionality, Financial security, and Interactivity) to Attitudes significantly; while, Signs, Symbols, and Artifacts have non-significant effect. Furthermore, Arousal has not been able to mediate all e-servicescape variables to Attitudes significantly, but it mediates only Interactivity to Attitudes significantly.

Adopting the S-O-R framework in our research, not only as a reinforcement of the relationship between environmental stimuli to consumers and what response will be evoked, but also the S-O-R framework plays an important role in explaining the effect of the e-retail settings on consumer pleasure and arousal. Moreover, other researchers believe that this framework in measuring pleasure as a predictor of consumer behavior in the shopping environment (Babin et al., 2013; Chebat and Michon, 2003; Donovan and Rossiter, 1982; Donovan et al., 1994). Definitely, this framework will work best when stimuli in an environment affect the internal states of consumers (e.g., Baker et al., 1992; Eroglu, et al., 2001; McKinney, 2004; Sherman et al., 1997).

In the shopping environment, the use of this framework is divided into two, namely in the physical and non-physical environment. Both environments can be manipulated by producers according to the emotions, attitudes, and behaviors they want to get from consumers. Generally, manufacturers will manipulate things that trigger and stimulate consumers to, at least, spend more time in their service environment. In addition, manipulation for producers allows them to obtain information about service quality, type of consumers, comfortable environment for consumers, and target consumers; and will gradually affect consumer responses in visiting shopping websites. In our research on Spotify, it appears that the company displays a website or music player that is attractive and

convenient for consumers. Some background features such as color, font size and type, images, information, and service menus show a good level of service, make it easier, and provide security and comfort in using Spotify.

Our research reveals that positive emotions from a pleasant and arousing environment will lead to a positive attitude; where it represents the consumer's desire to stay, explore, and engage with the website. On the other hand, negative emotions will lead to consumer efforts to avoid, feel bored or anxious, and tend to leave the service environment and not return; as also described by Mehrabian and Russell (1974a).

Moreover, we refer to the results of the study where the S-O-R framework is set in a research framework that connects e-servicescape, emotions, and attitudes, it can be seen that Signs, Symbols, and Artifacts is not the main factor in e-servicescape stimuli (S), if we define Pleasure and Arousal as organism's reaction to its environment (O) and Attitude as a general consumer reaction. This is because Signs, Symbols, and Artifacts have no significant effect on Pleasure and Arousal. Nevertheless, the role of S-O-R framework in this research is quite good and can describe the process of consumer stimuli and reactions working. This psychological process is the basis for researchers in using theories and research frameworks that are in accordance with research objectives.

In addition, the S-O-R framework that we apply represents emotions in mediating the relationship between e-servicescape stimuli and consumers' attitudes towards Spotify. As we said earlier, this mediation process explains internal emotional processes based on consumer psychological processes. This arises from the stimuli presented and the reactions caused by one's emotions (Bagozzi, 1986). In details, Bagozzi (1986, p. 46) stated organism as internal processes and structures that occur between external inputs and the final actions, emotions, or responses released by the individual, including perceptual, psychological, emotional, and intellectual activities. In our research, it is believed that there is a unique value in which psychologically there is a process of processing consumer views and knowledge of an environment. Interestingly, previous empirical research has highlighted this as a process that allows consumers to convert environmental stimuli into useful information for them and use it in understanding the environment before making an attitude (Lee and Lee, 2019), intention (Harris and Goodie, 2010), or decision (Koo and Ju, 2010).

#### **6.4. Summary**

In general, in this chapter, we present the overall results of the studies that we have done and answer the research questions we posed at the beginning. We believe that our study mainly focuses on the psychological processes that occur in consumers by underpinning the phenomena and related theories. Making studies into a coherent series requires some effort and testing, as a result, that we can see a holistic view of the work we are doing. We started with a manipulation study, a study of two conditions and two different groups, until we combined the studies together and justified them in a broad context. It is undeniable that this study cannot be separated from the many broad views on "what should" be done by researchers. However, we believe that this should be interpreted as enrichment of research, especially the divergent perspectives of each researcher.

## **CHAPTER 7**

### **CONCLUSION, IMPLICATION, CONTRIBUTION, LIMITATION, AND FUTURE RESEARCH**

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#### **7.1. Introduction**

In this chapter, we will talk about the conclusion, implication, contribution, limitation, and future research; a passage that is as important as any other in our study. Here we will relate the results of our study to the implications that will occur and have a social and practical impact on related topics. This is what will make our research meaningful and of value to readers in general. Furthermore, the studies that we do have a theoretical and practical contribution. With this in mind, we hope that our research will contribute to knowledge and its application in the practical world. Then, we will convey that our study has limitations. This is because the focus we examine requires us to limit the research to the scope that we do. We strive to present the results of our research and our views on what we do within that scope. We hope that the limitations of the study that we currently have can be a foundation or a starting point for future researchers to conduct studies on the same or other topics as we are currently doing.

#### **7.2. Conclusion**

In general, it is an important point that researchers need to pay attention to regarding the topic of e-servicescape. E-servicescape tries to find the right formula in creating customer service through a competitive environment. Thus, the company will know the behavior, needs, standards of consumers towards the environment in which they shop or carry out activities. Two important things that need to be underlined in the e-servicescape are 1) understanding that consumer feelings are central to how we respond to the environment, and 2) understanding how these feelings can have implications for consumer behavior.

Study I, Study II (a and b), and Study III applied different approaches and tested different levels of consumer response. Study I and Study II (a and b) aim to initiate formulation before conducting Study III. The basis of judgment and support is needed in our initial study, before testing the main test Study III. In theory, the claiming proposed model in Study III is important to strengthen the model to be tested. One of them is by taking a random factor in the e-servicescape and testing it using different methodologies. Findings

generated in the Action will also vary. We describe our findings in Study I, Study II (a and b), and Study III as follows.

In Study I, we found that treatment carried out in an online service environment (e-servicescape) can lead to the emergence of stimulation in consumers. This is because companies that manipulate, design, and manage positively on their websites have a positive effect on consumers. Consumers can feel that a pleasant environment contributes "feeling and perception" to an object they see. As stated by Wirtz (2018) in his book "Crafting the service environment" that designing a service environment can make consumers feel happy or relaxed, help them find their way in complex service environments and shape their perceptions of quality and important outcomes such as purchase behavior, satisfaction, and repeat purchases. This is important to do as an evaluative step on the existing system or the initiation of a new program in order to provide a sense of comfort to consumers. We can see how websites or applications on smartphones periodically update the appearance, menu, how consumers interact, payment methods, or responsiveness when consumers use them. If it creates a bad and unpleasant environment, it has the potential to frustrate consumers. Thus, creating a comfortable environment for consumers will be one of the ways in which companies strive to satisfy consumers.

Study II found that the interaction of e-Servicescape factors had an impact on consumers. They prefer an online environment that displays a pleasant atmosphere for the products or services displayed on the website. We prove this by testing the Factorial ANOVA where High-level Ambient and High-level of Interactivity are preferred by consumers over Low-level conditions. We found in Study II that groups exposed to a pleasant online environment had positive and different responses than groups in a neutral environment. By doing a test using Multigroup analysis (MGA) it is increasingly confirmed that the pleasant condition of the e-servicescape will have a positive impact on consumer Pleasure and Arousal.

In Study III, we find that first, not all factors in e-Servicescape have an effect on Pleasure and Arousal; they are Signs, Symbols, and Artifacts. We realize that these factors are not effective for use in the context of an online environment. As stated by Jeon and Jeong (2009) that Signs, Symbols, and Artifacts are not proven to have an effect on emotions (pleasure and arousal). Second, Financial Security has no effect on Arousal. One strong opinion is to explore how emotions work in a relatively short time, while considering Financial Security in a transaction requires a relatively short evaluation time. This opinion

refers to Schachter and Singer (1962), Titchener (1914), Cornelius (1991), and Barrett (2017) who explain the James-Lange theory. In our research, the psychological process of each consumer needs to be a basic consideration to find out what happens to consumer behavior in their virtual environment.

Although previous research, conducted by Hopkins et al. (2009) by taking the position where the e-servicescape directly affects attitudes, which in our study, we avoided. This reasoning is based on the considerations that we get based on the theory and previous empirical studies which stated that there is an internal reaction (or called internal responses by Bitner (1992)) in consumers before attitudes occur. Thus, it will be a little ambiguous, although this is the policy of the researchers, when we examine attitudes without including emotions. In fact, Hopkins et al. (2009) in his study mentions “ultimately, customers' responses to a service setting, and hence the e-servicescape, may take several forms: cognitive, emotional, or physiological...emotionally, the Web site/e-servicescape can influence one's mood or attitude” (p. 29). As a result, this is what we try to avoid by presenting the harmony of the arguments and theories used in the study.

Furthermore, we try to position our research by implementing Ambient, Spatial Layout and Functionality, and Signs, Symbols, and Artifacts, Financial Security, and Interactivity as e-servicescape multi-factors. These considerations make it rational not only to include the dimensions or factors of the e-servicescape in our study, but also to the involvement of these factors in the online shopping environment. Moreover, to be certain of this study that to explore the psychological process of consumer, it will involve fundamental theories such as environmental psychology, the Mehrabian-Russell model, and the S-O-R framework. This is what we are trying to highlight by retracing the theories and models used, consequently, that we hope to produce contributive empirical research.

### **7.3. Implications**

The growth of internet purchasing creates new options for consumers since online competition is more strong and severe, geographical barriers are reduced, and product attributes can be compared more easily. These characteristics, together with increasing client computer proficiency, are highlighting the importance of e-commerce for practically every product category. This study examines the psychological processes that occur in their thoughts, when consumers interact with a virtual environment. The purpose of this study is

to better understand the production of e-servicescape stimuli that impact consumer attitudes in general, and particularly the interplay between emotional states inside the customer.

Based on Lee and Lee (2019, p. 474) fashion retail malls that lack the resources to build their own shopping centers or spend in upgrading the aesthetics of existing locations might influence customer views by using appealing models. While the attractiveness model cannot directly affect attitudes, it may influence them through PMR and NMR. This statement refers to the limited capacity and ability of the company in designing shopping websites, which can rely on the appearance of attractive models on the website. There are various forms, which can be in the form of photos, videos, or pop-up art, consequently, it encourages more consumers to have an attitude of visiting and staying longer on the website. Certainly, Lee and Lee (2019) added that this role cannot be separated from Positive Mood Reinforcement (PMR), Negative Mood Reduction (NMR); where “mood” in our study is part of pleasure emotions and arousal emotions.

From the analysis, we can infer that in practice, the online environment or website designed and created by the company has an influence on consumers' emotions. Therefore, companies should emphasize creating attractive websites, providing easy access, and clear information about the products and services offered. Several things that can trigger emotions in consumers include color, audio, video, picture-based information, various access menu options as stimuli in the online environment to increase consumers' emotions. This step can be taken by continuously providing updates on websites/applications that are launched according to the ongoing theme, festival, or season, as well as providing a feedback mechanism for consumer responses to these changes.

By citing the research presented by Lee and Lee (2019), our study has implications for the possible points to significant difficulties in service marketing and management reasoning in the near future. New kinds of e-servicescape are continuously being developed as technology and service imagination allow, thus it is reasonable to anticipate continued study interest in online environment. Companies can anticipate these technological changes by preparing infrastructure (software and hardware) to build an online shopping environment platform favored by consumers. Fundamentally, the relationship between variables is founded on the S-O-R framework, which is a core framework that incorporates concepts related to stimulation, process psychology, and the development of responses in response to stimuli, among other things.

This study has practical and social implications where organizations may learn more about consumers via social media platforms, and they can interact with them more directly through these channels. During these changing times, physical and mortar shops would be well to evaluate their e-servicescape presence in order to enable and promote interaction with customers who are more engaged in their purchases. In addition, consumer behavior is shifting as a result of the digital revolution. The fact that many consumers are already equally involved with digital-space social networks as they were with brick-and-mortar shops must be taken into consideration by service managers and other stakeholders. In social networks, the more time customers spend as participant-actors, the more likely it is that their decisions on what and where to purchase will be influenced by their interactions with friends and other influencers.

#### **7.4. Contribution**

Our research position is to place our studies on a complete and comprehensive understanding of the relationship between environmental psychology, the M-R model, and the e-servicescape. This consequence requires us to conduct research in a limited scope on these matters. We are afraid that if our work is done outside of our research position, it will run outside the context of the topic we are studying. Obviously, with that consequence, we did detailed work that our study can be seen from alternate perspective.

Therefore, by doing a research position, we add what is missing and re-discover what has been found in previous research. If we observe carefully and refer to the research conducted by Bitner (1992) and Harris and Goode (2010), as the research stream of servicescape and e-servicescape studi, then we add different factors and dimensions to the previous ones, thus, we include the opinion of Jeon and Jeong (2009) in this study. However, before we jump up to such assumption, we did Study I, Study IIa & IIb, and Study III.

With the empirical findings in Study I, our study contributes to the importance of initiating the manipulation of the study object before conducting larger-scale testing. Doing these actions will provide an opportunity to test and try ideas in a particular environment before providing support or judgment on the assumptions we have. As a result, researchers will find it easier and more solid in constructing research arguments.

Furthermore, the empirical findings in Study IIa with ANOVA testing contributed to differences in responses and treatments in order to strengthen the justification for certain groups in an environment. The main idea is how a group can give different combinations of

stimuli to an object. This is important as a consideration for researchers in increasing their confidence to test further data or continue to use the data. Meanwhile, the empirical findings in Study IIb with MGA testing contribute to providing a definitive conclusion about the causes of the relationship between the variables in the tested hypothesis.

Empirical findings in Study III with SEM testing contributes to conclusion about "Signs, symbols, and artifacts" status in e-servicescape context. Those findings said that "Signs, symbols, and artifacts" is not relate to use in e-servicescape on website basis. The test results state that the opinion of Jeon and Jeong (2009) about "Signs, symbols, and artifacts" in our online environment does not have a significant contribution and effect. Definitely, it validates and re-discovered previous research conducted by Harris and Goode (2010), Lee and Jeong (2012), Tran et al. (2012), Sahoo and Pillai (2017), Tankovic and Benazic (2018), Teng et al. (2018), and Tran and Strutton (2020) who removed it in their empirical research. Our research validates the opinions and arguments presented by Mehrabian and Russell (1974a) and Donovan and Rossiter (1982) regarding the environmental psychology, emotions, and attitudes of consumers in the retail context.

#### **7.4.1. Theoretical Contributions**

We look at three perspectives on the challenge of linking e-servicescape with attitudes. *First*, viewing e-servicescape as in the context of technology, therefore, it is necessary to use qualified technical tools in creating e-servicescape. This includes software, engine responsiveness, font-background-color selection, security, and information connectivity. *Second*, looking at the e-servicescape in the context of a marketing strategy, by strengthening positive language, deliver promises, personal help/assistance, product offerings, prices, and ease of payment. *Third*, viewing and understanding how psychological processes occur through emotional states in consumer behavior for the stimuli that occur. We cannot ignore this aspect when we discuss the stimulus and response generated in the consumer; because there is a lot of debate about it. Such environmental conditions cannot be separated and viewed from one perspective only, but holistically. Conflicts in research often arise when researchers view that "serving consumers" is only part of technology or marketing, whereas in a complex and dynamic world, both need to be present when serving consumers. Thus, the results of this study contribute to the flow of research on online marketing where the e-servicescape issue arises.

This study also contributes to the strengthening of the theory that is motivated by 1) psychological process such as environmental psychology theory and the M-R theory; 2) the theory of stimulation and response processes such as e-servicescape, emotion based on PAD, and attitude; and 3) the stimulus-organism-response (S-O-R) as theoretical framework. The diversity of these theories is not only interrelated, but also synchronizes and reinforces each other with empirical research evidence. We provide theoretical contributions to information processing, which has been dominated by studies on cognitive psychology. In our study, the position of emotions contributes to the theory in the form of aligning views with previous research on the information processing experienced by emotions. This is in line with research conducted by Zajonc (1980, 1984), Pham et al. (2001), Clore and Storbeck (2006), and Storbeck and Clore (2008) which stated that affect or emotions have an influence on cognitive function that comes from a particular stimulus object or event. Thus, Forgas (2011) stated that such a view is interpreted as the diversity that occurs in behavioral phenomena in psychology.

The contribution of our study also captures the phenomenon that has been conveyed by Lee and Jeong (2012) that consumer behavior in the online service environment is caused by interactions that affect their emotions. We emphasize that the use of emotions is important in research because consumer interactions and experiences in the online world leads to subjective evaluations of target and object stimuli (Damasio, 1994; Schwarz and Clore, 1996; Pham, 1998; Wyer et al., 1999). Clearly, we want to contribute a theoretical view on the information processing of emotions as has been done by Gorn et al. (1993, 2001), Levine et al. (1994), Hermans et al. (1994), Schwarz and Clore (1996), Ottati and Isbell (1996), Pham (1998), and Pham et al. (2001); but it has disappeared now because researchers have explored more on the cognitive side as done by Lazarus (1991, 1999), Lin (2004), Richard (2005), Chang and Chen (2008), Kawaf and Tagg (2012), Rose et al. (2012), Kim and Lennon (2013), Liu et al. (2013), Jai et al. (2013).

Another contribution is how this study, theoretically with empirical evidence, is able to explain the psychological processes that occur in consumers due to the stimuli, emotions, and attitudes that arise. And explains how it all happens in a virtual environment. Knowing the attitudes of consumers when they are in a shopping environment will help 1) researchers to investigate further about the possibility that attitudes have other impacts on intention, decision, satisfaction, or loyalty; and 2) companies to create a shopping environment in accordance with consumer expectations. Additionally, this study adds to the field by

elucidating the psychological mechanism through which e-servicescape cues alter attitudes via emotions as a mediator. Due to the fact that earlier research has neglected to describe the psychological processes behind consumer emotions, this study presents a unique viewpoint on how these occurrences are explained.

We discussed the importance of research that employs attitudes as the dependent variable in the previous chapter. Attitudes development induced by inputs from the e-servicescape is projected to result in the establishment of novel views on the interpretation of attitudes based on environmental psychology processes. Thus, this study is important in that it serves as a springboard for other significant studies. This is because we want to make a theoretical addition to ongoing research on consumer behavior theories such as the Theory of Reasoned Action (TRA) (Fishbein, 1980) and the Theory of Planned Behavior (TPB) (Ajzen, 1985). According to TRA theory, in order to forecast customer behavioral intention, both attitude and behavior predictions are required. Separating behavioral intention from conduct thereafter enables the understanding of variables limiting attitudinal impact (Ajzen, 1980). Thus, the link between attitude measurements and volitional behavior performance will become more apparent (Hale et al. 2003). Additionally, this study is likely to add to other studies that focus only on TPB. Attitude will be addressed in more detail, as will the theories of attitude, which will be analyzed and challenged in depth. Thus, attitude is seen not only just as a customer's own attitude, but also as the result of consumer interactions with their surroundings (Madden et al., 1992).

We use the S-O-R framework as a lens through which to view the psychological processes behind consumer behavior. The findings of this research verify Mehrabian and Russell's (1974a) about classic model addressing the influence of the retail environment on a consumer's behavioral reactions. Theoretical investigations of the link between external aspects of the e-servicescape and attitudes, with emotional assessments of consumers serving as a mediator. According to the pleasure-arousal-dominance model (Mehrabian and Russell, 1974a), positive judgments of e-Servicescape qualities induce particular emotional states in a client, resulting in the formation of an attitude favorable to adoption. The empirical findings of this study confirm the importance of both e-Servicescape elements and emotional states in influencing behavioral changes, hence validating the aforementioned paradigms.

#### **7.4.2. Practical Contribution**

Researchers and practitioners in the field of e-commerce will benefit from the findings of this research in a variety of ways. Brick and mortar stores can adopt characteristics such as more relationship-oriented processes, both in digital space and in physical premises, as a result of integrating digital and physical spaces, with developments on a single platform potentially leading to service innovations on the side. Certainly, the creation of a digital-based service environment is a major concern nowadays, given that the changing economy necessitates customers spending more time in the digital world. Creating stimuli through websites and virtual applications will improve the quality and atmosphere of the e-servicescape, resulting in consumers feeling comfortable in shopping and getting clear information.

Managers are responsible for designing the products or services displayed on the website. The basic considerations are related stimuli factors and can be well integrated in the virtual service environment. Combining stimulus factors in a virtual environment is a strategy that covers not only marketing issues, but also information technology issues. Accordingly, music companies need to invest their resources in e-servicescape factors such as ambient, spatial layout and functionality, financial security and interactivity that have a strong effect on emotions and attitudes.

Companies must enhance the usability of websites, manage the information necessary by online customers, modify elements of web pages to match customer demands, and allow connection with clients in order to boost the emotional side of consumers. The consumer emotions are a sensitive thing that determines consumer behavior or attitudes. Companies need to make this as a strategic thing that can have an impact on the company. Furthermore, particular attention should be paid to maintaining transaction security, making investments in customer personal data protection, and educating consumers about the use of personal data, among other things.

#### **7.5. Limitations and Future Research**

This study purely focuses on factors in the e-servicescape as stimuli that cause responses in the form of attitudes in consumers. The stimuli in the e-servicescape play an important role in generating emotional states thus they affect attitudes. Definitely, the research variable is limited to this because the focus of the research is to observe the process

of consumer psychology occurring. Things other than the variables and the focus of the study are certainly not considered in the research, although there is potential for future research. However, as a foundation and initial initiation of research on how emotions can be a bridge between e-servicescape stimuli and attitudes, this research needs to be explained. The use of respondents who are non-Spotify users is the reason for the researchers to consider the context of this research. We want to present an unbiased study in which this is most likely to happen to Spotify users if they participate in this research.

The results of the study were limited to the answers of participants who only saw images with a neutral and pleasant website approach, where they not have experienced the experience of accessing the Spotify website/application. The experience factor is important to increase the justification for why emotions play an important role as a mediating variable in this study. Future study may look at how profoundly the effect of a consumer's wants and previous online shopping experiences influences their emotional arousal and attitudes about a website in the context of future online shopping encounters. This means that the selection of respondents involves the Spotify user website/application.

Various variables of e-servicescape stimuli should be investigated in future research to see how they affect customer reactions in website and/or application settings. For example, the importance of social presence in the e-servicescape. Moreover, Lee et al. (2016), Gefen and Straub (2004), Jeon et al. (2020) examined that the existence of a social present such as social and communication processes that occur in a virtual environment. This perspective is an alternative for researchers to conduct research on how the pattern of relationships between one consumer and another consumer occurs when they will consume a product.

In addition, beside we used the emotions variable, researchers can use cognition as an alternative variable. Because this study focuses on a review of emotions based on PAD by Mehrabian and Russell (1974a), we missed the opportunity to explore how e-servicescape stimuli effect on cognition; and it is a good opportunity to research. If we refer to the environmental psychology theory, the organism response factor in the S-O-R framework is not only limited to emotional, but also targets cognition and experiential perspective as a holistic perspective (Fisk et al., 2011; Kumar et al., 2013). As also stated by Loewenstein (2007) who emphasizes changes in attitude caused by cognition processes and rationales. As a result, it opens the space for further research to use cognitive and experiential perspectives as variables that are affected by the presence of stimuli in the e-servicescape.

Moreover, this study was conducted through an online experimental survey using a convenience sampling method; where results might not be applicable to other contexts or other demographic selections. another alternative that can be done is to conduct experimental research in a laboratory that clearly distinguishes between the control group and the experimental group; where it is disguised in quasi-experimental research.

## **7.6. Summary**

In general, in this section we convey that the conclusion, implication, contribution, limitation, and future research in our study are the identities that will characterize the work we do. Certainly, we still have a lot of work to do in order to contribute more to further research. Some criticisms and suggestions may appear along with the results of this study and writing; but we also hope it will provide new knowledge for us, thus it can be improved.

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