

RESEARCH ARTICLE



Factors Influencing Customers' Online Shopping Behavior in Malaysia During the COVID-19 Pandemic

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Abstract: The article presents an overview of the arguments and rebuttals made in the scientific discourse regarding Malaysia's expanding online shopping trend, particularly in light of the COVID-19 epidemic. This scientific decision is significant since the widespread usage of COVID-19 has altered consumer purchasing behavior and how firms operate globally by reducing potential risks such as making the wrong purchase or falling prey to online fraud. This study aims to determine the impact of perceived risk, trust, and product diversity on consumers' decisions to purchase things online in Malaysia's Klang Valley. The study utilized a quantitative survey methodology, selecting 327 sample sizes from a targeted demographic of online shoppers using Krejcie and Morgan tables. SPSS was used for descriptive and inferential analyses. The study found that product variety, trust, and perceived risk significantly predict consumers' online buying behavior in Malaysia during the COVID-19 pandemic. Trust and product variety moderately influence online purchasing, while perceived risk has a negative impact. In contrast to perceived risk (standardized coefficient = -0.252), which has a negative and moderate impact, the results indicate that product variety (standardized coefficient = 0.571) and trust (standardized coefficient = 0.461) have an average influence on customers' online purchase behaviors. The study supports all hypotheses (H1, H2, and H3), indicating that trust, perceived risk, and product variety significantly influence consumers' online purchasing behaviors in Malaysia during the COVID-19 pandemic. The study emphasizes the need for a comprehensive understanding of online consumer factors and their implications for e-commerce vendors, suggesting the inclusion of marketing professionals in marketing strategy formulation.

Keywords: consumer behavior, perceived risk, product variety, trust, online shopping

1. Introduction

Malaysia's Internet user base reached 21.93 million in 2018, with growth expected in the coming years, presenting new opportunities for online commerce [1, 2]. Due to this reason, Malaysia is experiencing a rapid growth in the field of information and communication technology. The World Wide Web facilitates commerce, social interaction, and shopping, with online shopping increasing as people transition from traditional to digital lifestyles. Nevertheless, online shopping offers consumers a wide range of items and services, allowing them to compare prices with other intermediaries to find the best deal [3–7]. Online platforms have become a convenient method for purchasing food and other necessities due to travel restrictions during the COVID-19 lockdown in Malaysia [8–11]. Due to safety concerns and the desire to avoid contracting the virus, Malaysian customers have shown a preference for online shopping over in-person shopping. Approximately 72% of Malaysian consumers preferred to shop online during the epidemic, according to Rakuten Insight Surveys Malaysia. The study utilized a survey research strategy, utilizing a questionnaire to gather data from Malaysian online

customers. Risk perception, uncertainty perception, trust, and product range variables have an impact on consumer behavior in online shopping. Current research is more concerned with typical consumer behavior during the COVID-19 pandemic, although many studies have focused on consumer shopping behaviors. The damage to the global economy and businesses caused by the COVID-19 outbreak is immeasurable. The uncertainty faced by retailers and end consumers was exacerbated by a number of factors, including falling incomes, international travel restrictions, fluctuating consumer demand, and changes in the behavior of market players [12]. Customers have been encouraged to shop online rather than in person, supporting the use of preventive measures such as lockdowns, isolation, and social exclusion to limit the spread of the virus [13]. The COVID-19 outbreak therefore accelerated the global development of e-commerce, particularly in Malaysia. Further study is required to comprehend the shopping behavior of Malaysian consumer's online [14–17]. Companies are shifting their focus from traditional face-to-face supply chains to online ones, emphasizing the exchange of goods and services through electronic platforms like the Internet [18–20]. The e-commerce industry in Malaysia is still in its early stages, and it is crucial to consider various factors when analyzing online shopping trends, as Gupta and Jain [21] found significant

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security issues in online transactions, and despite these issues, individuals are currently satisfied with online shopping. However, consumers' behavior during the purchase process can be influenced by a number of factors. For example, Liao et al. [22] observed that perceived uncertainty and trust are more important characteristics of online shopping, while Kumar et al. [10] discovered that perceived risk is a significant factor influencing online purchase intention. The importance of these attributes in consumers' online purchasing decisions remains a topic of debate in research. This study explores factors influencing online purchase decisions during the COVID-19 pandemic in Malaysia, including risk perception, trust, and product variety, highlighting the growing importance of online consumer behavior.

2. Literature Review

Many factors such as the pandemic situation have an impact on consumer behavior. The increasing number of COVID-19 cases and its consequences, including quarantine, isolation, social distancing, and societal pressure, has affected not only individuals' welfare-oriented behavior but also their purchasing behavior [23]. Consumer behavior is influenced by many factors, including the pandemic situation. The surge in COVID-19 cases and its aftermath, including quarantine, isolation, social distancing, and societal pressure, has significantly impacted individual welfare and purchasing behavior [23]. The increased frequency of online ordering by segregated populations reduces the cost of flexibility, increases discrimination, and shifts tastes toward local goods [24]. In most cases, consumers are able to obtain all kinds of data and information through the Internet [25]. Online shopping enables customers to compare various products and services through a variety of evidence. Consumers' purchase decisions are influenced by factors such as risk, uncertainty, safety, security, validity, and trust when shopping online [26, 27]. The study by Bai et al. [28] revealed that product variety significantly influences consumers' purchasing behavior during online shopping. Dhanapal et al. [29] highlight that online shopping is driven by the ability to compare goods, brands, prices, and customer reviews, making it a convenient and convenient shopping experience. Bhatti et al. [30] discovered that online shopping usage is not solely driven by the variety of products available in online stores. Wang et al. [31] conducted an empirical study on online shopping and found that product variety and trust directly influence customers' attitudes toward online shopping. Faqih [32] found that the most important aspects of customers' online buying behavior are low perceived risk and website quality. Therefore, there are numerous factors that influence consumers' behavior, but the researchers selected three aspects, including perceived risk, trust, and product variety, which are considered in the literature to be the more controversial factors of consumers' online buying behavior. The study's conceptual framework is developed based on previous literature, addressing various aspects to formulate hypotheses.

H1: Product variety correlates consumers' buying behavior during online shopping.

Online shopping involves purchasing or selling goods or services on a global web platform. Jain [33] highlights that the COVID-19 pandemic has significantly accelerated the growth of online shopping among consumers in the modern business world [15]. A deep understanding of consumer purchasing behavior, and the ability to influence it, is relatively essential in the modern commercial environment due to a fierce competition [34].

Consumers have been driven to shop online by the COVID-19 pandemic, social distancing, and staying at home. The COVID-19 pandemic led to widespread online shopping for goods and services by all consumer groups. Globally, including in Malaysia, there was a marked shift to e-commerce spending [35]. These include continued growth in online usage, increased awareness of online shopping, and low cost through bulk purchasing [36]. Organizations must analyze online shopping behavior in Malaysia to understand factors influencing consumer spending and improve their understanding of the Malaysian context. Many researchers [37, 38] have pointed out that online shopping is very different from typical retail environments. Perceived risk refers to the level of dissatisfaction and discontent with the decision-making process based on the purchase goal. It is a strong indicator of consumer behavior because customers are more likely to mitigate potential disasters than to seek purchase success [39]. The impact of dynamic online shopping behavior on the success of e-commerce transactions is significant [40, 41]. Alalwan [42] suggests that perceived risk in online shopping is more discrete than in face-to-face shopping, likely impacting consumers' online buying behavior. Online shopping can reduce perceived risk when goods are explained properly. Afridi et al. [43] found that low perceived risk in online shopping significantly influences consumers' buying behavior. The study of Zuelseptia et al. [44] revealed that perceived risk significantly influences consumers' online shopping behavior.

H2: Perceived risk correlates consumers' buying behavior during online shopping.

Trust refers to confidence or reliance on the excellence or quality of a person or object, or the truthfulness of a statement, according to Gong [45]. It is "a confidence or sureness in the morality, honesty, and dependability of trustee". Trust is often described as a relationship between two or more people [46] or as a willingness to be vulnerable but have faith or confidence in another person to be trustworthy [47]. According to Javalgi et al. [47] and Gong [45], trust involves believing opinions and trusting intentions. Online service workers are grappling with a growing lack of trust from virtual consumers, which is a significant issue. Investigators in e-commerce face challenges in understanding the intricate relationship between consumer trusts and their ultimate impact on trust choices [48]. There is a lack of research on the relationship between trust and purchasing behavior. Trust building is crucial for e-commerce auction systems, as highlighted by Chen and Huang [49]. Leeraphong and Mardjo [50] assert that trust significantly influences the conduct of online consumers. Consumers who trust online services often expect virtuous quality and secure delivery.

H3: Trust correlates consumers' buying behavior during online shopping.

Much research has been done on trust as it relates to bricks-and-mortar advertising. In the context of non-store arrangements, trust in online shopping is currently being extensively studied and deliberated. However, these efforts have not been adequately researched, especially in the Malaysian context. However, due to the negative effects of preferential economies, the cost of transporting diversified products increases with the number of product lines [51]. The cost of diversification increases as more diversity is often associated with higher environmental charges. In order to maintain product diversity and stabilize the organizational costs of picking the benefits of grouping, platform owners are crucial. Product diversity has been extensively addressed in the literature, with studies such as Muthumani et al. [52],

Kuthambalayan and Bera [53], and van Kampen and van Donk [54] highlighting the ideal list level. The focus of this study, however, is on the impact of product variety on consumers' online shopping behavior.

2.1. Conceptual framework

Consumer behavior when shopping online is illustrated in Figure 1. Kotler's [55] stimulus-response model of consumer behavior can be used to better understand how different customers behave when buying consumer goods. It is a succinct description of different types of consumers that are influenced by stimuli presented in advertisements, e.g., product, price, trust, place, and action. In the marketing environment, consumers are presented with various stimuli. These include economic, technological, political, and cultural characteristics. The buyer's decision-making process is often seen as a 'black box' and is central to the explanation. This study focuses on perceived risk, trust, and product variety as stimuli for online shopping, while the consumer's purchase behavior is the result. When shopping online, customers may be more willing to purchase higher quality products or services if they perceive less risk. Purchasing behavior may also be stimulated by the availability of a wide range of products and services and by consumers' confidence in these products and services. This figure can be linked to Ajzen's [56] Theory of Planned Behavior, which suggests that intentions are indicators of how an individual intends to behave and the effort they put into achieving certain behaviors. Due to the limitations of the Theory of Reasoned Action (TRA) in dealing with planned behavior, Ajzen [57] proposed the Theory of Planned Behavior as an extension of the TRA. The TRA predicts that behavior is not fully under control, resulting in a planned action [56]. Ajzen [56] states that the planned behavior model provides the most comprehensive explanation of consumer behavior, suggesting that individuals are likely to engage in certain behaviors when in control. Ajzen's [56] model suggests that people are more likely to behave as they want to behave when they feel positive and perceive greater behavioral control. Normative views, including rules and opinions, play a key role in shaping subjective norms and behavioral control. The model predicts that behavioral views will influence attitudes, although the precise nature of this relationship remains unclear. The model predicts that behavioral views will influence attitude, although the precise nature of this relationship remains unclear [56]. This theory is important because it links attitudes to behavior, which has implications for understanding how individuals' behavior can be changed. This may help to understand how consumer behavior changes when shopping online compared to bricks and mortar.

Online purchase intentions can be influenced by perceptions of risk and uncertainty, as well as the opinions of others when applying the Theory of Planned Behavior to Taiwanese consumers [58]. These

factors can influence consumers' purchase intent, which can influence their online shopping behavior and ultimately their behavior [58]. It is desirable to study intentions to buy rather than behavior to buy. It is important to note that intention does not always translate into action [59], even though intention is a strong predictor of actual online purchase behavior [60]. Al-maghrabi et al. [61] applied this theory to the study of online shopping behavior. They found that consumer trust predicts consumer retail shopping behavior. Hu et al. [62] examined online consumers' online shopping decisions on the basis of the theory of perceived ease of use and perceived trust. Sahney et al. [63] suggested that online stores should understand their customers' shopping behavior in order to build and maintain trustworthy relationships with their customers. Future studies should explore the relationship between factors and online shopping behavior.

3. Methodology

3.1. Research design

The study employs the quantitative research method as its methodology, as this approach is suited for measuring the variables (perceived risk, trust, and product variety) that impact consumers' purchasing decisions when they shop online. The current study highlights that the deductive approach is more appropriate for testing dominant theory and positivist philosophy. The current study employed a survey research strategy, with a questionnaire used to collect data from Malaysian online customers.

3.2. Participants

Non-probability sampling using convenience sampling, which is a more appropriate and cost-effective method of data collection [64]. In terms of sample size, Malaysia has approximately 26 million Internet users, and online shopping has increased by 10.6% as a result of the COVID-19 pandemic. Cohen's [65] table indicates that for a population exceeding 10 million, a sample size of 383 with a 5% margin of error is appropriate. Nonetheless, only 327 valid questionnaires could be used to estimate the final sample size. The study's sample location, Klang Valley, was chosen due to its higher Internet user population [66].

3.3. Instruments

Andrews et al. [67] used four questions to assess perceived risk, Cheung and Lee [68] used four items to assess product variety, Andrews et al. [67] used three items to assess consumers' online shopping behavior, and Cheung and Lee [68] used three items to examine trust.

A survey becomes unreliable or malfunctions if its value is less than 0.70. When a construct has a reliability score of 0.70 or higher but less than 0.8, it is considered reasonably reliable; when the score is 0.80 or higher, the data are valid. Table 1 presents the study's

Figure 1

Conceptual framework of consumers' online buying behavior

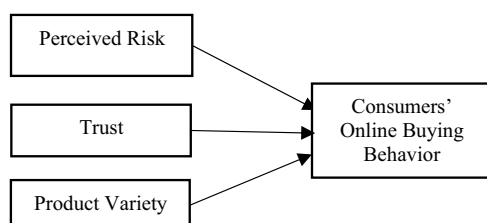


Table 1
Test of reliability

Constructs	Instrument	Reliability (α)
Product variety	3	0.812
Trust	3	0.771
Perceived risk	3	0.790
Online buying behavior	4	0.801

Table 2
Profile of respondents

Components	Rate	Percentage (%)
Gender		
Female	156	47.7
Male	171	52.3
Age		
20 and below	50	15.3
21–30	121	37.0
31–40	104	31.8
41 and above	52	15.9
Marital status		
Married	171	52.3
Single	156	47.7
Profession		
Student	59	18.0
Employee	121	37.0
Entrepreneur	101	30.9
Overseas Malaysian	46	14.1
Monthly income		
RM3000 and below	49	15.0
RM3001-RM4000	102	31.2
RM4001-RM5000	103	31.5
RM5001 and above	73	22.3

reliability findings, which show that all construct values greater than 0.70 indicate data internal consistency. Product variety (0.812) and online purchasing behavior (0.801) exhibited high internal consistency, while trust (0.771) and perceived risk (0.790) demonstrated adequate internal consistency.

According to Table 2, the survey had 327 participants, with 156 (47.7%) females and 171 (52.3%) males. These findings showed that during Malaysia's COVID-19 outbreak, more male consumers went shopping online. These findings revealed that male Malaysian consumers engage in online shopping.

4. Results

All of the reviews point toward answering the research questions presented by non-probability sampling using convenience sampling so that the research findings through quantitative data obtained from questionnaires that impact consumers' purchasing decisions when they shop online. The macroperspective is used to analyze the results, providing a comprehensive overview of the respondents' feedback on the studied variations. The study's findings are analyzed from a micro perspective, considering key factors in consumers' purchasing behavior toward online shopping. Due to space constraints and for the purpose of setting the focus of the discussion for each subsection, the general findings that have been discussed in the macro section are not repeated in the micro section unless it is necessary.

The mean and standard deviation are applied to calculate the build parts' measurement level. To rate each selected component's elements, a 5-point Likert scale was used. Table 3 shows that during the COVID-19 pandemic, consumers were not in agreement that they received what they ordered through the online platform (mean = 2.55; SD = 0.513), that they did not receive defective goods from online channels (mean = 2.57; SD = 0.519), and that it was slightly agreed that it was easy to assess the quality of goods and services over the Internet. These results demonstrate that Malaysian consumers view online purchasing as

Table 3
Statistics of descriptive

Elements	SPSS coding	Mean	SD
Perceived risk	PR1	2.55	0.513
	PR2	2.69	0.519
	PR3	2.57	0.611
Product variety	PV1	3.40	0.632
	PV2	3.22	0.505
	PV3	3.81	0.501
Trust	T1	2.81	0.601
	T2	3.00	0.524
	T3	3.14	0.629
Online buying behavior	OBB1	4.01	0.538
	OBB2	4.04	0.619
	OBB3	3.09	0.699
	OBB4	4.07	0.578

carrying a significant level of risk and that online platforms still need to be improved to boost consumer confidence.

In this study, the correlation (r) values range from -1.0 to $+1.0$. In Table 4, the correlation coefficients are displayed. Customers' online buying habits were found to be adversely and marginally (-0.312^{**}) linked with their sense of danger during the COVID-19 epidemic in Malaysia. According to the findings in Table 4, there is a slightly positive relationship ($r = 0.390^{**}$; $p = 0.000$) between product variety and online purchasing trends. These findings imply that product variety—which includes the opportunity to buy products from multiple brands at varying price points and quality levels—may have an impact on Malaysian Internet customers' decisions to buy. To alter the nation's consumer purchasing habits, online retailers must focus on a variety of brands. A moderately favorable correlation has been seen between customer trust and online shopping behavior ($r = 0.449^{**}$; $p = 0.000$). Malaysian customers have a strong association with this. These findings demonstrate how trusts like warranties, assurances of product quality, and personal information can influence consumer purchasing decisions.

Table 5 showed that a linear regression analysis was performed (online buying behavior) to determine how the independent components (perceived risk, product variety, and trust) affected the dependent variable. This test employs a variety of correlation coefficients and the coefficient of determination to determine how well the model fits the data. The investigation entailed looking at the regression coefficients (beta) to find an answer.

Table 6's coefficient results show that all three independent variables, perceived risk, trust, and product variety, can predict Malaysian consumers' online purchase behaviors. Product diversity ($\beta = 0.571$; $p = 0.00 < 0.05$) is the most effective predictor of customers' online purchasing behavior. The third

Table 4
Analysis of correlation

	OBB	PR	PV	T
Online buying behavior	1.000			
Perceived risk	-0.312^{**}	1.000		
Product variety	0.390^{**}	0.390^{**}	1.000	
Trust	0.449^{**}	0.550^{**}	0.650^{**}	1.000

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

Table 5
Test of ANOVA^a

Model	Sum of square	df	Mean square	F	Sig.
1 Regression	73.99	3	24.6	107	0.000 ^b
Residual	73.40	24	0.2265		
Total	147.9	27			

Note: ^aDependent Variable: Online Buying Behavior

^bPredictors: (Constant), Perceived Risk, Trust, Product Variety

Table 6
Test of coefficients

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error			
(Constant)	2.122	0.084		30.525	0.000
Perceived risk	-0.273	0.085	-0.252	-3.553	0.001
Product variety	0.301	0.082	0.571	5.601	0.000
Trust	0.206	0.084	0.461	6.213	0.000

Note: ^aDependent Variable: Online Buying Behavior

more powerful predictor of the customers' online purchasing behaviors was perceived risk ($\beta = -0.252$; $p = 0.001 < 0.05$). The second-best predictor of customers' online purchasing behaviors is trust ($\beta = 0.461$; $p = 0.00 < 0.05$).

5. Discussion

Perceived risk (standardized coefficient = -0.252) had a negative and modest impact on customers' online buying behaviors; in contrast, the results show that product diversity (standardized coefficient = 0.571) and trust (standardized coefficient = 0.461) have more influence. The results show that all three variables—trust, perceived risk, and product variety—influence customers' online buying behaviors in Malaysia during a COVID-19 situation, supporting the proposed hypotheses H1, H2, and H3. A more reliable predictor of consumers' online buying habits appears to be product variety. The present findings align with other studies, like Mason et al. [69] research, which found that brand preferences have a significant role in customers' decisions to shop online. The lack of product variety in online businesses during COVID-19 had a detrimental impact on Malaysian consumers' online purchasing habits, according to research by Akter and Sultana [70]. Industrials should collaborate with more reputable online brands and offer a variety of brands in their online storefronts to improve their customers' online purchasing habits. According to Bhatti et al. [30], the availability of a diverse range of products from the online store was not the primary motivator for online shopping. As a result, academics disagree on the importance of product diversity in influencing consumers' purchasing decisions when shopping online. Low perceived risk in online shopping has a positive influence on customers' purchasing decisions, according to Afridi et al. [43]. Consumers perceive risks when making online purchases, which may or may not have an impact [71]. The nuances of the relationship between consumer trust and the trust choices that ultimately matter continue to pose a challenge for e-commerce

researchers. There have been few studies on this topic, particularly those that examine the relationship between purchasing behaviors and trust. Building virtual customer trust is a prerequisite for implementing an e-commerce auction system [72]. Fatema and Siddiqui's [73] prior study provides backing for these findings, as it found that trust influenced Bangladeshi customers' online purchasing behavior as payment method, product quality, and safety. As a result, Internet businesses should focus on their clients' digital competencies and identify the areas where they need their trust. However, Choe et al. [74] discovered that the perceived hazards associated with the COVID-19 pandemic hurt online shoppers' purchasing decisions, altering personal habits and consumption patterns [75]. According to Brewer and Sebby [76], perceived risk and the fear of spreading led to changes in consumer behavior, with a stronger preference for utilizing technology that socially isolates users from one another. These findings support the notion that the COVID-19 pandemic has increased the number of purchases made online and that factors influencing consumer choices include perceived risk, trust, and product availability. Due to its ability to make purchases without requiring customers to leave their homes or risking their health, online shopping has grown in popularity over traditional retail.

6. Contribution of This Study

Due to this pandemic in Malaysia, the current study is conducted on customers' buying behavior and the factors that affect it. Ajzen and Fishbein's [77] theory of planned behavior and Pavlov's [78] stimulus-response theory were used to make a theoretical contribution. This paper adds to the corpus of knowledge on online buying decisions from a theoretical standpoint. The Internet's explosive expansion eliminates physical barriers and creates a global economy. The study's findings confirm that perceived risk, trust, and product diversity affect consumers' purchasing decisions during a pandemic. Customers are more likely to purchase online than in person, especially in epidemic circumstances. Management experts advise businesses and marketing specialists to reassess their planned activities. For example, they should concentrate on better product and service presentation, forecasting, and reorganization, especially from the perspective of online networks. In addition, this study also helps online corporations resize their online volumes to the disadvantage of their offline ones in terms of delivery, technology, and stock control. Last but not least, it was crucial for companies, especially those in non-essential product categories, to pivot their organizational models. The current study also contributes academically and helps students and researchers conduct future studies and identify research gaps.

7. Limitations and Future Research

There are some shortcomings in this study. First, because the sample is non-probabilistic and limited to Malaysian clients, it cannot adequately reflect the total population. Thus, future studies will focus on Malaysian and global perspectives using the anticipated model, a more illustrative sampling technique, and a randomly selected sample of respondents. Second, the suggested model does not account for all factors that could influence customers' online purchasing decisions. The data were gathered before the onset of winter and throughout the first several months of the pandemic, when increased mobility limitations impacted

people's decisions to shop online. Therefore, it is advised to broaden the theoretical framework that has been supported here, taking into consideration additional elements that have not been considered in more recent research or the application of the current framework at various stages of the epidemic. Additionally, it is advised to put this concept into practice when buying specific items online, like food and clothing. Even though it is well known that the current study's results and recommendations need to be carefully extrapolated and simplified, it is clear that these limitations do not balance the successful investigations and the contributions made by academia, the market, and culture.

8. Conclusion

Internet marketers should prioritize health and safety measures during delivery to lower the possibility of contamination. They should also offer a reliable online payment method and a range of brands for their online businesses. Executives should also research the purchasing habits of their clients and how these features affect changing behavioral forms before investing time and energy in them. It will help them be more informed and thoughtful. Online retailers might implement advertising methods to gain a competitive edge over outdated business practices. These days, marketers have to cope with interactions through digital ad communication networks because lockdown and pandemic scenarios have caused a radical change in customer behavior. Online purchasing has become increasingly popular during and after COVID-19 as a convenient and safe shopping option for consumers. COVID-19 has impacted online shopping in Malaysia because of the country's isolation and inability to visit physical establishments. As a result, the epidemic has altered consumer purchasing habits. The reviews address research questions using non-probability sampling and convenience sampling, utilizing quantitative data from questionnaires to analyze consumer purchasing decisions when shopping online habits during the COVID-19 pandemic and how variables like perceived risk, trust, and product diversity affect such behaviors.

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Ethical Statement

This study does not contain any studies with human or animal subjects performed by any of the authors.

Conflicts of Interest

The authors declare that they have no conflicts of interest to this work.

Data Availability Statement

The data that support this work are available upon reasonable request to the corresponding author.

Author Contribution Statement

Rahiya Binti Kunji Moidin Kuttty: Conceptualization, Methodology, Software, Formal analysis, Investigation,

Resources, Data curation, Writing – original draft, Funding acquisition. **Hemaloshinee Vasudevan:** Software, Validation, Formal analysis, Resources, Data curation, Writing – original draft, Writing – review & editing, Visualization, Supervision, Project administration. **Imran Aslan:** Validation, Writing – original draft, Writing – review & editing.

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