

## Online Shopper Satisfaction: Exploring the Impact of e-Service Quality

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**Abstract:** The advent of online shopping has brought a significant revolution in how individuals exchange goods and services. Online purchasing has gained considerable popularity, especially after the Movement Control Order due to COVID-19. Therefore, this study aims to find the relationship and identify the most dominant factors of e-service quality that affect online shopping. Convenience sampling was used to collect primary data. 250 self-administered questionnaires with four Likert scales were distributed through a social media channel among Klang Valley residents aged 18 years and above. The data was then analyzed using SPSS Version 26. Multiple Regression Analysis was used to investigate the relationship between e-service quality and customer satisfaction. The researcher found a collective significant effect between Customer Satisfaction and all independent variables except Perceived Risk. Convenience was found to be the most dominant factor that influences Customer Satisfaction. Hence, this study can benefit online business owners as they develop appropriate strategies based on the findings to expand their business.

**Keywords:** *e-service quality, online shopper, online purchase, customer satisfaction, online business*

### 1. Introduction and Background

In 2019, there were 4.13 billion Internet subscribers worldwide, implying that more than half of the world's population could access the Internet (Clement, 2020). According to Clement (2020), while global internet connectivity is increasing steadily, it depends on countries focusing on developing infrastructures to improve communication quality, which is superior. According to the U.S. International Trade Administration (2022), Malaysia is an attractive market for e-commerce in Southeast Asia because of its thriving economy and advanced digital technology infrastructure. In 2021, there were 27.4 million active internet users in Malaysia, which had a high mobile phone penetration rate of 84.2%. In Malaysia, there were 39.99 million mobile connections as of January 2021, and there were 28 million users of social media. According to Samuel & Anita (2022), the ongoing progression of technology enables individuals to access their necessities conveniently. The distinguishing characteristic of this phenomenon lies in the presence of the internet. The number of Internet consumers has steadily increased each year.

**The Impact of COVID-19 On Malaysian Consumer Purchases:** In the year 2020, the COVID-19 pandemic hit the world and this led to the Movement Control Order (MCO) imposed by the government the citizen of Malaysia. During the MCO period, non-essential stores such as clothing and accessory shops are not allowed to be open, and individuals are prohibited from doing any unnecessary movement to other district or state (Moorthy, Kamarudin, Govindarajo & Ting, 2022). As a result of the pandemic, online shopping transactions have significantly increased. One of Malaysia's online shopping platforms, Lazada, has witnessed an 80% surge in orders compared to pre-pandemic levels (Nathan, 2021). During COVID-19, the demand for online services has increased significantly compared to offline services. This is due to the desire for a simpler lifestyle, instant service, greater product availability, and the government's large-scale social restrictions that force most activities to be performed at home. The e-commerce phenomenon has steadily grown in Malaysia, with no signs of future decline (Shuradin & Adnan, 2022). Then, the buying pattern shifts from traditional to online shopping, and the business operator must be creative in highlighting their product in the virtual marketplace by promoting it through the website. There are many more examples of the marketplace; however, the website will be the main bridge to liaise the online shopper with the business provider as the business operator will own and operate this platform. The intriguing question is how to encourage online consumers to return to a website or purchase online. Therefore, this study was interested in examining the relationship between e-service quality and the satisfaction of online consumers.

This study focuses on the transformative effect of the COVID-19 pandemic on consumer behavior in the context of online purchasing due to the Movement Control Order, a significant economic downturn in numerous businesses, resulting in a heightened struggle for survival. Certain businesses have transitioned from traditional methods of selling goods and services to electronic commerce (e-commerce). People stayed at home, maintained social distance, and did not shop as frequently as they typically would (Statista, 2021a; Zamboni et al., 2021). While the pandemic reduced physical store purchasing, online shopping increased. The increase in online shopping during lockdowns highlighted the importance of a website's design and functionality in retaining consumers and influencing their purchasing intentions. The adoption of online purchasing was hindered by concerns regarding data security and payment methods, which led to issues of trust. Despite the benefits of convenience and a more extensive selection of products, certain demographics had difficulty entirely adopting online shopping. The pandemic prompted a significant increase in the preference for online purchasing in Malaysia, with government policies further advancing this trend. To facilitate businesses' successful transition to the digital marketplace, this paper identifies the factors influencing online purchasing satisfaction.

To have a critical understanding of the topic, the following research objective will be examined:

- (i) To determine the influence of e-service quality (website design, service convenience, perceived Risk, and Fulfillment) on customer satisfaction.
- (ii) To examine the most dominant factors of e-service quality that influence customer satisfaction.

## 2. Literature Review

**Customer Satisfaction:** Customer satisfaction is a crucial element of a business strategy as it determines service performance. Customer satisfaction encompasses multiple definitions that can be applied in diverse contexts, consistently linked to products and services. The significance of customer happiness in business has been a subject of interest among researchers. Many scholars have emphasized the importance of satisfying customers, as they are considered the lifeblood of any organization.

Oliver (1980) was one of the early scholars who defined customer satisfaction as the subjective result of comparing the customer's expectations to the perceived product or service performance. It is supported by some scholars (Anderson, Fornell, & Lehmann, 1994; Brunner, Stöcklin, & Opwis, 2008), who stated that consumer satisfaction should be evaluated according to cumulative satisfaction. That is based on past and present customers' experiences with the outcomes of the supermarket's products/services, as opposed to a post-transaction evaluation (Filipe et al., 2017). Kotler and Keller (2016) defined customer satisfaction as clients' emotional responses, such as happiness or frustration, influencing fulfillment or failure to meet their expectations. It is further explained by Barnes et al., (2021) that in addition to being satisfied with the seller's pleasant surprise, a consumer is delighted when their expectations are met or exceeded. It can be concluded that customer satisfaction is correlated with the congruence between performance and expectations. When performance meets or exceeds expectations, customers typically convey satisfaction. In contrast, customer dissatisfaction ensues if the actual outcome falls short of expectations. This relationship highlights the crucial role that managing and exceeding customer expectations plays in nurturing positive outcomes and sustaining high customer satisfaction.

In highlighting the importance of understanding customer satisfaction and online shopping, a significant number of investigations have been conducted (Ballantine, 2005; Cappelli et al., 2011; Jun et al., 2004). This can be seen through the study done by Guo et al. (2012), which determined three factors that could influence online shopping customer satisfaction, namely, (i) variables of technology, including security, usability, web design, and privacy; (ii) variables of shopping, including ease, trust, and trustworthiness, and delivery; and (iii) variables of product, including the value of merchandising products, and product customization.

Based on the previous study elaborated above, the customer satisfaction index can be seen from various aspects, such as the drop in sales volume in the business, profit margin, and the number of records or data registered in the sales performance sheet. Thus, it is important to retain customer satisfaction for a business to

be sustained. It is a greater challenge for business operators to measure customer satisfaction as the contribution of customer satisfaction can derive from many factors or variances. Customer satisfaction is the top priority for business and should be one of the main agendas for business as customer satisfaction is more important than other matters in the business. The business operation may collapse if it fails to meet customer satisfaction.

**Online Shopping:** The COVID-19 pandemic has shifted the purchasing pattern of the consumer from going to a store to making a purchase, and customers can now make transactions online. Online purchasing is more advantageous and economical, particularly during and after the COVID-19 pandemic. Many businesses have invested considerable time and resources during this crisis to develop or enhance their e-commerce strategies. This is to ensure that e-commerce can maintain the popularity it garnered during the shutdown, even after the reopening of stores (Koch et al., 2020). Online shopping is electronic commerce that allows customers to purchase through an online marketplace such as Shoppe, Lazada, or Mudah. my, Taobao, or Amazon, and direct to the seller's website, such as Harvey Norman, SenHeng, HP, Tefal, and many more. Interestingly, due to the growth of online purchasing, the number of shopping websites operated by local micro sellers has increased. Therefore, online purchasing has expanded the market, made it possible to sell nearly impossible products, and created new markets not limited by geographical considerations (Rahman & Norman, 2016).

According to Koch et al., (2020), investigating established factors of online purchase behavior is crucial, as businesses must capitalize on consumer behavior to maintain a competitive advantage. Understanding online shopping behavior can contribute to the strategic management of online shopping and lead to success in online business. A significant fraction of the economic footprint of modern countries is accounted for by customer purchasing. Current behaviors and structures are being questioned because of the COVID-19 pandemic. Crises can result in fundamental economic and societal shifts, businesses must understand consumer behavior in the present (Koch et al., 2020).

**E-Service Quality:** Service quality has received growing attention from scholars in the service marketing literature. Parasuraman et al. (1988) defined service quality as the gap between customer presumption and the experience of service consumption and product delivery. This group of researchers developed a five-scale model, SERVQUAL, to measure service quality, which includes physicality, approachability, steadfastness, understanding, and guarantee. However, the difficulty arises in measuring internet service quality due to the difference in environment between offline and online. Due to the differences, Parasuraman et al., (2005) later created the e-Service Quality (E-S-QUAL) model. There are four dimensions of a 22-item system to measure electronic service quality: availability and privacy (E-S-QUAL). E-S-QUAL). Additional measures for the recovery service standard (E-RecSQUAL) three-dimensional items, (i) responsiveness, (ii) reimbursement, and (iii) touch only apply to those with unusual experiences on the website. Several studies were carried out using the scales of these models to test the indifferent content of service efficiency, such as shopping places, banking, tourism, and e-commerce, using similar variables or with some adjustment innovation.

Service quality is becoming the center of attention in electronic commerce (Santos, 2003). Essentially, e-service quality is an important key to determining the success of e-commerce. This is an important key to determining the success of e-commerce, including costless, feasible, and more accessible than offline. It proposes and discusses a conceptual model of the determinants of e-service quality. The overall quality of e-service is statistically strongly correlated with consumer actions. To suit online shopping and analysis work, different aspects of e-service efficiency have developed. Rita et al. (2019) analyzed the four-dimensional e-service efficiency model that predicts consumer behavior. The study aims to assess the impact of customer loyalty on customer behavior, specifically regarding repurchasing decisions, product recommendations, and revisiting websites.

Additionally, it seeks to examine the influence of customer confidence on these outcomes to enhance our understanding of the diverse national cultures and their relationship to different levels of e-service quality attributes. Analytical studies have shown that three dimensions of e-service quality influence overall e-service efficiency, specifically (i) website architecture, (ii) security/privacy, and (iii) efficiency. Thus, this paper used the e-service scale from Rita et al. (2019) to measure e-service quality.

The researcher has summarized five aspects that will be utilized for these studies, as outlined in Table 1.

**Table 1: Definition of e-Service Quality**

Construct	Definition	References
e-Satisfaction	Customer pleasant experience and overall satisfaction.	Blut (2016), Rita et al. (2019), and Ting et al. (2016)
Website Design	The website interface is well-designed and visually appealing, including up-to-date information, vendor prompt services, and guarantee.	Rita et al. (2019), Blut (2016) and Holloway & Beatty (2008)
Service Convenience	The website is well-organized and easy to navigate includes saving time	Rita et al., (2019), Chen & Dhillon (2003), Blut (2016), and Holloway & Beatty (2008)
Perceived Risk	The website conveys trust and confidence	Rita et al., (2019), Blut, (2016), and Holloway & Beatty, (2008)
Fulfillment	The service delivers as promised	Blut, (2016); Khan et al., 2019; Wang et al., (2003)

The e-service scale from Rita et al. (2019) measured e-service quality, including website design, service convenience, perceived risk, and fulfillment. The first dimension, website design, encompasses all aspects of the user experience on a website, including information quality, website aesthetics, purchase procedure, website convenience, product selection, price offerings, website personalization, and system availability (Rita et al., 2019). It is further explained that the website interface should be well-designed and visually appealing, including up-to-date information, vendor prompt services, and guarantees. According to the study by Arilaha, Fahri, and Buamonabot (2021), most respondents agreed that website design must be visually attractive, have a well-organized appearance, and facilitate quick and easy transaction completion. It shows that website design is crucial in online shopping. It is highlighted in a previous study that the features of website design, such as ease of navigation and user-friendly designs, encourage buyers to continue engaging in buying behavior (Venkatakrishnan, Alagiriswamy and Parayitam, 2023). The critical factor leading to return visits to the website is the web content, which includes font, pictures, illustrations, assembly sound, motion, and someday, surprise, maybe even smell. Successful web design requires the correct web content decisions as this can attract customers to visit again.

The second dimension is service convenience. According to Rita et. al., (2019), aside from the website being well-organized and easy to navigate, it should be able to save time. Service convenience specific to online shopping has been established in prior online service quality literature suggesting some factors to improve website quality, such as ease of use, interactivity, information search, information depth and richness, and protection (Ahmad et al., 2016; Jun et al., 2004; Parasuraman et al., 2005; Yang, Jin & Peterson, 2004). However, researchers have paid little attention to empirically examining the prominent aspects of online shopping convenience and their appropriate characteristics in-depth and systematically. Nevertheless, very few studies have addressed the problem of perceived consumer convenience in e-commerce. The researchers empirically find that service convenience has a major impact on customers' overall satisfaction. Other researchers have also established several primary convenience elements conducive to customer satisfaction, such as graphic design, information superiority, and delivery facility (Jiang, Yang & Jun, 2013).

Next is perceived risk, which is important for understanding the assessment and decision-making of the client when selecting a specific brand (Conchar et al., 2004). Perceived risk in customer behavior is powerful because customers are driven to prevent more errors that increase the buying utility (Mitchell, 2001). Risk assessment and risk-taking are part of the cost of choice and are an important part of decision-making (Conchar et al., 2004). For the first time in 1960, Bauer defined perceived risk as "subjectively perceived risk in a situation of purchasing behavior of choice," numerous researchers followed him to refine, improve, and extend it until today. According to Udo, Bagachi, and Kirs (2010), online purchase is significantly hampered by perceived risk, which is indicated by phrases like personal risk, privacy, economic, psychological, and technological risk system failure, and related losses are examples of factors that can affect the quality of e-services and consumer satisfaction. Perceived risk emphasizes the idea of the risk that a customer would experience when conducting

online transactions. The higher perceived risk causes the customer to fear more during online transactions and vice versa (Salim et al., 2023). Increased customer engagement behavior can be achieved by lowering perceived risks. However, a lack of research has been done on the risk mechanism (Fan, Shao, and Dong (2022).

The last dimension of e-service quality is fulfillment. According to Wang et al. (2003), "fulfillment" is regarded as one of the major elements of e-service quality by Zeithaml (1988). Fulfillment was characterized by Wang et al. (2003) as "accuracy of service claims, having items in stock, and delivering the proper product within the given period." Besides, Blut (2016) defined fulfillment as ensuring customers receive precisely what they bought, such as delivery timing, order correctness, and delivery condition. This can only be evaluated once the payment has been made.

Further explained by Suryani et. al., (2020) that fulfillment is the website's ability to fulfill customer needs when customers experience service failure. According to Liao & Keng (2013), consumer post-payment dissonance is more common in online shopping than in offline shopping since buyers cannot inspect the goods before purchasing them. To provide excellent service quality to clients, businesses must assure delivery timeliness, order correctness, and delivery conditions. While discussing e-service quality, Narteh (2013) discovered that fulfillment was an important aspect of service quality, leading to high e-customer loyalty and satisfaction. According to Jain et al. (2015), e-fulfillment has three distinct processes: "order procurement, order fulfillment, and product returns." Thus Wang et al., (2003) investigated the link between these three processes and e-customer satisfaction, and the results revealed that e-fulfillment is the most important factor in promoting e-customer satisfaction and a long-term relationship with the customer. It was further highlighted by Putra & Antonio (2021) that the fulfillment element from e-service quality affected the whole e-service quality.

**Relationship between e-service quality and customer satisfaction:** Quality of service and customer satisfaction are extremely important concepts that businesses must recognize to remain competitive and successful. Quality of service contributes to customer satisfaction. It is recommended that enterprises maintain a high level of service to survive. Customer satisfaction is essential for the survival of a business, as it influences repurchase, product loyalty, and positive word-of-mouth, and satisfied customers can become strategic business partners. Lee and Lin (2005) found that a website's design, usability, responsiveness, and trust influence the overall service quality and consumer satisfaction. The aforementioned factors are strongly related to customers' purchasing intentions. However, the personalization factor is unrelated to the overall quality of service and consumer satisfaction in the online market, which has increased steadily in recent years. Enhancing online service quality can increase customer satisfaction. Hang et al. (2009) concluded from their research that website owners should improve the quality of e-service and prioritize the perceived consumer. According to a study conducted in Nigeria by Olasanmi (2019), over fifty percent of respondents regularly shop online. It was also discovered that many reasons for preferring certain online shops were cited, including convenience, the availability of better product information, a more comprehensive selection of products to choose from, and lower prices than others. In addition, it was demonstrated that online shopping usage, as reflected by prices, degree of awareness, time and convenience, product quality, and associated risks, substantially influenced consumer happiness. According to the survey, increased consumer satisfaction may result in increased online shopping.

**Hypothesis:** The hypothesis is formulated based on research objective 1: To determine the influence of e-service quality (website design, service convenience, perceived Risk and Fulfillment) on customer satisfaction.

**H1:** Website design has a remarkable influence on customer satisfaction.

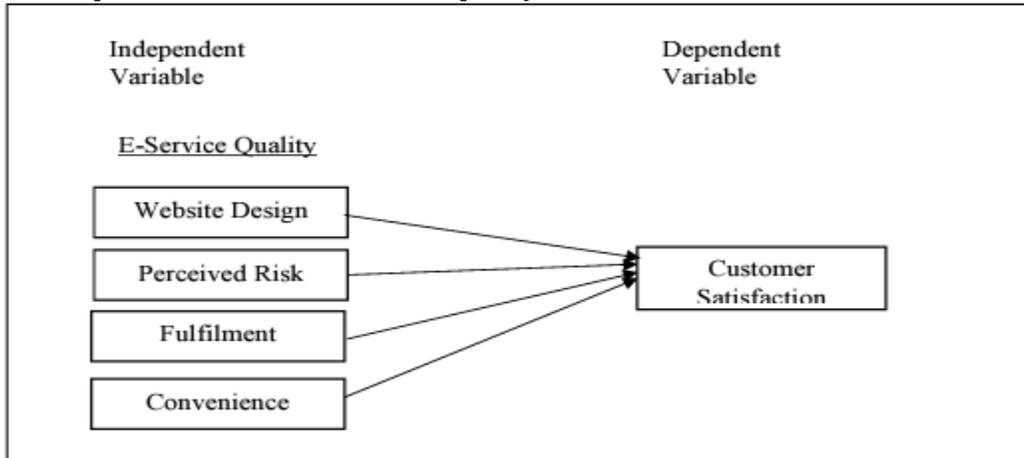
**H2:** Customer-perceived Risk has a remarkable influence on customer satisfaction.

**H3:** e-Service convenience has a remarkable influence on customer satisfaction.

**H4:** Fulfillment has a remarkable influence on customer satisfaction.

**Conceptual Framework:** The conceptual framework is illustrated in Figure 1.

**Figure 1: Conceptual framework of e-service quality and customer satisfaction**



### 3. Research Methodology

As a result of the study's research objectives, the quantitative approach with correlational analysis was utilized for the research design. This study examined the relationship between service quality and online shopping customer satisfaction. Global Data (2020) mentioned that before the COVID-19 pandemic, only 30% of Malaysians chose online shopping, and the trend lifted well, with 51% of Malaysians preferring online shopping after COVID-19. Malaysia's e-commerce market experienced a 24.7% growth in 2020.

A convenient sampling technique was used among Klang Valley residents aged 18 and above. Convenience sampling can be defined as a type of non-probability sampling involving subjects from the nearby part of the population. With the advancement of technology and the COVID-19 pandemic, the questionnaires were developed through Google Forms, which were then distributed through e-mail, WhatsApp, Facebook, Instagram, and Twitter. For this study, the sample size was determined by using G\*Power software. The researcher calculates the sample size by using the G\*Power 3.1.9.4. Hence, the settings measured in this study are as follows: Effect size  $f^2$ : 0.15,  $\alpha=0.05$ , and the number of predictors=4 (Website Quality, E-Service Convenient, Perceived Risk, Fulfilment). The power was set at 95%. This calculation shows that the sample size for four predictors should be 129 respondents.

The questionnaires contained two segments, Sections A and B. Section A comprised the demographic profile, which included gender, marital status, ethnicity, age, occupation, and monthly household income. Also included in Section A were how frequently, how much spending, and the mode of payment for online shopping. In Section B, the e-Service Quality, including Website Service Quality, Perceived Risk, Intention, E-Service Convenience, and E-Satisfaction, was assessed. Section A was the descriptive measure using a nominal scale, while Section B was measured using the four Likert scales.

The researcher adopted the question proven from past research to ensure its validity. The instrument is summarized in the table below:

**Table 2: Validity of instrument sources from the previous study**

Name of Construct	Measure	Scale of Source
e-Satisfaction	4 items	Blut, (2016), (Ting et al., 2016)
Website Design	4 items	Blut, (2016) and Holloway & Beatty, (2008)
Service Convenience	4 items	Blut, (2016) and Holloway & Beatty, (2008)
Perceived Risk	3 items	Chen & Dhillon (2003), Blut, (2016), and Holloway & Beatty, (2008)
Fulfilment	4 items	Khan et al., (2019)

Expert opinions and suggestions were also considered to ensure the instrument's validity before distributing the questionnaire to the targeted respondents. The reliability test was run before proceeding to data analysis. There was one commonly recognized rule for describing Cronbach's Alpha value of reliability. The acceptable value for reliability is  $> 0.7$ . Table 3 below shows the reliability statistics rule.

Pilot tests were conducted in the initial stages to test the respondents' understanding of and reliability of the questionnaires. 66 questionnaires were distributed for the pilot test consisting of non-Klang Valley respondents. The result has shown that the Cronbach Alpha was above .70 for each dimension, which, according to the Rules of Thumb by Hair et al. (2015), the reliability was acceptable. Then, the actual study supported the reality, as shown in Table 3, whereby the Cronbach Alpha was above .70 for each dimension.

**Table 3: Pilot Test for Validity Instruments**

Variables	Cronbach's Alpha for Pilot Test	Cronbach's Alpha for Actual Data	No of Items
Web Design (WD)	.832	.795	4
Perceived Risk (PR)	.781	.864	4
Fulfillment (F)	.880	.781	4
Convenience (C)	.768	.827	3

#### 4. Results

This section presents sets of results relating to the profile of respondents' demographics, the description of e-service quality and customer satisfaction, and the correlation analysis to ascertain the relationship between each variable.

**Demographic Profile and Respondents' Information:** The demographic profile and respondents' information were summarized in Table 4.

**Table 4: Demographic Profile and Respondents' Information**

Demographic profile and response information	Frequency	Percentage (%)	
<b>Gender</b>	Male	65	38.2
	Female	105	61.8
<b>Marital Status</b>	Single	30	17.6
	Married	140	82.4
<b>Ethnicity</b>	Chinese	1	0.6
	Indian	3	1.8
	Malay	166	97.6
<b>Age</b>	18 - 25 years old	7	4.1
	26 - 33 years old	23	13.5
	34 - 41 years old	70	41.2
	42 - 49 years old	49	28.8
	50 years old and above	21	12.4
<b>Occupation</b>	Government Servant	24	14.1
	Private Sector Employee	107	62.9
	Self- Employed	24	14.1
	Students	5	2.9
	Others	10	5.9
<b>Monthly Household Income</b>	Less than RM2,000.00	12	7.1

RM2,001.00 – RM4,000.00	42	24.7
RM4,001.00 – RM6,000.00	43	25.3
RM6,001.00 – RM8,000.00	22	12.9
RM8,001.00 – RM10,000.00	14	8.2
More than RM10,000.00	37	21.8

The study involved 170 residents of the Klang Valley. The respondents were predominantly female (61.8%) and married (82.4%). The ethnic distribution mainly was Malay (97.6%), followed by Indian (3%) and Chinese (0.6%). Most respondents (41.2%) were aged between 34 to 41 years, with other age groups represented as well. In terms of employment, the highest percentage (62.9%) were private sector employees, followed by government servants (14.1%) and self-employed individuals (14.1%). Some respondents were students, pensioners, housewives, or unemployed. Regarding monthly household income, 25.3% earned RM4,001.00 to RM6,000.00, while 24.7% earned RM2,001.00 to RM4,000.00. One-fifth had over RM10,000.00, and the rest fell in different income brackets.

**Descriptive Table of E-Service Quality and Customer Satisfaction:** Based on the descriptive analysis shown in Table 5, the mean score for Customer Satisfaction was (M=3.3162, SD=0.47227). This mean was high and showed that the customers were satisfied with their online purchases. Analysis of Independent Variables shows that convenience had the highest mean score (M=3.5276, SD=0.5214), followed by Web Design (M=3.4794, SD=0.41283), Perceived Risk (M=3.3250, SD= 0.70703) and Fulfilment (M=3.1088, SD=0.48184).

**Table 5: The summary of studies related to service quality, including web design, perceived Risk, Fulfillment, and Convenience on customer satisfaction.**

Variable	Mean	Standard Deviation	Minimum	Maximum
Web Design (WD)	3.48	.41	2.75	4.00
Perceived Risk (PR)	3.33	.71	1.00	4.00
Fulfillment (FF)	3.11	.48	1.50	4.00
Convenience (C)	3.53	.50	1.67	4.00
Customer Satisfaction (CS)	3.32	.47	2.00	4.00

**Correlation Analysis:** As shown in Table 6, a Pearson product-moment correlation was calculated to ascertain the relationship between each variable. There was no significant correlation between Perceived Risk and Web Design ( $r=-.012, n=170, p=.872$ ). Nonetheless, there was a moderately significant positive correlation between Web Design and Fulfillment ( $r=.387^{**}, n=170, p=.000$ ); Convenience ( $r=.400^{**}, n=170, p=.000$ ); and Customer Satisfaction ( $r=.527^{**}, n=170, p=.000$ ). Perceived Risk had no significant correlation with fulfillment ( $r=.023, n=170, p=.770$ ), Convenience ( $r=.049, n=170, p=.527$ ), or Customer Satisfaction ( $r=.115, n=170, p=.137$ ) besides Web Design. A significant positive weak correlation existed between Fulfillment and Convenience ( $r=.208^{**}, n=170, p=.007$ ), and a significant positive moderate correlation existed between Fulfillment and Customer Satisfaction ( $r=.475^{**}, n=170, p=.000$ ). In addition, convenience demonstrated a moderately significant positive correlation with Customer Satisfaction ( $r=.592^{**}, n=170, p=.000$ ). Due to the Correlation Analysis, the research questions should be answered in detail.

**Table 6: Pearson Product-Moment Correlation.**

	Web Design (WD)	Perceived Risk (PR)	Fulfillment (FF)	Convenience (C)	Customer Satisfaction (CS)
Web Design (WD)	1				
Perceived Risk (PR)	-.012	1			
Fulfillment (FF)	.387**	.023	1		
Convenience (C)	.400**	.049	.208**	1	
Customer Satisfaction (CS)	.527**	.115	.475**	.592**	1

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

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

## Discussion

**Research Question 1: To determine the influence of e-service quality (website design, service convenience, perceived Risk, and Fulfillment) on customer satisfaction.**

**Influence of Web Design on Customer Satisfaction:** Based on the findings, the study showed that web design had a significant positive moderate correlation ( $r=.527^{**}$ ,  $n=170$ ,  $p=.000$ ) influence on Customer Satisfaction. Respondents agreed with web design because they feel satisfied with their online shopping experience. According to Bhatti et al., (2020), web design may influence customers buying products as customer satisfaction depends on their experience. Hatti et al., (2020) believe that when they find easy and accessible websites, they must take advantage of them. Furthermore, it plays a vital role in their satisfaction. Apart from that, Cyr et al. (2008) show that web design, including the menu layout, accessibility to product information, logical presentation of product information, screen design, navigation, sequencing, presentation of product attributes, and product availability, contribute to customer satisfaction where most respondents were satisfied with the website that had more features and was user-friendly, which made navigation easier and faster. The same study also found that websites that are more complicated and time-consuming to navigate due to the lengthy information reduced customer satisfaction. Setyaning & Nugroho (2020) proved that a good quality web design might make customers interested in proceeding with their online shopping. They stated that a good web design will display a website that is easy to navigate and requires less effort to explore. They also acknowledged that creating the right user-friendly website allows the customer to access it in a way that is most enjoyable for them. Camilleri (2021) identified one of the critical factors of online service delivery during the COVID-19 pandemic as the website's features, including its attractiveness and functionality. These factors are believed to increase customer satisfaction, generate repeat business, and create positive reviews on social media. It is in line with the findings from Arilaha, Fahri, Muamonabot (2021) and Venkatakrishnan, Alagiriswamy, and Parayitam, (2023), which revealed that website design played a significant effect on e-service quality. It is also further supported by Venkatakrishnan et al. (2023), who found that web customer satisfaction is higher when a high level of web design interacts with e-service quality than at low levels of web design. However, when the e-service quality increases from low to high, the difference between customer satisfaction at high web design and low web design increases under the conditions of high trust.

**Influence of Perceived Risk on Customer Satisfaction:** The study showed that perceived risk had no significant correlation with Customer Satisfaction ( $r=.115$ ,  $n=170$ ,  $p=.137$ ). The relationship between these two variables was not significant. Raman et al. (2020) stated that privacy and security might be the basic things online customers expect. They claimed that both factors that contributed to the perceived risk might be the hygienic factors for online shopping as the absence of that factor would affect the adoption of online shopping while its presence may not contribute to buying behavior. As most of the respondents were young adults (aged below 41 years old), they were aware of the risk online, but they are generally less concerned about it and keep shopping online for other reasons. Amileri (2021) also found that perceived risk and website security had a negligible effect on customer satisfaction. This behavior differs from older adults who have developed less trust in online shopping (Raman et al., 2020). The findings are also similar to Fan, Shao, and Dong (2022), who state that customers' perception of e-service quality of community e-commerce directly and positively affects the main stage of customer engagement behavior, and customer-perceived risk mediates this process. Salim et al. (2023) explained that perceived risk emphasizes the idea of the risk that a customer would experience when conducting online transactions. Thus, the higher perceived risk causes the customer to have a higher fear during online transactions and vice versa. It can be concluded that the higher perceived risk does not lead to customer satisfaction.

**Influence of Fulfillment on Customer Satisfaction:** Based on the findings, the study showed that fulfillment had a significant positive moderate correlation with customer satisfaction ( $r=.475^{**}$ ,  $n=170$ ,  $p=.000$ ). fulfillment had a remarkable influence on customer satisfaction. Camileri (2021) proved that Fulfillment during an unprecedented COVID-19 pandemic increased customer satisfaction towards online shopping, potentially generated repeated business, and created positive reviews on social media. The study shows that timely deliveries and the provision of personalized services significantly affect consumer satisfaction and loyalty. Besides, Camileri (2021) also stated that online retailers should respond to customer inquiries promptly. The researcher believed minimum customer complaints may increase customer satisfaction and reduce negative

criticism on review websites and social media. It is supported by previous research that found that the biggest dimension contributor to e-service is Fulfillment (Suryani et al., 2020). This dimension indicates the company's capacity to supply products, fulfill customer commitments, and meet customer expectations. These findings aligned with a study from Putra & Antonio (2021), which highlighted that the strongest impact on e-service quality comes from fulfillment. The same finding was found in a study by Çelik (2021) that showed the fulfillment dimension, one of the e-service quality dimensions, significantly and positively affects e-satisfaction. Therefore, the fulfillment variable is a priority that should be noticed in the services. Thus, it is acknowledged that business players must concentrate on the requirements of timely and well-maintained delivery of goods.

**Influence of Convenience on Customer Satisfaction:** Based on the findings, convenience had a significantly positive moderate correlation with Customer Satisfaction ( $r=.592^{**}$ ,  $n=170$ ,  $p=.000$ ). The findings align with the arguments that e-service convenience contributes to customer satisfaction. As proven in the previous study by Mpinganjira (2015), four dimensions of service convenience, including search evaluation, order, and possession, had a significant influence on customer satisfaction and behavioral intentions to repurchase from an online store. Furthermore, according to Le-Hoang (2020), seven dimensions of online convenience affect customer satisfaction, including access, evaluation, attentiveness, transaction, possession, and post-possession. Hoang stated that the online convenience experience was essential as customers would feel satisfied and continue to make online purchases at the website. This was also supported by Ashiq & Hussain (2023), who said that online users can easily trust websites and have a level of satisfaction if the service providers bring convenience to their online shopping experience.

**Multiple Linear Regression:** Multiple linear regression was calculated to predict customer satisfaction based on four (4) independent variables: web design, perceived risk, Fulfillment, and convenience. Perceived risk was dropped in the regression as it had no significant relationship with Customer Satisfaction. The results of the analysis are shown in Table 7.

**Table 7: Multiple Linear Regression Test.**

	Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistic		
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	<b>(Constant)</b>	1.352	.208		6.488	.000		
	<b>Convenience</b>	.557	.058	.592	9.525	.000	1.000	1.000
Dependent variable: Customer Satisfaction (CS) R <sup>2</sup> = 0.351, Adjusted R <sup>2</sup> =0.347, Sig. = 0.000								
2	<b>(Constant)</b>	.293	.246		1.189	.236		
	<b>Convenience</b>	.407	.057	.432	7.132	.000	.840	1.191
	<b>Web Design</b>	.457	.069	.399	6.585	.000	.840	1.191
Dependent variable: Customer Satisfaction (CS) R <sup>2</sup> = 0.485, Adjusted R <sup>2</sup> =0.478, Sig. = 0.000								
3	<b>(Constant)</b>	-.089	.244		-.363	.717		
	<b>Convenience</b>	.390	.054	.415	7.273	.000	.837	1.195
	<b>Web Design</b>	.344	.069	.301	4.965	.000	.743	1.345
	<b>Fulfillment</b>	.267	.056	.273	4.506	.000	.847	1.181

Dependent variable: Customer Satisfaction (CS)  
 R<sup>2</sup> = 0.547, Adjusted R<sup>2</sup> =0.539, Sig. = 0.000  
 Note: Significance Levels: \* $p<0.05$ ; \*\* $p<0.001$ .

As shown in Table 7, Model 1 indicates that there was a significant effect between customer satisfaction and Convenience  $\beta=0.415$ , and  $p<0.01$  ( $F(1,168) = 90.721$ ,  $p < .001$ ), with an R<sup>2</sup> of .351. This means that 35.1% of the customer satisfaction is from the Convenience factor only, and 64.9% is from factors outside the model. Next, Model 2 showed there was a collective significant effect between Customer Satisfaction and independent variables, including Web Design and Convenience ( $F(1,167) = 43.366$ ,  $p < .001$ ), with R<sup>2</sup> of .485.

This means that 48.5% of customer satisfaction is from Web Design and Convenience, while another 51.5% is from factors outside the model. Moreover, Model 3 showed that there was a collective significant effect between Customer Satisfaction and all three independent variables, including Web Design, Fulfilment, and Convenience ( $F(1,166) = 23.100, p < .001$ ), with  $R^2$  of .547. These findings show that 54.7% of customer satisfaction is influenced by Web Design, Fulfilment, and Convenience, while the remaining 45.3% could be other factors outside the model. In conclusion, of the three models presented, Model 3 is the best as 54.7% of customer satisfaction can be predicted from three independent variables that have been studied. The p-value of 0.000 shows that the research model is fit, and the independent variables (Web Design, Fulfilment, and Convenience) used were statistically significant. In addition, variance inflation factors (VIF) are too small, showing no multicollinearity in the model. Hence, none of the independent variables correlate. The multiple regression by unstandardized coefficients can be identified:  $CS = -0.089 + 0.390*C + 0.344*WD + 0.267*F$ . The multiple regression by standardized coefficients can be identified:  $CS = 0.244 + 0.054*C + 0.069*WD + 0.056*F$ .

**Research Question 2: What is the most dominant e-service quality factor influencing customer satisfaction?**

As shown in Table 7, convenience is the most dominant quality factor influencing customer satisfaction, as it shows the highest B value (0.390). Furthermore, convenience had the highest mean score (3.5276 + 0.5214) compared to other independent variables studied.

Thus, a summary of the hypothesis is concluded in Table 8.

**Table 8: Summary of Hypothesis**

Hypothesis	Results
H1 Website design has a remarkable influence on customer satisfaction.	Supported
H2 Customer perceived risk has a remarkable influence on customer satisfaction.	Not supported
H3 e-Service convenience has a remarkable influence on customer satisfaction.	Supported
H4 Fulfilment has a remarkable influence on customer satisfaction.	Supported

**5. Managerial Implications and Recommendations**

This study discovered only 54.7% of the factors influencing Customer Satisfaction in online shopping. Meanwhile, the remaining 45.3% could be other factors not included in the regression analysis. Potential factors might come from the demographic profile or other factors, such as customer relationships and perceived fairness, which are not included in the study.

The study findings can enhance the business operator's ability to win the customer's heart. This study provides a comprehensive e-service quality framework crucial for businesses aiming to enhance their online operations and meet the evolving expectations of digital consumers. This study concluded that Web Design, Fulfilment, and Convenience are vital in determining customer satisfaction. Hence, the business operator should also pay attention to the market trends as the market always changes, and technological evolution might influence customer satisfaction to stay relevant and competitive in the online market. For example, the business operator should add features using a mobile application so that the customer can easily reach them and offer various payment methods that are convenient to the customer. To ensure the online shopping process goes smoothly, the business operator can keep updating the technology adaptation for the business to succeed. It is also suggested that online business players create visually appealing community web designs to increase customer engagement. Customer trust and happiness can be enhanced by concentrating on elements such as intelligent fulfillment, interactive service, system design, and security assurance. Besides that, online business players should establish clear protocols for handling order exceptions, such as out-of-stock situations or shipment delays, to provide excellent customer service. Provide customers with quick and receptive customer care

methods, such as email or live chat, to handle their questions and problems as soon as they arise. Online businesses need to optimize order fulfillment and indirectly enhance customer satisfaction. To summarize, a comprehensive framework for e-service quality comprises multiple dimensions such as website design, customer-perceived Risk, Convenience, and Fulfillment. Businesses can improve the quality standard of their e-services, differentiate themselves in the competitive digital market, and cultivate enduring client connections short term and long term by creating and executing such a framework.

### Conclusion

The study emphasizes the significant influence of e-service quality on customer satisfaction in online shopping. Positive perceptions of web design, service fulfillment, and convenience enhance the appeal of online shopping. Surprisingly, Perceived Risk was not found to impact customer satisfaction, suggesting that concerns about risk do not discourage online shoppers. This reflects a growing openness among Malaysian online shoppers to digitalization, which is evident through their engagement with diverse platforms like social media and dedicated e-commerce sites such as Amazon, Lazada, and Shopee. Prominent brands like McDonald's and Pizza Hut have reshaped online shopping by introducing applications that streamline the process. An essential feature of these apps is the incorporation of easily navigable online payment methods, which have significantly enhanced the ease and effectiveness of online shopping. These firms have streamlined the checkout process and catered to their customers' varying tastes by offering various payment methods, including proprietary e-wallets and online banking. Thus, this study highlights managerial implications that can guide future strategies and actions in the e-commerce landscape. Based on these findings, businesses must prioritize developing and implementing a comprehensive E-Service Quality Framework, emphasizing website functionality and responsive customer support. Additionally, integrating a real-time Customer Feedback Loop and fostering a customer-centric organizational culture are vital strategies to adapt and refine services consistently, ultimately guaranteeing heightened online shopper satisfaction and loyalty. As a result, the Malaysian market may progressively adopt a thriving online shopping landscape, indicating a changing stance towards digital transactions.

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