MK022/2206

IMPACT OF PERCEIVED E-SERVICE QUALITY TOWARDS CUSTOMER ENGAGEMENT ON E-COMMERCE PLATFORM AMONG GENERATION Z IN MALAYSIA

BY

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A final year project submitted in partial fulfillment of the requirement for the degree of

BACHELOR OF MARKETING (HONOURS)

UNIVERSITI TUNKU ABDUL RAHMAN

FACULTY OF BUSINESS AND FINANCE
DEPARTMENT OF MARKETING

APRIL 2023

DECLARATION

We hereby declare that:

(1) This undergraduate FYP is the end result of our own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic, or personal.

(2) No portion of this FYP has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning.

(3) Equal contribution has been made by each group member in completing the FYP.

(4) The word count of this research report is 9879 words.

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Date: 26th April 2023

ACKNOWLEDGEMENT

We would like to express our sincere appreciation to all those who have contributed to the completion of this research. First and foremost, we would like to thank our supervisor, Dr. Chim Weng Kong for the guidance, expertise, support, and reminders regarding the project. His valuable feedback and guidance that were selfless and rich with knowledge helped us to refine our ideas and improve the quality of our work.

We express deep gratitude to our respected examiner, Ms. Yip Yen San whom so kindly provided us with feedbacks and posed us with questions that were thought-provoking which aid us in enhancing our research.

We would also like to thank our family and friends for their relentless support and words of encouragement throughout the course of the project. They have been the source of motivation and focus for us to complete the project.

Finally, we would like to express our thanks of gratitude to Universiti Tunku Abdul Rahman for providing us with such opportunity to conduct the research and bringing this project to fruition.

DEDICATION

This research project is the result of an arduous journey filled with sacrifices along the way. This research, made possible with the efforts of the researchers, is wholeheartedly dedicated to Dr. Chim Weng Kong, our parents, families, and friends. We are grateful to all who have extended their assistance and support to allow us to complete this research.

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CE	Customer Engagement
DOSM	Department of Statistics Malaysia
DV	Dependent Variable
E	Efficiency
F	Fulfillment
Gen Z	Generation-Z
IV	Independent Variable
P	Privacy
SA	System Availability
SMEs	Small and Medium-Sized Enterprise
SPSS	Statistical Package for Social Science

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PREFACE

Since the outbreak of the COVID-19 pandemic, e-commerce platforms in Malaysia as well as over the world experienced a surge of active users. This is deemed convenient to the Generation Z age group as they are tech savvy and are comfortable to use e-commerce. However, it must be noted that the pandemic has led to many distractions in the daily life of consumers, thus leading to a lowered attention span. E-service quality plays an important role in shaping the consumers' perception of an e-commerce platform which is an imperative indicator of platform success and adoption. This has prompted the researchers to look to the direction of e-service quality and e-commerce platforms. While looking into this topic, the researchers found that there was little to no research studying on the impact of perceived e-service quality on customer engagement on e-commerce platforms among Generation Z in Malaysia. There are various research done on customer engagement, but it is acting as a mediator role or moderator to customer loyalty or customer satisfaction. Hence, this research will enable future researchers and e-commerce platform developers to better understand the impact that e-service quality can have on customer engagement to improve on the customer experience.

ABSTRACT

Convenience is key in today's environment because the Internet is intertwined with everything. This has propelled the success of e-commerce to new heights. This double-edged sword has brought upon distractions to e-commerce customers from other forms of entertainments. What is left is a short among the generation Z customers. Generation Z Malaysians take up 29% of the Malaysian population, making it the largest age group. While still being technologically dependent and attention deficient. E-service quality can improve customer's overall associations towards a platform and influencing their perception of the platform to achieve customer engagement. E-S-QUAL model was applied in this research to discover the impact of e-service quality towards customer engagement on e-commerce platforms among Generation Z in Malaysia. It is the most commonly used and externally validated scale in the context of e-service quality. The four independent variables were derived from the model which are efficiency, fulfilment, privacy and system availability. The four hypotheses were constructed to identify if these variables have an effect on customer engagement on e-commerce platforms. The sample size for this study is 400 Generation Z e-commerce users (18–25-year-old) as the target respondents. The questionnaire was implemented with reliability test and validated with construct validity and content validity. The results were analysed with the use of Statistical Package for the Social Sciences (SPSS). Inferential analysis method was employed using Pearson Correlation Coefficient and Multiple Linear Regression to identify the relationship between the independent variables and dependent variable in this study. The main limitation of the study is the use of convenience sampling which did not accurately represent the population demographic to increase the accuracy of the study's findings.

CHAPTER 1: INTRODUCTION

1.1 Research Background

Since the adoption of Internet and the introduction of World Wide Web back in 1991 (Zwass, 2019), people started to see the potential of using the internet to trade goods and services. Given that mobile electronic devices such as smartphones and computers have become more accessible than before, e-commerce is becoming a fairly common practice throughout the world and businesses that did not take online sales into account will be deemed odd and obsolete (Fan et al., 2018). Nowadays the internet makes doing business online more convenient and brings huge business opportunities regardless of the limitation of geographical location. This is because e-commerce lowered the barrier of setting up a business and expanding the reach of their business to customers in different geographic locations, allowing the customers to obtain information on the products from anywhere, expanding the possibilities of potential sales (Fan et al., 2018). Unfortunately, the pandemic has impacted the nature of business of e-commerce around the globe (Bhatti et al., 2020), affecting the supply chain and logistics on a global scale and increasing the uncertainty at the peak of the pandemic (Elrhim & Elsayed, 2020).

However, the World Trade Organization (2020) stated that this is perfect timing for e-commerce to prove its significance and effectiveness in the fields of trade and online shopping, hence showing its importance to save the world economy during the pandemic. Furthermore, the availability of affordable and convenient connection to Internet has also contributed to the growing acceptance of e-commerce among businesses and customers, and many indications show a positive impact of e-commerce on the growth of businesses (Anuj et al., 2018). Thus, with the increase in businesses accepting e-commerce, consumer purchase habits have also shifted away from traditional brick-and-mortar stores and towards online shopping, increasing customer product discovery (Tsagkias et al., 2020). Whereby, this will help both stakeholders to satisfy their goals, for business is the purchases made by the customer in order for the business to survive and the customer needs on what the business offers to the market (Tsagkias et al., 2020). By now, there are 5 billion internet users and 4.65 billion social media users around the globe which make up the whole digital population (Johnson, 2022), and in 2021 retail e-commerce sales amounted to roughly 4.9 trillion dollars worldwide and are expected

to increase 50% by 2025 (Chevalier, 2022). The opportunity e-commerce presented for both businesses and customers is the exposure and awareness between the product and the customer's needs, whereby customers can access any store globally 24/7 without any geographic limitations and the business was provided with a lower barrier to entry and brand awareness from the convenience of the internet (Pantelimon et al., 2020).

The quality of e-services is critical to the viability of Web channels and will be jeopardised if issues occur such as difficulty in completing a transaction online, delivery is not on time and emails or inquiries are not answered, as it is an important component for consumers in selecting prefered platform (Sharma and Lijuan (2015); Parasuraman et al., 2005). E-service quality is commonly defined as the extent to which a website facilitates efficient and effective shopping, purchasing, and delivery of products and services which is proposed by Zeithaml et al. (2002), as cited in Suhartanto et al., (2018). The quality services of the website are expected by the customer or visitor when they try to make an online purchasing decision (Ewing, 2010, as cited in Suhartanto et al., 2018), thus the website's quality is deemed vital for the company to market their products and services. Customer engagement is referred to as a customer's connection to a company brand as manifested in cognitive, affective and behavioural actions apart from the purchase situation, it has been recognized as a fundamental determinant of brand loyalty (Li et al., 2020). Yet engaging with Generation-z will be a challenge as they are known for their attention deficit disorder as they have high dependency on the technology causing shorter attention span (Gaidhani et al., 2019). According to Statista published by Müller (2021a), the e-commerce industry in Malaysia has a value of RM30.2 billion in 2020 and is projected to grow further in the coming few years. In Malaysia, the two most popular e-commerce platforms are Lazada and Shopee (Seah et al., 2022) – our focus of study. In Q1 of 2022, Shopee had approximately 55 million monthly visitors in Malaysia (Hirschmann, 2022) while in Q2 of 2021, Lazada had approximately 13.75 million monthly visitors in Malaysia (Müller, 2021b).

1.2 Research Problem

E-commerce platforms all around the world have experienced a surge of users ever since the COVID-19 pandemic as a result of people's fear of contracting the virus from going out as well as the increased usage of media (Bhatti et al., 2020). As defined previously, the generation Z

in Malaysia holds the highest age group with 29% of the total estimated 32.73 million population in 2020 (DOSM, 2021; Tjiptono et al., 2020) with US$327 million monthly disposable income (Tjiptono, Khan, Yeong & Kunchamboo, 2020). Generation Z are tech savvy and have high technological knowledge as compared to other generations and are more comfortable with using the Internet and its applications (Vasudevan & Arokiasamy, 2021). Generation Z members are known as digital natives with high technological experience and knowledge, innovative and creative individuals leading to be the main driver of change and innovation in the online landscape (Flippin, 2017; Priporas et al., 2017; Wood, 2013, p.1). The convenience and time-saving aspect of e-commerce shopping is one of the trends for Gen Z consumers which allows the overall online shopping space to grow rapidly (Ngah et al., 2021; Tiwari & Joshi, 2020). It is clear that generation Z as our focus of study is justified as a significant contributor to e-commerce usage.

When reviewing e-commerce usage, it was assumed that the low prices and the variety in options as well as web presence to be the determinants for e-commerce success (Khan, Zubair & Malik, 2019; Parasuraman, Zeithaml & Malhotra (2005). However, Parasuraman et al. (2005) soon discovered that e-service quality, or in this context, e-service to be pivotal. E-service is understood as the role of service in an online setting (Bilgihan, 2016). Service quality can improve customer's overall connections towards the platform, influencing their opinion of its attractiveness and informing motives to use interactivity to achieve customer engagement (He & Li, 2011; Utami et al., 2022). With customer engagement, it has the objective to influence customers to make impulse purchases (Bag et al., 2021). Impulse buying behaviour is integral for e-commerce as there is more competition among the platforms now and therefore, are required to tap into the impulsiveness that are more prevalent in internet shoppers (Liu, Li & Hu, 2013; Wiranata & Hanato, 2020). Therefore, customer engagement is critical to the success of e-commerce.

It is known that the attention span of both adults and teenagers are very short with adults only having around 8 seconds of attention on social media (Silvia, 2019). The same issue is faced by e-commerce platforms. With increasing competitors and shortened attention span of this technologically complex business nature of e-commerce, it is imperative that customer engagement strategies be implemented to retain them (Mohanty & Dey, 2020, p. 22). With so many digital distractions, it is clear that customer engagement should be understood by e-

commerce platforms to keep customers browsing and making purchases on the platform. A positive customer engagement can bring about financial and non-financial benefits to a platform both short-term and long-term (Merdiaty & Aldrin, 2021).

There is already research done on exploring the relationship between e-service quality and customer loyalty (Jiang, Jun & Yang, 2016; Purwanto; 2022; Putri & Pujani, 2019; Tzavlopolos et al., 2019) and customer satisfaction (Momotaz & Hasan, 2018; Purwanto, 2022; Tzavlopolos et al., 2019) in the e-commerce context. E-service quality has positive impact on customer satisfaction and customer loyalty (Tzavlopolos et al., 2019) which Ataburo et al. (2017) explains a high e-service quality will satisfy customers and in turn, will influence their intention to purchase and repurchase from the company. While Ghosh (2018) found that e-service quality impacts the perceived value and the perceived value in turn will affect customer loyalty.

The SERVQUAL model developed by Parasuraman, Zeithaml & Berry (1988) has been widely used by researchers. However, Parasuraman, Zeithaml & Malhotra (2005) revised and adapted it to measure the service quality on websites whereby customers shop online known as E-S-QUAL, which is also widely used in the online context. Numerous studies have been conducted in many contexts utilising the E-S-QUAL scale, primarily because it conducts a holistic assessment of the quality of online services (Ghosh, 2018). A study done by Hapsari, Clemes and Dean (2017) on airline passenger setting which discovered that customer engagement to be one of the most important constructs affecting customer loyalty. Customer engagements in an online environment are greatly influenced by the quality of the e-service (Elsharnouby & Mahrous, 2015; Sukendia et al., 2021). However, in the e-commerce context, there is very little studies done on e-service quality and customer engagement (Sukendia et al., 2021). Most of the research related to e-service quality is more focused on investigating how customer engagement can lead to improved customer loyalty and satisfaction, rather than studying customer engagement as a standalone. Hence, this study intends to fill the gap by researching on how perceived e-service quality affects customer's engagement on e-commerce platforms among generation Z by using the E-S-QUAL model.

1.3 Research Objectives

This study intends to identify the impact of the perceived e-service quality towards customer engagement on e-commerce platforms among Generation Z by using the E-S-QUAL model. The specific objectives of this study are as follows:

1. To determine the impact of the e-service quality of the e-commerce platform towards customer engagement among Generation Z in Malaysia.
2. To examine the relationship between e-service quality and customer engagement in the e-commerce context using E-S-QUAL.

1.4 Research Question

1. How do the four dimensions (Efficiency, Fulfilment, System availability and Privacy) of E-S-QUAL influence customer engagement?
2. Is there a significant relationship between efficiency and customer engagement?
3. Is there a significant relationship between fulfilment and customer engagement?
4. Is there a significant relationship between privacy and customer engagement?
5. Is there a significant relationship between system availability and customer engagement?
6. How does the four dimensions (Efficiency, Fulfilment, System availability and Privacy) facilitate the relationship between customer engagement?

1.5 Research Significance

The outcome of this research is particularly important to help the practitioners such as e-commerce platform developers, SMEs, online sellers and online entrepreneurs to understand the significance of the impact of perceived e-service quality towards customer engagement on e-commerce platforms among generation Z in Malaysia. This research can aid the e-commerce platform developer to understand how their e-service quality influences customer engagement hence taking in the factors found in their design process. Furthermore, it will help e-commerce companies develop a better e-service quality improvement program to improve their platform's customer engagement, increasing the visitor traffic to the platform. Provides valuable insight

into the perceived e-service quality and customer engagement on e-commerce platforms and helps them to understand the value of e-service quality that it provides to their current business model. From the academic perspective, this research will contribute to the field of e-commerce and the E-S-QUAL model and help academicians to understand further how it would impact the practitioners In Malaysia. Additionally, this research will contribute to the theoretical framework of E-S-QUAL, studying how the dimensions would influence a customer's behaviour and how it might differ under different circumstances, expanding and solidifying the application of the framework in this field of study. Hence contribute to the understanding of these related topics further in the future.

CHAPTER 2: LITERATURE REVIEW

2.1 Past Theory

The SERVQUAL model is synonymous with service quality by today with Parasuraman et al. (1988) whom created a service quality scale with five (5) dimensions – reliability, assurance, tangibles, empathy, and responsiveness. Parasuraman et al. (1988) defined service quality as the discrepancy between customer expectations and customer perception of the service. However, due to the vastly different environment and touchpoints in the internet environment, such dimensions do not reflect the essence of e-service quality. This can be attributed to the context in which SERVQUAL was intended for – traditional service (Ladhari, 2009). Studies that evaluated the applicability of this model in online context and have found it to not be an adequate fit with multiple dimensions being insignificant (Belanche et al., 2021). There are other models that fit in this online e-commerce context such as SITEQUAL (Yoo & Donthu, 2001), PIRQUAL (Francis & White, 2002) and WEBQUAL (Barnes & Vidgen, 2002). However, there is a reason as to why we chose E-S-QUAL. That reason is that E-S-QUAL reflects the dimensions deemed to be important from the customer's point of view, which in the case of e-commerce, the platform's reputation relies on the e-service quality felt and perceived by the customers (Kang et al., 2016, as cited in Rada et al., 2022). It also captures all phases of customer interaction on an e-commerce platform (Kim & Kim, 2010, as cited in Al-Dmour et al., 2019) that are based on the experience of the e-commerce customers (Ghosh, 2018). Additionally, the other scales do not adequately reflect every aspect of the purchasing process (Mamakou & Roumeliotou, 2022) and lack precise application and context-specific validation (Nandankar et al., 2023).

Hence, Zeithaml et al. (2002) initially introduced the E-S-QUAL model for evaluating e-service quality. However, the initial E-S-QUAL model focused on the consumer behaviour while purchasing online and did not consider the consumer's pre-purchase behaviour (Celik, 2021). Parasuraman et al. (2005) used the foundation developed in the original E-S-QUAL to produce an updated E-S-QUAL and E-RecS-QUAL. The E-RecS-QUAL is specifically for assessing the e-service quality when there are problems by measuring the recovery aspects (Ulkhaq et al., 2019). However, this is outside the scope of our studies on the effect of e-service

quality on customer engagement which occurs during the visit of the website, not during the recovery aspect. The updated E-S-QUAL model by Parasuraman et al. (2005) improved the original SERVQUAL model and finalised the scale which will be used in this paper. The E-S-QUAL model has four (4) dimensions – efficiency, fulfilment, privacy, and system availability.

Firstly, in **efficiency**, it is the ease and speed of accessing and site usage (Parasuraman et al., 2005). It encompasses the attributes of customer interface design on websites such as ease of finding items, manoeuvring, purchasing, and gathering information as well as the speed of accessing the site under this dimension. Since such attributes are closely related and perceived as efficiency, the author labelled this as efficiency. Secondly, **fulfilment** as Parasuraman et al. (2005) describes, has items related to behind-the-scenes infrastructure of a site such as proper delivery within the timeframe stipulated, fast delivery of order, availability of items wanted and fulfilment of order. Such items are to assess the reliability dimension from the SERVQUAL model into the e-service quality context that can be done so through the fulfilment dimension in E-S-QUAL (Zeithaml et al., 2002; Parasuraman et al., 2005). Thirdly, in **privacy**, it is the extent to which the site is protecting and securing customer's information (Parasuraman et al., 2005). The items in this dimension include the protection and confidentiality of sensitive information and the information credit card. Lastly, **system availability** is the correct functioning of the site in terms of technical functions such as proper functioning of site, smooth launch of site and no perceivable lag in site which illustrates the capabilities of a platform to run smoothly (Parasuraman et al., 2005).

2.2 Review of Variables

2.2.1 Independent Variable: Efficiency

Efficiency in the e-commerce context refers to convenience and speed of accessing information as well as using the website (Mamakou & Roumeliotou, 2022). It includes aspects of website user interface design that make it simple to find products, browse, buy, and gather information, as well as how quickly users may access the site (Parasuraman et al., 2005). It is also described as convenience to access a site and locate the items and the information desired by the customer within the site without any extra effort (Dastane et al., 2018; Zeithaml et al., 2002). As stated

in Ali Abumalloh, Ibrahim, & Nilashi (2020), improving efficiency in looking for the customer's desired product and information will enhance the likelihood of positive intentions towards the platform. This is because the efficiency of the e-commerce platform will help customers match the product's offering with their preference profiles. Efficiency is considered vital for the website or any online platform since it provides convenient interaction and time efficiency as its features for an online platform (Dalbehera, 2020).

2.2.2 Independent Variable: Fulfilment

Fulfilment comes as one of the significant dimensions in evaluating the e-commerce platform from the findings of Mamakou & Roumeliotou, (2022), where it controls the promises of an item's availability and the order fulfilment. It evaluates the application, performance and operation of the site (Ahmed et al., 2021) and deals with keeping the service promise and timely order fulfilment (Dalbehera, 2020). E-commerce businesses need to ensure their delivery system effectiveness and stock availability which will increase the chances of customer interactions with the e-commerce platform, assisting in nurturing a well-established e-commerce marketplace (Baqai, Qureshi, & Morah, 2021). Parasuraman et al. (2005) suggested that the aspect of the website has to do with the availability of the goods and services that can satisfy the customer's demand, as well as the fulfilment of safe and on-time delivery. The components in this dimension relate to the behind-the-scenes infrastructure of a website, such as proper delivery within the allotted duration, quick order delivery, availability of desired items, and order fulfilment. Dastane et al. (2018) also provide that fulfilment is the capability to fulfil promises such as stock availability and delivery time to the customer. Whereby Zeithaml et al. (2002) also describes that reliability has the same meaning as fulfilment in the online services context, and it is translated into delivery accuracy, and accurate product representation. Incorporating the fulfilment of service commitments, stock availability, and timely delivery of the product.

2.2.3 Independent Variable: Privacy

Privacy is the assurance that the website in this context the e-commerce platform is free from any threats that endanger the customer's information and transactions (Ahmed, et al., 2020; Baqai & Qureshi, 2019 as cited in Baqai, Qureshi, & Morah, 2021). Privacy is described as ensuring that the payment information is securely managed, the shopping data is well-secured, and no credit card information is sent to third parties or anybody with unauthorised access (Dastane et al., 2018). Involves the protection of the customer's data, prohibiting sharing data that was collected while using the website, protecting anonymity, and respecting the customer's consent, ensuring it will not be used by fraudsters and scammers (Zeithaml et al., 2002). Whereby, personal information leakage from the platform has a significant negative impact on online transactions while using an e-commerce platform, hence the platform needs to safeguard the customer's privacy to avoid potential risks of fraudulent activities (Thuy Tran, 2021). While customers' beliefs about the e-commerce platform's safety from intrusion and data protection play key determinants in positive customer interactions and emotions (Dalbehera, 2020).

2.2.4 Independent Variable: System Availability

System availability relates to the service provider's capacity to maintain and keep the website functional (Ulkhaq et al., 2019). This includes functions such as proper functioning of site, smooth launch of site and no perceivable lag in site which illustrates the capabilities of a platform to run smoothly (Parasuraman et al., 2005). Such functions are attributes of the overall system availability. A lag in site can be understood as response time which is the length of time taken for a customer to access a webpage on a site and to complete subsequent transactions (Kim & Lee, 2006; Zeithaml et al., 2002). The proper function of a site is associated with reliability in which the availability and functionality of the site is running properly (Zeithaml et al., 2002). Such functions can affect how customers perceive the quality of the e-commerce. With a slow and lagging website, it affects the user experience and thus leads to abandonment of the website by users (Abubakari, 2019). To sum up, e-commerce websites emphasise on the page speed, availability, and the lack of crash so as to improve the perceived quality of the site (Mamakou & Roumeliotou, 2021).

2.2.5 Dependent Variable: Customer Engagement

There has been much discourse over the definition of customer engagement. However, customer engagement is said to be of a multidimensional construct of cognitive, emotional, and behavioural dimensions (Bowden, 2009, p.65; Calder & Edward, 2009). Mainly, as defined by Hollebeek et al. (2014), engagement is said to be occurring during or related to focal interaction between customer and the platform. Calder and Edward (2009) defined online consumer engagement as a collection of experiences with the site. The experience can be a utilitarian experience (helpful information) or just an enjoyable experience by the consumer. While Bowden (2009, p.65) defines it as a psychological process that leads to customer loyalty. Customer engagement can also be understood as the state of involvement, engrossment, and the full absorption in something that is also understood as sustained attention towards something (Higgins & Scholer, 2009, as cited in Do et al., 2021). In general, there is consensus that customer engagement involves experiences and interactions between a platform (website) and the customer (Ting et al., 2021).

2.3 Theoretical Framework

Perceived e-service quality can influence customer engagement. From the literature review above, perceived e-service quality is broken down into four constructs taken from the E-S-QUAL model which has adapted the SERVQUAL model into the online context. The constructs are efficiency, fulfilment, privacy and system availability namely, which constitutes as the independent variables. While customer engagement is the dependent variable. Each independent variable's relationship to the dependent variable has been labelled as H1, H2, H3, and H4 accordingly. The four relationships are used to determine whether each independent variable has a significant relationship with the dependent variable.

Figure 2.1: Impact of perceived e-service quality towards customer engagement.

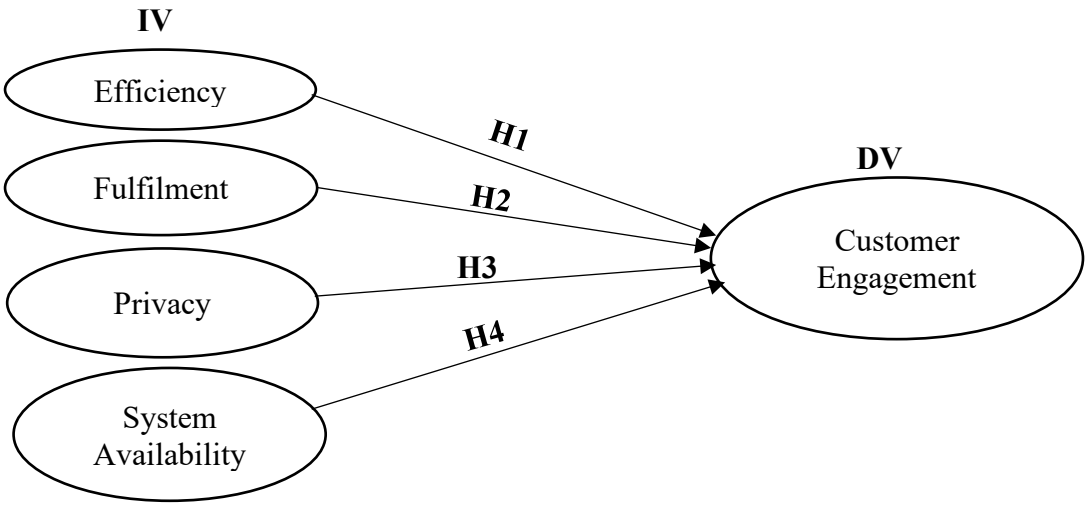

Figure 2.1. Proposed Research Framework

2.4 Hypothesis Development

2.4.1 Efficiency

Efficiency in e-service is critical in providing customers with good services from B2C e-commerce platforms, hence providing a positive customer experience, whereas suggested by Mai Chi et al. (2022) that customer experience influences customer engagement. Furthermore, suggested by Setiawan et al. (2021), indicates that the engagement of the customer with an organization's product or any part of the organisation, in this case, the e-commerce platform, will generate a new customer experience. Where an enhancement of customers' new experiences with the platform and the possibility to refortify positive past experiences with the platform will be possible when there is an increment in efficiency from the website, which they suggested that customer experience will significantly affect customer engagement afterwards (Sukendia et al., 2021). Showing us how efficiency from the e-commerce platform will affect customer experience which leads to customer engagement. Customer satisfaction is also another consequence of customer engagement (Sharma & Singh, 2021). There are solid findings indicating that efficiency as the dimension of E-S QUAL has a positive relationship with customer satisfaction, which is aligned with other researchers showing this dimension impacts other positive customers' emotions (Khan et al., 2019). Hence, this shows the potential

relationship on how efficiency can lead to customer engagement which affects customer satisfaction. Therefore, the following hypothesis is proposed:

H1: There is a significant relationship between efficiency and customer engagement.

2.4.2 Fulfilment

From the study of Sjahroeddin (2018), e-commerce providers need to ensure they can fulfil the promises such as accurate information on the product (stock availability and product information) and services (punctuality of delivery) which will impact customer satisfaction. Based on previous research, Sharma and Singh (2021) believe that customer satisfaction is the natural result of customer engagement. Regarding the impacts of fulfilment on customer satisfaction, the study by Khan, Zubair & Malik (2019), suggested that the idea of fulfilment should be prioritised by the platform where the more competent the delivery on punctuality and accuracy, will lead to higher contribution toward customer satisfaction, hence increasing the interaction between the platform and the customer. The capabilities of the e-commerce platform to fulfil their promises to the customer are being viewed as an impactful dimension, the customer will assess their satisfaction with the service quality they received from the platform (Sjahroeddin, 2018), which we know that customer satisfaction is the natural consequence of customer engagement. Also as stated in Khan, Zubair, & Malik (2019), fulfilment is fundamental to promote customer satisfaction and customer loyalty, whereas evidence shows that customer satisfaction and loyalty are direct outcomes of customer engagement (Nawaf Al-Nsour, 2020). Therefore, we have a strong reason to believe there is a positive relationship between fulfilment and customer engagement. As a result, the following hypothesis is developed:

H2: There is a significant relationship between fulfilment and customer engagement.

2.4.3 Privacy

A platform that collects and uses customers' information without consent leads to privacy concerns by the customers which affects how they interact with the platform (Quach et al., 2019). Such behaviour can be in terms of the hesitancy to interact or the limited interaction

with the platform due to the fear of misuse of information. While the interaction and transaction between customers and platform can be influenced with privacy concerns (Jozani et al., 2020). The customer experience is impacted by privacy, which also influences the customer's behaviour during usage of the platform driving sales (Anic et al., 2019). Bowden (2009) findings conclude that customer engagement is influenced by their experience as cited in a research by Sukendia et al. (2021). The fear of leakage of data and credit card information can be a big reason as to why customers are not likely to interact with a platform. The interaction between customers and the platform is what allows for customer engagement to occur which can come in the form of reviews and comments from other users that are willing to interact and share personal information in their shopping experience (Chang et al., 2009; Sukendia et al., 2021). Therefore, the following hypothesis is advanced:

H3: There is a significant relationship between privacy and customer engagement.

2.4.4 System Availability

In a study on customer loyalty in mobile commerce, a subset of e-commerce by Alotaibi (2021), In mobile commerce, it was discovered that system availability had the most significant positive influence on customer loyalty. The customers' engagement on the e-commerce platform can create customer loyalty as the good experience in using the platform tends to create loyal customers (Chen et al., 2021; Sukendia et al., 2021). A proper functioning website is imperative in customers' perception of a company's service, and such functions along with other factors of a website can connect with customers' emotions (VO et al., 2020). The customers' emotions have a direct impact on their engagement (de Oliveira Santini et al., 2020) and therefore e-commerce platforms should ensure the proper functions of the site. Besides emotions, the theory of flow, or flow state is to enhance customers' attention and allow them to feel in control without distractions (Sinnett et al., 2020). Kim et al. (2020) and Korzaan (2003) supported the argument that poor technical functions such as slow response time, error messages and non-working links can hinder customers from reaching the flow state. A customer in the flow state is said to show intensive engagement to an activity (Kim et al., 2020), in this case, engaged in using e-commerce platforms. It is of utmost importance that e-commerce platforms ensure the sites are functional and seamless. The following hypothesis is developed:

H4: There is a significant relationship between system availability and customer engagement.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Research Design

This research will be carried out by using a quantitative approach. This is because the e-service quality dimensions (E-S-QUAL) have been widely tested and explored in past research using quantitative approach with 9530 referenced articles as of April 2023. While E-commerce context studies have been carried out for decades. Through questionnaires or surveys, which are commonly used in quantitative research, it allows researchers to observe the numerical data to better understand the relationship between variables which can remove personal biases and lead to statistically accurate (valid) and reliable results (Helen & Dulock, 1993, as cited in Miraj & Wang, 2019).

The descriptive research design allows the researchers to identify how customer will engage on the e-commerce platform due to the impacts of the e-service quality provided on platform and also the fact that the variables and the environment of e-commerce cannot be manipulated easily. A descriptive research design helps the researchers to describe the phenomenon and identify what has happened (Nassaji, 2015). In this research, correlational research method (a type of descriptive research) is applied in order to establish the correlation of two variables (Curtis et al., 2016). Hence, this method design will allow researchers to determine the correlation of the independent variables consisting of efficiency, fulfilment, privacy and system availability, and the dependent variable – customer engagement. This allows the researchers' results to be more reliable and accurate.

3.2 Sampling Design

3.2.1 Target Population

A group of individuals having one or more than one characteristic of interest is refer as a target population, a well-defined target audience is fundamental to avoid inaccuracy in the research, guiding the research in appraising the credibility of the represented population, the result of the

research and the sampling techniques (Asiamah, Mensah, & Oteng-Abayie, 2017). The targeted population in this research is the members of Generation Z (Gen Z) in Malaysia, that is people that born between 1995 to 2010, where they are viewed as the genuine digital natives, which have been able to access to the internet, social networks and etc from a young age (Francis & Hoefel, 2018). According to DOSM (2021) in Malaysia, Gen Z is regarded as the largest age group taking up 29% of Malaysia's total 32.73 million population in 2020. Hence, they are a group of people with high digital literacy, making them ideal to be targeted for this research.

3.2.2 Sampling Frame

According to Stasny (2001), a list whereby units are taken from the sample is called a sampling frame, whereas the list can be an actual list of units such as a phone book or map. However, since this research's target population is Gen z Malaysians who have experience with e-commerce platforms, hence the sampling frame is not available here as cited in (Hansen et al., 2020, pp. 205–224).

3.2.3 Sampling Technique

Since there are no probability sampling mechanism available non-probability sampling techniques is applied, which is the sampling frame (Vehovar, et al., 2016). This is because non-probability samples do not engage in a series of perfect sampling frames, but the samples depend on the collection of the convenience samples are collected and tuned according to the objective to minimise the differences between the collected sample and target population represented (Cornesse et al., 2020). Therefore, Convenience Sampling Technique is implemented in this research. The convenience sampling method is the prevailing non-probability approach where units available are selected, where the commonplace to be collected is from events, online platforms, people on the streets or an organisation (Vehovar, et al., 2016). This technique is a method that aggregates the samples by selecting the respondents that are conveniently located or an internet platform (Edgar & Manz, 2017), in this research we will be mainly using Google Form to collect our data.

3.2.4 Sample Size

A sample is representing part of the target population that has complete and similar fundamental characteristics to the target population (Uakarn, Chaokromthong, & Sintao, 2021). In order to have an effective method to determine the size of the sample, this research will be referring to the Krejcie & Morgan Table to get the ideal sample size needed for this research. The table was proposed by Krejcie & Morgan in 1970 to answer the increasing demand for an efficient way of determining the sample size needed to be representative of the target population (Krejcie & Morgan, 1970). The calculation is not needed for acquiring the sample size as Krejcie & Morgan's Table (Refer to Figure 3.1) has already provided the sample required for different population sizes. To get the population for Gen Z Malaysian, we need to take 29% multiplied by 32.73 million which will be approximately 9.5 million as our target audience. Hence, our sample size will be 384 and we will round it up to 400 respondents to participate in the risk of error. Therefore, a total of 400 respondents will be our sample size for the study of Gen Z Malaysians.

TABLE 1

Table for Determining Sample Size from a Given Population

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size.
S is sample size.

Figure 3.1

3.3 Data Collection Methods

3.3.1 Primary Data

The primary data source is an important and highly invaluable source of knowledge. The primary data refers to the original data collected for the specific research purpose. For this research, the researchers employed the survey method to collect large and representative samples for a low cost (Hox & Boeije, 2005, as cited in Vetter, 2017). Specifically, computer-administered surveys will be implemented to reach the targeted respondents conveniently.

3.3.2 Pilot Study

A pilot study can mitigate errors in a smaller sample size before being conducted for the full-scale study, and the pilot study size is taken from the 10% of the sample size. (Connelly, 2008, as cited in Kasiri et al., 2017). The errors in the questionnaire can be vetted and adjusted to minimise the probability of failure (Majid et al., 2017). With 400 respondents for the full-scale study, the pilot study size is 40 respondents.

The questionnaire for the pilot study will be conducted via online, as similar to the full-scale study. The Google Form link is posted on social networks like Instagram and Facebook and on education platforms like Microsoft Teams and common to get respondents between the age of 18 to 25 to fill in. The respondents for pilot study is enclosed to students in Universiti Tunku Abdul Rahman (UTAR) with convenience sampling method as majority of the students are Gen Z and are Malaysian. Once the respondents has done the questionnaire, a feedback form is collected. No negative feedback was received hence no amendment were made on the questionnaire.

3.3.3 Reliability Test

To measure the internal consistency of a test or scale where it is expressed as a measure in numerical form in between 0 and 1 Cronbach Alpha is implemented. The quantity of

measurement error in a test can be shown by reliability estimates, in other words, this interpretation of reliability is the correction of the test within itself (Tavakol & Dennick, 2011; Taylor et al., 2020). Showing how items in set are closely related inside a group (UCLA, 2021). However, higher coefficient alpha does will not always result into higher degree of internal consistency and improper use of alpha can cause a test to be wrongly discarded by not giving trustable results (Tavakol & Dennick, 2011; Taylor et al., 2020).

Cronbach's Alpha Range	Level of Reliability
<0.6	Poor
0.60 to <0.70	Acceptable
0.70 to <0.8	Good
0.80 to <0.90	Excellent

3.3.3 Reliability Test table

Source: Glen (2021).

This study ran a reliability test to determine the internal consistency of the items. The result of the reliability test is shown in Table 3.3.4.

Table 3.3.4: (Pilot Study)

Result of Reliability

Variable	**Cronbach's Alpha**	**No. of items**	**Results of Reliability**
Efficiency	.858	8	Excellent
Fulfilment	.849	7	Excellent
Privacy	.824	3	Excellent
System Availability	.709	4	Good

Customer Engagement	.817	5	Excellent

According to Table 3.3.4, the result was collected from the pilot test which consists of 40 respondents that was collected online. The Cronbach Alpha result for Efficient (IV) which is 0.858, for Fulfilment (IV) which is 0.849, for Privacy (IV) which is 0.824, for Customer Engagement (DV) which is 0.817 are considered as Excellent result of reliability (Glen, 2021). The reliability test of System Availability is showing result of 0.709 which is classified as Good according to Glen (2021).

3.3.4 Fieldwork

With the COVID-19 virus still rampant, it was not advisable for the researchers to physically hand over the hardcopy of the questionnaire to hundreds of respondents. Hence, the online questionnaire survey is created with Google Forms and sent out to 400 respondents across Malaysia with convenience sampling method. To ensure the researchers get 400 respondents, with the resources available to the researchers, the researchers posted the questionnaire survey on UTAR's Mailmaster email as well as promoting it on Microsoft Teams in different classes. Furthermore, the researchers went to UTAR Kampar campus to get more respondents by sharing the QR code image to the prospects to fill the Google Form. The link to the Google Form is also shared on social media platforms similar to the pilot study to get friends, acquaintances and fellow Gen Z who fit the criteria to be the respondents. Gen Z respondents with experience in purchasing from E-commerce platform sites are qualified to answer the questionnaire regardless of the respondent's race, religion, and gender.

The questionnaire construct is in simple and clear use of English to ease the understanding by the respondents. The Google Form questionnaire would contain the researchers' contact information to allow the respondents to contact the researchers for any enquiries or problems faced. Google Form is used by the researchers due to the familiarity of operating and exporting of data. Google Form is also capable of calculating and generating the data needed such as the percentage of each age range group, gender group and more in a convenient manner.

3.4 Questionnaire Design for Main Study

The questionnaire of this research consists of 2 sections. The respondents of the questionnaire are required to match our target population's characteristics which is:

- Have purchased products or services on e-commerce platform before.
- Age between 18 to 25

7 questions included in Section A. There will be two questions to screen the respondents which are the experience in purchasing from an e-commerce platform site and age range between 18 to 25 to be in our targeted demographic of Gen Z. The remaining 5 questions are concerning the respondents' personal information such as their gender, race, frequency of shopping, income level and time spent scrolling on e-commerce platform sites.

Section B has been categorised into 5 sub sections, which are the 4 dimensions of E-S QUAL which are Efficiency, Fulfilment, System Availability and Privacy, and Customer Engagement. Likert Scale measurement has been applied to section B with range of 1 to 5 to record the respondents' answers towards the statement, which is from strongly disagree to strongly agree.

3.4.1 Measurement of Current Research's Variables

Table 3.4 Table of Constructs

Constructs	Sources
Efficiency	Parasuraman et al. (2005)
Fulfilment	Parasuraman et al. (2005)
Privacy	Parasuraman et al. (2005)
System Availability	Parasuraman et al. (2005)
Customer Engagement	Thakur (2016); Harrigan et al. (2017)

Refer to Appendix 3.1 for more information on the questionnaire items and sources.

For Thakur: The nature of mobile shopping, or more commonly known as M-commerce is similar to e-commerce platforms as it is a subset of e-commerce (Kate & Mente, 2018). The

researchers adopted the questionnaire from Thakur (2016) which is done specifically for mobile device shopping. The adapted questions taken from this author is to make it relevant to the context of the study, which is sites housing e-commerce platforms.

For Harrigan: The research of Harrigan et al. (2017) focuses on the customer engagement towards tourism sites. Due to the nature of the research done by the author, it is in the online context, which is relevant to the researchers' study on sites of e-commerce platforms.

3.5 Proposed Data Analysis Tools

3.5.1 Descriptive Analysis

The descriptive analysis consists of ways of organizing, showing and describing collected data by using visual aids or organizing tools such as tables, graphs and summary measures (Mann, 2016). Most of the data sets are usually large in size, hence it is hard to draw informative conclusions or make decisions. Therefore, summaries by using tables, graphs and summary measures will assist the researcher to comprehend the data. This tool will be most useful to understand and analyze the demographic profiles of our respondents.

3.5.2 Inferential Analysis

The inferential analysis consists of ways to infer the population by drawing out characteristics of the population into samples and using the sample result to assist the researchers in making decisions, predictions, inferences, and forecasts about the population (Mann, 2016). This will help the researchers to understand and analyse the population and draw a conclusion by using the summary measures about the characteristics of the target populations of this study accurately.

3.5.3 Pearson Correlation Coefficients Analysis

Also known as Linear Correlation Coefficient, it is a tool to measure and understand the relationship and the strength of linear association between two variables in this study (Mann, 2016; Weiss, 2017). It is one of the most commonly used statistical tools to measure the correlation between two quantitative variables, the strength of the linear relationship will also show the usefulness of the regression equation for making predictions (Weiss, 2017). This will help the researchers measure the strength of the linear relationship between the (IVs) E-S-QUAL four dimensions and the (DV) customer engagement.

The range for the value of the correlation coefficient: -1 to 1; That is,

$$-1 \leq \rho \leq 1 \quad \text{and} \quad -1 \leq r \leq 1$$

If r = 1, a **perfect positive linear correlation is presented**; If r = -1, a **perfect negative linear correlation is presented**; If r is close to zero, then there is **no linear relationship** between the two variables.

when there is a positive correlation between two variables and it is close to 1, it has a **strong positive linear correlation**; when there is positive correlation between two variables and it is close to 0, it is a **weak positive linear correlation**. On the other hand, a **strong negative linear correlation** appears when the correlation between two variables is negative and close to -1; Lastly when the negative correlation between two variables is close to 0, **weak negative linear correlation is considered.**

Source: Mann (2016).

3.5.4 Multiple Regression Analysis

Multiple regression analysis is implemented because researchers will often use more than one predictor variable (Weiss, 2017), it relates a dependent variable to a set of independent variables (Ross, 2017). It will help this research to understand the four dimensions of E-S QUAL towards customer engagement.

The multiple linear regression *model supposes that the response* Y *is related to the input values* x_i , $i = 1, \ldots, k$, *through the relationship*

$Y = \beta 0 + \beta 1x1 + \beta 2x2 + \cdots + \beta kxk + e$

Source: Ross (2017).

3.5.5 Statistical Package for the Social Sciences (SPSS)

SPSS is an effective and user-friendly tool for researchers to study the quantitative data obtained, a strong choice for business studies related to consumer behaviour and a powerful tool for all kinds of statistical analysis of data (Rahman & Muktadir, 2021). SPSS has complex statistical tests built in and the easy-to-learn and user-friendly user interface, allows researchers to perform analytical activities without any hassle. Therefore, this tool will assist the researcher to analyse the data collected effectively providing comprehensive and meaningful results for this study.

CHAPTER 4: DATA ANALYSIS

4.1 Descriptive Analysis

4.1.1 Gender

Gender	Frequency	Percentage (%)
Male	184	46.00
Female	212	53.00
Prefer Not to Say	4	1.00
Total	400	100.00

Source: Developed from Research Data

According to the table above, this research collected 400 responses which consist of 184 (46%) males, 212 (53%) females and 4 (1%) of the responses prefer to not specify their gender.

4.1.2 Age

Age	Frequency	Percentage (%)
18-21	148	37.00
22-25	252	63.00
Total	400	100.00

Source: Developed from Research Data

Since this research is targeting Generation Z, hence the data collected consist of respondents ageing from the range of 18-25, and the rest of the responses that are not qualified have been

filtered out for more accurate results. 148 (37%) of the respondents are between the ages of 18-21 and another age group are between the ages of 22-25 which has 252 (63%) of responses.

4.1.3 Race

Race	Frequency	Percentage (%)
Malay	67	16.75
Chinese	310	77.50
Indian	22	5.50
Others	1	0.25
Total	400	100.00

Source: Developed from Research Data

According to the table above, a total of 400 responses are collected. Majority of the respondents are Chinese 310 (77.50%) and the second largest respondents' race is Malay 67 (16.75%), followed by Indian 22 (5.50%) and lastly 1 (0.25%) respondent is a Bumiputera from Sabah.

4.1.4 Frequency of Purchase on E-Commerce Platform

Frequency of Purchase on E-commerce Platform	Frequency	Percentage(%)
Once Every Few Months	108	27.00
At Least Once A Month	145	36.25
More Than Twice A Month	106	26.50
More Than 4 Times A Month	41	10.25
Total	400	100.00

Source: Developed from Research Data

This study obtained data on the respondents' online shopping behaviour in addition to the demographic profile of the research target audience. 145 (36.25%) if the respondents had made a purchase at least once a month on an e-commerce platform. Followed by 108 (27%) respondents that had made a purchase once every few months on the e-commerce platform. Furthermore, 106 (26.50%) of respondents purchase more than twice a month on the e-commerce platform and 41 (10.25%) of the respondents had made a purchase more than 4 times a month.

4.1.5 Monthly Income Level

Monthly Income	Frequency	Percentage (%)
Below RM 2,000	300	75.00
RM 2,001 - RM 3,000	69	17.25
RM 3,001 - RM 4,000	24	6.00
Above RM 4,001	7	1.75
Total	400	100.00

Source: Developed from Research Data

There are four monthly income categories data that have been collected from our respondents. The largest income category from the data is income category from below RM 2,000 which consist of 300 (75%) of respondents. Followed by the income category of between RM 2,001 – RM 3,000 which have 69 respondents (17.25%) and the RM3,001 – RM 4,000 category which consist of 24 (6%) of respondents. Lastly, the highest income group which has an income level above RM 4,000 has the lowest respondents which is 7 (1.75%).

4.1.6 Time Spent on E-commerce Platform Site

Time Spent on E-Commerce Platform Site	Frequency	Percentage (%)
Less Than 1 Hour	175	43.75
1-2 Hours	168	42.00
2-3 Hours	41	10.25
More Than 3 Hours	16	4.00
Total	400	100.00

Source: Developed from Research Data

Data on the time spent on e-commerce platform sites was collected from 400 respondents and it consists of four categories. Largest group of the respondents 175 (43.75%) spent less than 1 hour on the e-commerce platform. 168 (42%) of the respondents spent 1-2 hours on an e-commerce platform and 41 (10.25%) respondents spent 2-3 hours on an e-commerce platform site. Lastly, 16 (4%) respondents spent more than 3 hours on the e-commerce platform.

4.2 Validity and Reliability of Study

4.2.1 Reliability Test

Table 4.1: (Main Study)
Result of Reliability

Variable	**Cronbach's Alpha**	**No. of items**	**Results of Reliability**
Efficiency	.837	8	Excellent
Fulfilment	.872	7	Excellent
Privacy	.863	3	Excellent

System Availability	.763	4	Good
Customer Engagement	.778	5	Good

According to table 4.1, the result for Cronbach Alpha for Efficient (IV) which is 0.837, for Fulfilment (IV) which is 0.872, for Privacy (IV) which is 0.863, are considered as Excellent results of reliability (Glen, 2021). The reliability test of System Availability is showing a result of 0.709, for Customer Engagement (DV) it is showing 0.778 which is classified as Good according to Glen (2021).

4.2.2 Validity

Content validity is referred to how closely assessment instrument elements relate to and represent a particular assessment purpose (Yusoff, 2019). In content validation, a questionnaire's items are usually validated by experts from the industry of study or academics as well as respondents to allow for refinement of items (Elangovan & Sundaravel, 2021).

The E-S-QUAL scale was used in the design of the questionnaire for this study, with its 22-item scale of four dimensions of efficiency, fulfilment, privacy, and system availability as the independent variables of this study. While designing the dependent variable, customer engagement, the researchers referred to two different research's scale on customer engagement to form a 5-item scale. This decision was supported by the researcher's supervisor – an expert in the fields of service quality and banking that are related to this study.

The finalised 27-item questionnaire was distributed to a group of 40 respondents under the pilot study via online communication applications. After the respondents completed the pilot study, they were informally asked to provide feedback on the questionnaire. One of the respondents notified that they were over the age of 25 and was still able to fill out the questionnaire form. The problem was rectified on Google Forms and no further issue was recorded.

Construct validity is another method for determining the validity of a questionnaire with the use of Pearson Coefficient Correlation of each question in the pilot study to determine its validity. Construct validity is understood as a process of validating constructs based on how they correlate with other variables that are thought to theoretically relate to the construct of interest (Locke, 2012). To assess the linear relationship between each item on the questionnaire, a Pearson Correlation Coefficient was computed.

Significance level = 0.05, two-tailed test, sample size, N=40

The 27 items in the Pearson table can be referred to in appendix 3.0, while the critical value is 0.312. There is significant linear correlation when the Pearson Correlation, r obtained, is greater than the critical value (Stevens, 2019). All 27 items have r > 0.312 critical value and have Sig. (2-tailed) of <0.001 < 0.05 which leads the researchers to conclude that there is a significant correlation between each item, and all items are valid.

4.3 Inferential Analysis

4.3.1 Pearson Correlation Coefficient

Table 4.2: Pearson Correlation Coefficient Analysis

Variables	**E**	**F**	**P**	**SA**	**CE**
E	1.0				
F	.579**	1.0			
P	.462**	.550**	1.0		
SA	.515**	.583**	.576**	1.0	
CE	.466**	.593**	.526**	.560**	1.0

** Correlation is significant at the 0.01 level (2-tailed).

Pearson Correlation Coefficient is used to study the association between two variables as well as estimating the strength of the relationship and direction of relationship (Schober et al., 2018). The Pearson Correlation Coefficient value was calculated for this study to assess the linear relationship between each independent variable and the dependent variable. A correlation coefficient value of 0.1 to 0.39 is considered a weak correlation, a 0.4 to 0.69 value is considered a moderate correlation and a value of 0.7 to 0.89 is considered to have a strong correlation (Schober et al., 2018). Based on Table 4.2, the independent variable – Efficient (E), has a value of .466 which shows a moderate positive relationship with the dependent variable – Customer Engagement (CE). The second independent variable – Fulfilment (F) has a value of .593 which also shows a moderate positive relationship with Customer Engagement. The third independent variable – Privacy (P) shows a moderate positive relationship with a value of .526. Lastly, System Availability (SA) with a value of .560 shows a moderate positive relationship with Customer Engagement.

4.3.2 Multiple Linear Regression

Table 4.3: Multiple Linear Regression Analysis
Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.670[a]	.448	.443	2.58397

a. Predictors: (Constant), SA, E, P, F

R-Squared is a statistical measure of the closeness of data fitted to a regression line, and the higher the R-Squared value, the better the model fits the data (Acharya et al., 2019). An R-Squared of less than 0.4 would indicate a low correlation while an R-Squared of 0,5 and above shows a relatively strong correlation (Fernando, 2021). In this study, table 4.3 shows an R-Square value of 0.448 which is just under moderate effect size. Therefore, this indicates that 44.8% of the independent variables have an effect on customer engagement of Gen Z Malaysians.

Table 4.4: ANOVA Test
ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	**Regression**	2142.725	4	535.681	80.229	<0.001[b]
	Residual	2637.373	395	6.677		
	Total	4780.097	399			

a. Dependent Variable: CE

b. Predictors (Constant), SA, E, P, F

Table 4.4 demonstrates the F-value for this study having 80.229 and a P-value of <0.001. The greater the F-value, the more likely there is a difference between the group means (Zach, 2021). While a P-value of <0.05 indicates that the relationship between the independent variables and dependent variable is statistically significant. In this study, there is a statistically significant association between the independent variables and the dependent variable. Hence, E, F, P, and SA can demonstrate the variation in customer engagement of Gen Z Malaysians.

Table 4.5: Coefficient

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	**(Constant)**	1.812	1.170		1.549	.122
	E	.073	.043	.082	1.717	.087
	F	.256	.043	.310	5.968	<.001
	P	.249	.065	.185	3.801	<.001
	SA	.302	.067	.230	4.530	<.001

a. Dependent Variable: CE

P-values lower than 0.05 would suggest that the independent variables and the dependent variable are significantly related (Andrade, 2019). Table 4.5 displays the P-values of F, P and SA to be <0.001. This suggests that there is a substantial link between the dependent variable and these three independent factors. E, an independent variable, has a P-value of 0.087 > 0.05, indicating that there is no significant link between this variable and the dependent variable. The standardised coefficients aid in demonstrating an independent variable's impact on a dependent variable (Goyal, 2021). For this study, F with a standardized coefficient value of .310 is the most influential independent variable. The unstandardized coefficient values of E, F, P, and SA are positively correlated with CE. Therefore, the multiple regression equation is as follows:

CE = 1.812 + .073(E) + .256(F) + .249(P) + .302(SA)

According to Goyal (2021), the equation above explains that CE increases by .073, .256, .249, .302 units for a single unit change in E, F, P, and SA respectively.

4.4 Conclusion

In this chapter, all of the data gathering and information that was analysed using SPSS were interpreted. The outcome of this chapter proves that F, P, and SA have a significant influence on customer's engagement of Gen Z Malaysians while E does not have a significant influence.

CHAPTER 5: DISCUSSION, CONCLUSION, AND IMPLICATIONS

5.1 Discussion of Major Findings

Table 5.1:

Summary of the results of hypothesis testing

Hypothesis	Sig.	Result
H1: There is a significant relationship between **efficiency** and customer engagement.	.087	Not Supported
H2: There is a significant relationship between **fulfilment** and customer engagement.	<.001	Supported
H3: There is a significant relationship between **privacy** and customer engagement.	<.001	Supported
H4: There is a significant relationship between **system availability** and customer engagement.	<.001	Supported

H1: There is a significant relationship between efficiency (E) and customer engagement. According to the results of the inferential analyses, customer engagement on e-commerce platforms is not significantly impacted by efficiency (E). This result is inconsistent with earlier research, which suggests that efficiency has a significant impact on customer engagement (Elsharnouby & Mahrous, 2015; Sukendia et al., 2021; Ridzuan et al., 2022). E-commerce is a competitive market whereby participants are required to be at a certain level to be able to gain customers. Hence, this would indicate that the efficiency dimension of e-commerce to be at a

level where customers deem it to be the bare necessity to utilise e-commerce. It could be that customers have not used an e-commerce platform that is inefficient to notice how efficiency could affect customer engagement. Adding on to the fact that customers' hardware (Internet speed, smartphone, and computer capabilities) could be affecting this dimension as cautioned by Parasuraman et al. (2005) to companies on its lack of complete control over how the platform is perceived to be performing.

H2: There is a significant relationship between fulfilment (F) and customer engagement.

The finding indicates that fulfilment (F) significantly influences customer engagement on e-commerce platforms among Generation Z in Malaysia. This finding is consistent with previous research. Based on Parasuraman et al. (2005), fulfilment was found to have the strongest effect which is consistent with our study (F with standardized coefficient value of .310). The ability of e-commerce platforms to fulfil their promises on the products or service provided showcases its reliability to consumers browsing the platform which aids in keeping them engaged. This shows that consumers are concerned with how reliable e-commerce are in carrying out order fulfilment.

H3: There is a significant relationship between privacy (P) and customer engagement.

The finding indicates that privacy (P) significantly influences customer engagement on e-commerce platforms among Generation Z in Malaysia. Chang et al. (2009) study supports that privacy is a key factor for consumers to shop online as when they feel it is safe to submit personal information to e-commerce, it allows them to make purchases on such platforms. The finding indicates that a high level of privacy and security would mean a lower risk in using e-commerce which can positively impact customer engagement behaviour (Fan et al., 2022).

H4: There is a significant relationship between system availability (SA) and customer engagement.

According to the findings, it indicates that system availability (SA) significantly influences customer engagement on e-commerce platforms among Generation Z in Malaysia. This finding is consistent with past studies. If the site is not able to load and run smoothly with minimal lag, customers may stop using the site and not make a purchase (Mamakou & Roumeliotou, 2021). When customers cannot use an e-commerce platform as intended, it can lead to frustration and irritation. This can deteriorate customer engagement (Alwreikat & Rjoub, 2020). Hence, the

results demonstrate system availability to be a significant factor in impacting customer engagement on e-commerce platforms.

5.2 Implications of the Study

5.2.1 Theoretical Implications

The E-S-QUAL Theoretical Framework is being used in this study to investigate how perceived e-service quality affects customer engagement on e-commerce platforms. By looking into the four dimensions of E-S-QUAL, which is efficiency, fulfilment, privacy, and system availability (E, F, P, SA) as this research independent variables and examine these independent variables impact on the dependent variable which is customer engagement (CE). Exploring how the E-S-QUAL dimensions would influence consumer behaviour and how it would differ in various circumstances, thus allowing the application of the framework to be expanded and solidified in this field. In summary, the outcome of this chapter proves that F, P, and SA have a significant influence on customer's engagement of Gen Z Malaysians while E does not have a significant influence.

This paper can advance the theoretical framework of E-S-QUAL as this study results can be utilized as a reference for future exploration on relevant studies, assisting researchers to understand and expand the knowledge on relevant fields. This is because most of the study on e-service quality was looking at customer engagement as a moderating factor that can lead to improved customer loyalty and satisfaction hence, the findings from this study will help future research how e-service quality will impact on customer engagement as a standalone.

5.2.2 Managerial Implications

Along with the theoretical implications, the findings point to some managerial implications that could help to enhance the development of e-commerce platforms and their design.

Firstly, e-commerce companies and platform developers should emphasize on the dimension of Fulfilment of the e-commerce platform, as it comes as a significant dimension in evaluating e-commerce platforms. The findings shows that this dimension has a significant relationship with customer engagement, thus showing fulfilment on e-commerce platforms has an impact on customer engagement. It evaluates the application, performance, and operation of the website. For example, past study shows that to increase the chance of interaction with the customers, e-commerce businesses need to ensure their delivery system effectiveness and stock availability to ensure that the business can fulfill the order promises.

Secondly, e-commerce companies and platform developers should pay attention to the dimension of Privacy on the e-commerce platform. Privacy is the assurance that the e-commerce platform is free from any cyber threat (fraudulent activities online) that can endanger the customer's rights. The results also demonstrate a strong correlation between privacy and consumer engagement, indicating that privacy has an impact on customer engagement. Whereas the consumer's beliefs on the safety and privacy that e-commerce companies provide plays a vital role in positive customer interaction and emotions.

Moreover, System availability also signifies its importance for an e-commerce platform as it shows the service provider's capabilities in maintaining the basic functionalities of the platform. The results demonstrate that system accessibility also significantly affects customer engagement, indicating that a proper functioning website will affect the consumer's willingness to interact with the platform. For example, a slow functioning platform full of bugs will affect the user experience of the platform hence leading to abandonment of the website by the user.
Lastly, even though the findings show that efficiency did not show significant influence on the customer engagement, e-commerce companies and platform developers should still take note of the efficiency of the platform as the experience on the platform will still affect the

willingness of interaction from the consumer. As the researchers suspect that every platform provided efficiency that is on par with the competitions and the industry standards, however the efficiency of customer's own internet infrastructure will affect the user experience on the platform, hence customer understand and do not feel like it is the companies' problems when the function of the website is being affect by consumers' own internet infrastructure.

5.3 Limitations of The Study

The ability of the researchers to verify that respondents are answering the questionnaire correctly poses the study's main limitation. The sampling technique employed by the researchers is Google Form to collect responses. The lack of face-to-face contact with respondents made it significantly difficult for the researchers to keep track of genuine and proper response. There were instances where respondents filled the questionnaire with the same Likert scale point for every question. This begets responses that do not accurately reflect the respondent's actual perception and opinions on e-service quality towards customer engagement on e-commerce platforms. Moreover, some respondents may have had difficulties understanding the questions and could not have clarified with the researchers in real time causing a less effective two-way communication as a result.

Another limitation is in the demographic profile of respondents, specifically the race aspect. For this study, the largest portion of the sample is Chinese respondents with 77.5% of the total sample, while Malay, Indian and Other respondents hold 16.75%, 5.5% and 0.25% respectively. The reason for this large disparity among the races is mainly due to the use of convenience sampling methods. As the researchers are pursuing tertiary education at an institute with majority of its students being Chinese, it led to the demographic of the sample to be this way. Due to this limitation, the study may not be accurately reflecting the Malaysian Generation Z population perception on e-service quality impact towards customer engagement.

5.4 Recommendations for Future Research

Few recommendations will be given in this section to expand the opportunity and potential of future studies by rectifying the limitations identified in this research. For future relevant studies, it is proposed that the demographic acquired from the population should be representing the population demographic of the country, in this case it should be representing the population of Malaysia as the country is a diversified country with different culture. For example, having most of the respondents from a single race, which is Chinese, will cause bias in the data, because researchers are using convenient sampling methods in this study. Moreover, the researchers would be suggested to guide the respondents in a physical setting. Based on the limitations stated in the previous section, researchers should be monitoring and assisting the respondents to answer the questionnaire so that the data would be genuine and more accurate, eliminating the inaccurate data that may invalidate the result of this study. For example, the researchers in this study have filtered duplicated responses from the same person as the mass distribution across social media will accidentally collect the same responses from the same person. Lowering the chance of getting inaccurate data.

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Appendices

Appendix 1.0 Survey Questionnaire

Impact of perceived e-service quality towards customer engagement on e- commerce platform among Generation Z in Malaysia.

We are final year undergraduate students of Bachelor of Marketing (Hons), from Faculty of Business and Finance in University Tunku Abdul Rahman (UTAR) Kampar campus. As part of our research, we are conducting a study related to the above topic. Your responses will be useful in helping us investigate the

impact of perceived e-service quality towards customer engagement on e-commerce platform among Generation Z in Malaysia. Hence, we invite you to participate in our research.

For any enquiries, you may contact us at: Bennet Oon Wei Sharn | bennetoon23@1utar.my
Chan Chen Meng | cmchan024@1utar.my

Personal Data Protection

Please be informed that in accordance with Personal Data Protection Act 2010 ("PDPA") which came into force on 15 November 2013, Universiti Tunku Abdul Rahman ("UTAR") is hereby bound to make notice and require consent in relation to collection, recording, storage, usage and retention of personal information.

1. Personal data refers to any information which may directly or indirectly identify a person which could include sensitive personal data and expression of opinion. Among others it includes:

   a) Name
   b) Identity card
   c) Place of Birth
   d) Address
   e) Education History
   f) Employment History
   g) Medical History
   h) Blood type
   i) Race
   j) Religion
   k) Photo
   l) Personal Information and Associated Research Data

2. The purposes for which your personal data may be used are inclusive but not limited to:

   a) For assessment of any application to UTAR
   b) For processing any benefits and services
   c) For communication purposes
   d) For advertorial and news
   e) For general administration and record purposes
   f) For enhancing the value of education
   g) For educational and related purposes consequential to UTAR
   h) For replying any responds to complaints and enquiries
   i) For the purpose of our corporate governance

j) For the purposes of conducting research/ collaboration

3. Your personal data may be transferred and/or disclosed to third party and/or UTAR collaborative partners including but not limited to the respective and appointed outsourcing agents for purpose of fulfilling our obligations to you in respect of the purposes and all such other purposes that are related to the purposes and also in providing integrated services, maintaining and storing records. Your data may be shared when required by laws and when disclosure is necessary to comply with applicable laws.
4. Any personal information retained by UTAR shall be destroyed and/or deleted in accordance with our retention policy applicable for us in the event such information is no longer required.

5. UTAR is committed in ensuring the confidentiality, protection, security and accuracy of your personal information made available to us and it has been our ongoing strict policy to ensure that your personal information is accurate, complete, not misleading and updated. UTAR would also ensure that your personal data shall not be used for political and commercial purposes.

Consent:

6. By submitting or providing your personal data to UTAR, you had consented and agreed for your personal data to be used in accordance to the terms and conditions in the Notice and our relevant policy.
7. If you do not consent or subsequently withdraw your consent to the processing and disclosure of your personal data, UTAR will not be able to fulfill our obligations or to contact you or to assist you in respect of the purposes and/or for any other purposes related to the purpose.
8. You may access and update your personal data by writing to us at

Bennet Oon Wei Sharn | bennetoon23@1utar.my Chan Chen Meng | cmchan024@1utar.my

1. **Acknowledgment of Notice**

◯ I have been notified and that I hereby understood, consented and agreed per UTAR above notice.

◯ I disagree, my personal data will not be processed.

Skip to section 8 (Thank you for taking the time out of the day to fill this form.)

Section A - Demographic Profiling

Screening Question 1

1. Have you purchased products or services from an e-commerce platform before?

- Y
- es
- N
- o

Skip to section 8 (Thank you for taking the time out of the day to fill this form.)

Screening Question 2

2. How old are you?

- Below 18 years old

  Skip to section 8 (Thank you for taking the time out of the day to fill this form.)
- 18-21 years old
- 22-25 years
- old Over 25

  years old

  Skip to section 8 (Thank you for taking the time out of the day to fill this form.)

Personal Information

1. Gender

- Male
- Female
- Prefer not to say

2. Race

- Malay
- Chinese
- Indian
- Other: _____

3. How often do you make a purchase from an e-commerce platform?

- More than 4 times a month
- More than twice a month
- At least once a month
- Once every few months

4. Monthly Income Level*

- Below RM 2,000
- RM 2,001 - RM 3,000
- RM 3,001 - RM 4,000
- Above RM 4,001

5. How much time do you spend scrolling on an e-commerce platform site?

- Less than 1 hour
- 1-2 hours
- 2-3 hours
- More than 3 hours

Section B - Independent Variables

The following section uses the 5-Point Likert Scale:

1 - Strongly Disagree 2 - Disagree 3 - Neutral 4 - Agree 5 - Strongly Agree

Efficient

1. The e-commerce platform makes it easy to find what I need.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

1. It makes it easy to get anywhere on the e-commerce platform.

Strongly Disagree

1 ○

2 ○

3 ○

4

5

Strongly Agree

3. It enables me to complete a transaction quickly.

Strongly Disagree

1

2

3

4

5

Strongly Agree

4. Information at the e-commerce platform is well organized.

Strongly Disagree

1

2

3

4

5

Strongly Agree

5. It loads its page fast.

Strongly Disagree

1

2

3

4

5

Strongly Agree

6. The e-commerce platform is simple to use.

Strongly Disagree

1

2

3

4

5

Strongly Agree

7. The e-commerce platform enables me to get on to it quickly.

Strongly Disagree

1

2

4

5

Strongly Agree

8. The e-commerce platform is well organized.

Strongly Disagree

1

2

4

5

Strongly Agree

Fulfillment

1. It delivers orders when promised.

2. The e-commerce platform makes items available for delivery within a suitable time frame.

3. It quickly delivers what I order.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

4. It sends out the items ordered.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

5. It has in stock the items the company claims to have.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

6. It is truthful about its offerings.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

7. It makes accurate promises about delivery of products.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

Privacy

1. It protects information about my Web-shopping behaviour.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

2. It does not share my personal information with other sites.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

3. The e-commerce platform protects information about my credit card.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

System Availability

1. The e-commerce platform is always available for business.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

2. The e-commerce platform launches and runs right away.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

3. The e-commerce platform does not crash.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

4. Pages at the e-commerce platform do not freeze after I enter my order information.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

Section C - Dependent Variable

The following section uses the 5-Point Likert Scale:

1 - Strongly Disagree 2 - Disagree 3 - Neutral 4 - Agree 5 - Strongly Agree

Customer Engagement

1. Browsing e-commerce platforms improves my mood.

Strongly Disagree

1 ○

2 ○

3 ○

4 ○

5 ○

Strongly Agree

2. E-commerce platform gives me good product information.

Strongly Disagree

1 ○

2 ○

3 ○

4

5

Strongly Agree

3. E-commerce platforms provide information from other users that help me make good purchases.

Strongly DIsagree

1

2

3

4

5

Strongly Agree

4. When I am interacting with the e-commerce platform, I forget everything else around me.

Strongly Disagree

1

2

3

4

5

4

5

Strongly Agree

3. E-commerce platforms provide information from other users that help me make good purchases.

Strongly DIsagree

1

2

3

4

5

Strongly Agree

4. When I am interacting with the e-commerce platform, I forget everything else around me.

Strongly Disagree

1

2

3

4

5

Strongly Agree

5. I concentrate a lot on the e-commerce platform.

Strongly Disagree

1

2

3

4

5

Strongly Agree

Thank you for taking the time out of the day to fill this form.

Appendix 2.0 Internal Consistency Analysis (Pilot Study)

Scale: EFFICIENT (E)

Case Processing Summary

		N	%
Cases	Valid	40	100.0
	Excluded[a]	0	.0
	Total	40	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.858	8

Scale: FULFILMENT (F)

Case Processing Summary

		N	%
Cases	Valid	40	100.0
	Excluded[a]	0	.0
	Total	40	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.849	7

Scale: PRIVACY (P)

Case Processing Summary

		N	%
Cases	Valid	40	100.0
	Excluded[a]	0	.0
	Total	40	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.824	3

Scale: SYSTEM AVAILABILITY (SA)

Case Processing Summary

		N	%
Cases	Valid	40	100.0
	Excluded[a]	0	.0
	Total	40	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.709	4

Scale: CUSTOMER ENGAGEMENT (CE)

Case Processing Summary

		N	%
Cases	Valid	40	100.0
	Excluded[a]	0	.0
	Total	40	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.817	5

Appendix 3.0 Construct Validity on Pilot Study using Pearson Correlation Coefficient

Correlations

		E1	E2	E3	E4	E5	E6	E7	E8	F1	F2	F3	F4	F5	F6	F7	P1	P2	P3	SA1	SA2	SA3	SA4	CE1	CE2	CE3	CE4	CE5	Total
E1	Pearson Correlation	1	.716**	.677**	.159	.430**	.526**	.501**	.345*	.475**	.295	.464**	.622**	.431**	.472**	.135	.164	-.003	.323*	.553**	.502**	.274	.378*	.120	.357*	.496**	.031	.165	.601**
	Sig. (2-tailed)		<.001	<.001	.327	.006	<.001	<.001	.029	.002	.064	.003	<.001	.005	.002	.407	.311	.985	.042	<.001	<.001	.087	.016	.462	.024	.001	.850	.308	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
E2	Pearson Correlation	.716**	1	.661**	.079	.406**	.544**	.567**	.216	.467**	.413**	.232	.544**	.374*	.508**	.163	.085	.069	.356*	.468**	.385*	.260	.224	.190	.396*	.567**	.044	.366*	.586**
	Sig. (2-tailed)	<.001		<.001	.629	.009	<.001	<.001	.180	.002	.008	.150	<.001	.018	<.001	.314	.603	.671	.024	.002	.014	.105	.164	.239	.012	<.001	.787	.020	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
E3	Pearson Correlation	.677**	.661**	1	.277	.483**	.520**	.628**	.365*	.414**	.372*	.397*	.613**	.542**	.372*	.161	.104	-.051	.309	.684**	.576**	.182	.187	.386*	.298	.488**	.147	.498**	.652**
	Sig. (2-tailed)	<.001	<.001		.083	.002	<.001	<.001	.020	.008	.018	.011	<.001	<.001	.018	.321	.524	.757	.052	<.001	<.001	.260	.247	.014	.061	.001	.365	.001	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
E4	Pearson Correlation	.159	.079	.277	1	.219	.299	.389*	.554**	.167	.175	.311	.299	.523**	.308	.457**	.583**	.469**	.227	.232	.357*	-.091	-.031	.427**	.432**	.383*	.402*	.311	.553**
	Sig. (2-tailed)	.327	.629	.083		.175	.061	.013	<.001	.303	.281	.050	.061	<.001	.053	.003	<.001	.002	.159	.150	.024	.577	.851	.006	.005	.015	.010	.051	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
E5	Pearson Correlation	.430**	.406**	.483**	.219	1	.610**	.538**	.403**	.595**	.389*	.557**	.475**	.407**	.556**	.382*	.381*	.235	.500**	.351*	.296	.486**	.485**	.245	.271	.389*	.200	.277	.682**
	Sig. (2-tailed)	.006	.009	.002	.175		<.001	<.001	.010	<.001	.013	<.001	.002	.009	<.001	.015	.015	.145	.001	.027	.063	.001	.002	.128	.091	.013	.216	.084	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
E6	Pearson Correlation	.526**	.544**	.520**	.299	.610**	1	.757**	.441**	.457**	.366*	.239	.641**	.647**	.650**	.297	.226	.159	.514**	.570**	.516**	.404**	.550**	.495**	.466**	.552**	.383*	.443**	.784**
	Sig. (2-tailed)	<.001	<.001	<.001	.061	<.001		<.001	.004	.003	.020	.137	<.001	<.001	<.001	.062	.162	.327	<.001	<.001	<.001	.010	<.001	.001	.002	<.001	.015	.004	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
E7	Pearson Correlation	.501**	.567**	.628**	.389*	.538**	.757**	1	.380*	.530**	.349*	.365*	.610**	.660**	.664**	.486**	.297	.215	.448**	.543**	.577**	.175	.377*	.546**	.577**	.573**	.365*	.453**	.799**
	Sig. (2-tailed)	<.001	<.001	<.001	.013	<.001	<.001		.016	<.001	.027	.021	<.001	<.001	<.001	.001	.063	.182	.004	<.001	<.001	.280	.016	<.001	<.001	<.001	.021	.003	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
E8	Pearson Correlation	.345*	.216	.365*	.554**	.403**	.441**	.380*	1	.480**	.083	.345*	.441**	.492**	.509**	.306	.297	.179	.306	.276	.165	.301	.324*	.170	.244	.337*	.417**	.363*	.592**
	Sig. (2-tailed)	.029	.180	.020	<.001	.010	.004	.016		.002	.610	.029	.004	.001	<.001	.055	.063	.268	.055	.085	.308	.059	.041	.294	.129	.034	.007	.021	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
F1	Pearson Correlation	.475**	.467**	.414**	.167	.595**	.457**	.530**	.480**	1	.639**	.637**	.556**	.401*	.502**	.443**	.231	.272	.292	.307	.270	.443**	.442**	.252	.265	.445**	.096	-.012	.640**
	Sig. (2-tailed)	.002	.002	.008	.303	<.001	.003	<.001	.002		<.001	<.001	<.001	.010	<.001	.004	.152	.090	.067	.054	.092	.004	.004	.117	.098	.004	.554	.943	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
F2	Pearson Correlation	.295	.413**	.372*	.175	.389*	.366*	.349*	.083	.639**	1	.626**	.413**	.383*	.260	.243	.136	.172	.205	.361*	.403**	.423**	.218	.296	.305	.360*	.102	.071	.523**
	Sig. (2-tailed)	.064	.008	.018	.281	.013	.020	.027	.610	<.001		<.001	.008	.015	.105	.131	.404	.289	.205	.022	.010	.007	.177	.063	.056	.022	.532	.665	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
F3	Pearson Correlation	.464**	.232	.397*	.311	.557**	.239	.365*	.345*	.637**	.626**	1	.526**	.431**	.317*	.412**	.425**	.262	.343*	.388*	.502**	.411**	.324*	.246	.226	.262	.073	.030	.605**
	Sig. (2-tailed)	.003	.150	.011	.050	<.001	.137	.021	.029	<.001	<.001		<.001	.005	.046	.008	.006	.102	.030	.013	<.001	.008	.041	.125	.161	.102	.655	.854	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
F4	Pearson Correlation	.622**	.544**	.613**	.299	.475**	.641**	.610**	.441**	.556**	.413**	.526**	1	.601**	.461**	.212	.183	.092	.470**	.621**	.650**	.331*	.473**	.262	.233	.501**	.143	.185	.700**
	Sig. (2-tailed)	<.001	<.001	<.001	.061	.002	<.001	<.001	.004	<.001	.008	<.001		<.001	.003	.188	.259	.572	.002	<.001	<.001	.037	.002	.102	.148	<.001	.380	.252	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
F5	Pearson Correlation	.431**	.374*	.542**	.523**	.407**	.647**	.660**	.492**	.401*	.383*	.431**	.601**	1	.596**	.306	.387*	.211	.473**	.548**	.606**	.298	.383*	.455**	.504**	.452**	.461**	.523**	.784**
	Sig. (2-tailed)	.005	.018	<.001	<.001	.009	<.001	<.001	.001	.010	.015	.005	<.001		<.001	.054	.014	.191	.002	<.001	<.001	.062	.015	.003	<.001	.003	.003	<.001	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
F6	Pearson Correlation	.472**	.508**	.372*	.308	.556**	.650**	.664**	.509**	.502**	.260	.317*	.461**	.596**	1	.517**	.334*	.264	.567**	.314*	.279	.322*	.431**	.439**	.477**	.545**	.462**	.427**	.750**
	Sig. (2-tailed)	.002	<.001	.018	.053	<.001	<.001	<.001	<.001	<.001	.105	.046	.003	<.001		<.001	.035	.099	<.001	.049	.081	.043	.005	.005	.002	<.001	.003	.006	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
F7	Pearson Correlation	.135	.163	.161	.457**	.382*	.297	.486**	.306	.443**	.243	.412**	.212	.306	.517**	1	.413**	.510**	.341*	.092	.111	.000	.160	.412**	.239	.316*	.239	.134	.515**
	Sig. (2-tailed)	.407	.314	.321	.003	.015	.062	.001	.055	.004	.131	.008	.188	.054	<.001		.008	<.001	.031	.571	.493	1.000	.324	.008	.137	.047	.137	.411	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
P1	Pearson Correlation	.164	.085	.104	.583**	.381*	.226	.297	.297	.231	.136	.425**	.183	.387*	.334*	.413**	1	.735**	.540**	.156	.385*	.169	.222	.238	.363*	.185	.290	.098	.536**
	Sig. (2-tailed)	.311	.603	.524	<.001	.015	.162	.063	.063	.152	.404	.006	.259	.014	.035	.008		<.001	<.001	.336	.014	.296	.168	.138	.021	.254	.069	.548	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
P2	Pearson Correlation	-.003	.069	-.051	.469**	.235	.159	.215	.179	.272	.172	.262	.092	.211	.264	.510**	.735**	1	.579**	-.088	.139	.204	.205	.397*	.326*	.249	.323*	.113	.465**
	Sig. (2-tailed)	.985	.671	.757	.002	.145	.327	.182	.268	.090	.289	.102	.572	.191	.099	<.001	<.001		<.001	.587	.392	.207	.205	.011	.040	.122	.042	.487	.002
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
P3	Pearson Correlation	.323*	.356*	.309	.227	.500**	.514**	.448**	.306	.292	.205	.343*	.470**	.473**	.567**	.341*	.540**	.579**	1	.295	.373*	.361*	.515**	.371*	.306	.411**	.333*	.299	.670**
	Sig. (2-tailed)	.042	.024	.052	.159	.001	<.001	.004	.055	.067	.205	.030	.002	.002	<.001	.031	<.001	<.001		.064	.018	.022	<.001	.019	.055	.008	.036	.061	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
SA1	Pearson Correlation	.553**	.468**	.684**	.232	.351*	.570**	.543**	.276	.307	.361*	.388*	.621**	.548**	.314*	.092	.156	-.088	.295	1	.764**	.091	.205	.270	.281	.436**	.013	.291	.567**
	Sig. (2-tailed)	<.001	.002	<.001	.150	.027	<.001	<.001	.085	.054	.022	.013	<.001	<.001	.049	.571	.336	.587	.064		<.001	.578	.204	.092	.079	.005	.938	.069	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
SA2	Pearson Correlation	.502**	.385*	.576**	.357*	.296	.516**	.577**	.165	.270	.403**	.502**	.650**	.606**	.279	.111	.385*	.139	.373*	.764**	1	.193	.279	.331*	.326*	.307	.151	.218	.619**
	Sig. (2-tailed)	<.001	.014	<.001	.024	.063	<.001	<.001	.308	.092	.010	<.001	<.001	<.001	.081	.493	.014	.392	.018	<.001		.233	.082	.037	.040	.054	.352	.176	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
SA3	Pearson Correlation	.274	.260	.182	-.091	.486**	.404**	.175	.301	.443**	.423**	.411**	.331*	.298	.322*	.000	.169	.204	.361*	.091	.193	1	.761**	.153	.100	.000	.312*	.335*	.487**
	Sig. (2-tailed)	.087	.105	.260	.577	.001	.010	.280	.059	.004	.007	.008	.037	.062	.043	1.000	.296	.207	.022	.578	.233		<.001	.346	.539	1.000	.050	.035	.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
SA4	Pearson Correlation	.378*	.224	.187	-.031	.485**	.550**	.377*	.324*	.442**	.218	.324*	.473**	.383*	.431**	.160	.222	.205	.515**	.205	.279	.761**	1	.194	.263	.189	.376*	.246	.570**
	Sig. (2-tailed)	.016	.164	.247	.851	.002	<.001	.016	.041	.004	.177	.041	.002	.015	.005	.324	.168	.205	<.001	.204	.082	<.001		.231	.101	.243	.017	.126	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
CE1	Pearson Correlation	.120	.190	.386*	.427**	.245	.495**	.546**	.170	.252	.296	.246	.262	.455**	.439**	.412**	.238	.397*	.371*	.270	.331*	.153	.194	1	.491**	.501**	.605**	.485**	.619**
	Sig. (2-tailed)	.462	.239	.014	.006	.128	.001	<.001	.294	.117	.063	.125	.102	.003	.005	.008	.138	.011	.019	.092	.037	.346	.231		.001	<.001	<.001	.002	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
CE2	Pearson Correlation	.357*	.396*	.298	.432**	.271	.466**	.577**	.244	.265	.305	.226	.233	.504**	.477**	.239	.363*	.326*	.306	.281	.326*	.100	.263	.491**	1	.720**	.500**	.395*	.626**
	Sig. (2-tailed)	.024	.012	.061	.005	.091	.002	<.001	.129	.098	.056	.161	.148	<.001	.002	.137	.021	.040	.055	.079	.040	.539	.101	.001		<.001	.001	.012	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
CE3	Pearson Correlation	.496**	.567**	.488**	.383*	.389*	.552**	.573**	.337*	.445**	.360*	.262	.501**	.452**	.545**	.316*	.185	.249	.411**	.436**	.307	.000	.189	.501**	.720**	1	.276	.284	.655**
	Sig. (2-tailed)	.001	<.001	.001	.015	.013	<.001	<.001	.034	.004	.022	.102	<.001	.003	<.001	.047	.254	.122	.008	.005	.054	1.000	.243	<.001	<.001		.084	.076	<.001

	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
CE4	Pearson Correlation	.031	.044	.147	.402*	.200	.383*	.365*	.417**	.096	.102	.073	.143	.461**	.462**	.239	.290	.323*	.333*	.013	.151	.312*	.376*	.605**	.500**	.276	1	.640**	.549**
	Sig. (2-tailed)	.850	.787	.365	.010	.216	.015	.021	.007	.554	.532	.655	.380	.003	.003	.137	.069	.042	.036	.938	.352	.050	.017	<.001	.001	.084		<.001	<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
CE5	Pearson Correlation	.165	.366*	.498**	.311	.277	.443**	.453**	.363*	-.012	.071	.030	.185	.523**	.427**	.134	.098	.113	.299	.291	.218	.335*	.246	.485**	.395*	.284	.640**	1	.548**
	Sig. (2-tailed)	.308	.020	.001	.051	.084	.004	.003	.021	.943	.665	.854	.252	<.001	.006	.411	.548	.487	.061	.069	.176	.035	.126	.002	.012	.076	<.001		<.001
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40
Total	Pearson Correlation	.601**	.586**	.652**	.553**	.682**	.784**	.799**	.592**	.640**	.523**	.605**	.700**	.784**	.750**	.515**	.536**	.465**	.670**	.567**	.619**	.487**	.570**	.619**	.626**	.655**	.549**	.548**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	<.001	.002	<.001	<.001	<.001	.001	<.001	<.001	<.001	<.001	<.001	<.001	
	N	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40	40

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix 3.1 Measurement of Current Research's Variables

Construct	Measurement	Reference
Efficiency	E1. This site makes it easy to find what I need.	Parasuraman et al. (2005)
	E2. It makes it easy to get anywhere on the site.	
	E3. It enables me to to complete a transaction quickly	
	E4. Information at this site is well organized.	
	E5. It loads its page fast.	
	E6. The site is simple to use.	
	E7. This site enables me to get on to it quickly.	
	E8. This site is well organized.	
Fulfilment	F1. It delivers orders when promised.	Parasuraman et al. (2005)
	F2. This site makes items available for delivery within a suitable time frame.	
	F3. It quickly delivers what I order.	
	F4. It sends out the items ordered.	

	F5. It has in stock the items the company claims to have.	
	F6. It is truthful about its offerings.	
	F7. It makes accurate promises about delivery of products.	
Privacy	P1. It protects information about my Web-shopping behaviour.	Parasuraman et al. (2005)
	P2. It does not share my personal information with other sites	
	P3. This site protects information about my credit card.	
System Availability	SA1. This site is always available for business.	Parasuraman et al. (2005)
	SA2. This site launches and runs right away.	
	SA3. This site does not crash.	
	SA4. Pages at this site do not freeze after I enter my order information.	
Customer Engagement	CE1. Browsing sites improves my mood.	Thakur (2016)

	CE2. Sites give me good product information.	
	CE3. Sites provide information from other users that help me make good purchases.	
	CE4. When I am interacting with the site, I forget everything else around me.	Harrigan et al. (2017)
	CE5. I concentrate a lot on this site.	

Appendix 4.1 Internal Consistency Analysis (Main Study)

Scale: EFFICIENT (E)

Case Processing Summary

		N	%
Cases	Valid	400	100.0
	Excluded[a]	0	.0
	Total	400	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.837	8

Scale: FULFILMENT (F)

Case Processing Summary

		N	%
Cases	Valid	400	100.0
	Excluded[a]	0	.0
	Total	400	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.872	7

Scale: PRIVACY (P)

Case Processing Summary

		N	%
Cases	Valid	400	100.0
	Excluded[a]	0	.0
	Total	400	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.863	3

Scale: SYSTEM AVAILABILITY (SA)

Case Processing Summary

		N	%
Cases	Valid	400	100.0
	Excluded[a]	0	.0
	Total	400	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.763	4

Scale: CUSTOMER ENGAGEMENT (CE)

Case Processing Summary

		N	%
Cases	Valid	400	100.0
	Excluded[a]	0	.0
	Total	400	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.778	5

Appendix 4.2 Pearson Correlation Coefficient for Inferential Analysis

Correlations

		Efficient	Fulfilment	Privacy	System_ Availability	Customer_Engagement
Efficient	Pearson Correlation	1	.579**	.462**	.515**	.466**
	Sig. (2-tailed)		<.001	<.001	<.001	<.001
	N	400	400	400	400	400
Fulfilment	Pearson Correlation	.579**	1	.550**	.583**	.593**
	Sig. (2-tailed)	<.001		<.001	<.001	<.001
	N	400	400	400	400	400
Privacy	Pearson Correlation	.462**	.550**	1	.576**	.526**
	Sig. (2-tailed)	<.001	<.001		<.001	<.001
	N	400	400	400	400	400
System_Availability	Pearson Correlation	.515**	.583**	.576**	1	.560**
	Sig. (2-tailed)	<.001	<.001	<.001		<.001
	N	400	400	400	400	400
Customer_Engagement	Pearson Correlation	.466**	.593**	.526**	.560**	1
	Sig. (2-tailed)	<.001	<.001	<.001	<.001	
	N	400	400	400	400	400

**. Correlation is significant at the 0.01 level (2-tailed).

Appendix 4.3 Multiple Regression Analysis for Inferential Analysis

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	System_Availability, Efficient, Privacy, Fulfilment[b]	.	Enter

a. Dependent Variable: Customer_Engagement

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.670[a]	.448	.443	2.58397

a. Predictors: (Constant), System_Availability, Efficient, Privacy, Fulfilment

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2142.725	4	535.681	80.229	<.001[b]
	Residual	2637.373	395	6.677		
	Total	4780.097	399			

a. Dependent Variable: Customer_Engagement

b. Predictors: (Constant), System_Availability, Efficient, Privacy, Fulfilment

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	1.812	1.170		1.549	.122
	Efficient	.073	.043	.082	1.717	.087
	Fulfilment	.256	.043	.310	5.968	<.001
	Privacy	.249	.065	.185	3.801	<.001
	System_Availability	.302	.067	.230	4.530	<.001

Coefficients[a]

Model		95.0% Confidence Interval for B Lower Bound	95.0% Confidence Interval for B Upper Bound
1	(Constant)	-.488	4.112
	Efficient	-.011	.157
	Fulfilment	.172	.340
	Privacy	.120	.377
	System_Availability	.171	.433

a. Dependent Variable: Customer_Engagement