

# Exploring the Mediating Role of E-Commerce Adoption on Halal SMEs' Competitiveness in Malaysia

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## ABSTRACT

The study examines the influence of e-commerce adoption on the growth and market competitiveness of Halal Small and Medium Enterprises (SMEs). It investigates the relationships between e-commerce adoption and perceived usefulness, perceived ease of use, perceived trust and security, and perceived competitive advantage. Data from 311 Halal SME owners and managers were analyzed using statistical techniques. The findings indicate that perceived usefulness positively influences e-commerce adoption, while the relationship between perceived ease of use and adoption is insignificant. Perceived trust and security are crucial factors driving e-commerce adoption, as Halal SMEs exhibit confidence in online transactions and relationships with e-commerce providers. The study highlights the significant impact of perceived competitive advantage on e-commerce adoption. However, e-commerce adoption does not directly mediate the relationship between these factors and business competitiveness. Future research should explore additional factors, such as the competitiveness of digital marketing strategies, to gain a comprehensive understanding of the complex dynamics between e-commerce adoption and Halal SME competitiveness.

**Keywords:** Halal SME's, E-commerce adoption, Competitive Advantages, Trust and security, PLS-SEM.

## INTRODUCTION

The adoption of e-commerce technologies by Halal SMEs has the potential to revolutionize their growth trajectories and enhance their market competitiveness (Hoque et al., 2014). The global Muslim population, estimated at 1.8 billion and projected to reach 3 billion by 2060, represents a vast consumer base with distinct preferences for products adhering to Islamic principles and Halal certifications (Kusumaningtyas et al., 2022; Yang et al., 2022). E-commerce adoption within the Halal industry can unlock new avenues for market reach, enabling Halal SMEs to connect with geographically dispersed consumers and tap into the growing demand for Halal products and services. Understanding the influence of e-commerce adoption on Halal SMEs' growth and market competitiveness is of paramount importance in devising effective strategies to harness the full potential of digital platforms. Despite the rising importance of e-commerce in the Halal industry, there is a paucity of empirical research that comprehensively investigates the impact of e-commerce adoption on the growth trajectories and market competitiveness of Halal SMEs. Therefore, this study aims to bridge this research gap by examining the empirical relationship between e-commerce adoption, Halal SMEs' growth, and market competitiveness.

## BACKGROUND AND FRAMEWORK

### Halal SME: A Frontier In Islamic Economy Growth

Halal SMEs refer to small and medium-sized enterprises that comply with Islamic principles and regulations, producing and offering products and services that are permissible (halal) under Islamic law. These enterprises cater to the needs of Muslim consumers, who seek Halal-certified goods and services adhering to religious requirements. The growth of Halal SMEs has been closely linked to the expansion of the broader Islamic economy, which encompasses both Muslim-majority countries and non-Muslim majority markets with Muslim

consumer segments. Prior research indicates that Halal SMEs play a significant role in driving economic growth in both local and global contexts (Tarmizi et al., 2020). These enterprises contribute to employment generation, particularly in Muslim-majority countries, where they serve as engines for job creation and poverty alleviation. Halal SMEs also stimulate entrepreneurship, encouraging individuals to establish businesses that meet the growing demand for Halal products and services.

Hence, Overcoming challenges such as Halal certification, supply chain management, access to finance, and regulatory compliance is crucial for the sustained growth of Halal SMEs. Embracing technology and digital transformation can unlock new avenues for market expansion and competitiveness. Future research should explore strategies to enhance the growth and sustainability of Halal SMEs within the broader context of the Islamic economy.

### **E-Commerce Adoption and Halal SME Competitiveness**

E-commerce, which refers to the buying and selling of goods and services over the Internet, has witnessed exponential growth in recent years. It offers SMEs the potential to reach customers beyond geographical boundaries, reduce operational costs, and streamline business processes. By adopting e-commerce technologies, SMEs can establish online storefronts, engage in online marketing campaigns, process online transactions, and optimize their supply chain management, among other benefits (Hoque et al., 2014).

The concept of e-commerce adoption in SMEs involves the integration of electronic platforms, technologies, and processes into their business operations to harness the advantages offered by digital commerce (Mohd Tawil et al., 2015). However, the extent of e-commerce adoption varies among SMEs, influenced by factors such as industry characteristics (Norris, 2020), firm size technological readiness, and organizational capabilities. In the context of this research, the focus is on exploring the influence of e-commerce adoption on Halal SMEs' growth and market competitiveness. Analyzing the e-commerce adoption patterns, challenges, and outcomes in Halal SMEs can provide insights into how digital technologies can shape the growth trajectories and market reach of businesses operating in niche markets.

### **Model And Development Of Hypotheses**

Grounded in the Technology Acceptance Model (TAM) and extended empirical evidence, this study identifies four core determinants influencing e-commerce adoption: perceived usefulness, perceived ease of use, perceived trust and security, and perceived competitive advantage (Mokhtar et al., 2018; Tripopsakul, 2018; Lui et al., 2021; Juni Marianti et al., 2022). These constructs have been widely examined across technology adoption research but remain contextually underexplored among micro and small enterprises in emerging economies. Hence, this study seeks to further validate their interrelationships and explanatory power within the e-commerce adoption framework.

#### **Perceived Usefulness**

Perceived usefulness refers to the extent to which individuals believe that engaging with e-commerce platforms enhances their business efficiency and performance (Tripopsakul, 2018). Numerous empirical studies have affirmed its significant influence on technology adoption behavior (Lui et al., 2021). When users perceive e-commerce as an effective mechanism to achieve business goals such as increasing market accessibility, improving operational efficiency, and optimizing time and cost they exhibit stronger adoption intentions.

#### **Perceived Ease of Use**

Perceived ease of use denotes the degree to which individuals believe that utilizing e-commerce platforms requires minimal cognitive or physical effort (Mokhtar et al., 2018). A system that is user-friendly, intuitive, and easily navigable encourages continued engagement. Prior studies show that when individuals perceive online platforms as convenient and effortless to operate, their behavioral intention toward adoption significantly increases (Davis, 1989; Venkatesh & Bala, 2008).

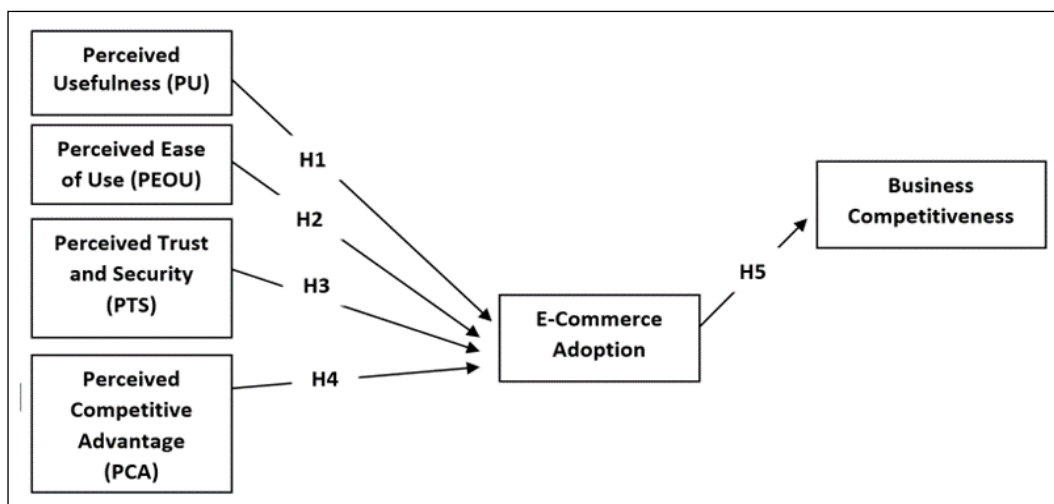
## Perceived Trust and Security

Trust and security remain central to the success of online transactions. Users are often hesitant to adopt e-commerce if they doubt the integrity and protection of their personal or financial information (Perera & Lanka, 2021). Secure payment gateways, transparent privacy policies, data encryption mechanisms, and vendor reputation collectively enhance perceived trust. Past research emphasizes that higher levels of trust and perceived security lead to stronger behavioral intentions and sustained use of e-commerce platforms (Gefen et al., 2003; Pavlou, 2014).

## Perceived Competitive Advantage

Perceived competitive advantage encapsulates the belief that adopting e-commerce can provide superior market positioning and strategic benefits (Juni Marianti et al., 2022). For SMEs, e-commerce is often viewed as a tool to extend market reach, strengthen customer relationships, and enhance brand differentiation. When entrepreneurs perceive digital technologies as essential for long-term competitiveness, they are more likely to allocate resources and commit to adoption (Porter, 2001; Teo et al., 2019). Accordingly, the theoretical model conceptualizes these four constructs as the principal antecedents of e-commerce adoption within the structural equation framework proposed in this study.

Figure 1 Proposed research model



Referring to the above Figure 1 model, the constructed hypothesis is:

H1: There is a significant positive relationship between perceived usefulness and e-commerce adoption.

Ho1: There is no significant relationship between perceived usefulness and e-commerce adoption.

Perceived usefulness, as a crucial determinant of users' attitudes and intentions, has been widely recognized in the field of e-commerce adoption. It refers to the extent to which individuals believe that using a particular technology will enhance their performance or productivity. Several studies have consistently found a positive relationship between perceived usefulness and e-commerce adoption (Peng & Tao, 2022; Rizca Amelia et al., 2022). Users are motivated by the perceived usefulness of e-commerce in facilitating their goals, whether it is finding desired products, comparing prices, or conducting secure online transactions (Lui et al., 2021; Schaefer et al., 2021).

H2: There is a significant positive relationship between perceived ease of use and e-commerce adoption.

Ho2: There is no significant relationship between perceived ease of use and e-commerce adoption.

Numerous studies have found a positive association between perceived ease of use and e-commerce adoption. The concept of perceived ease of use suggests that users are more likely to adopt and utilize e-commerce

platforms when they perceive the technology as intuitive, user-friendly, and requiring minimal effort to navigate and perform tasks (Kusumaningtyas et al., 2022). By providing a user-friendly interface, clear instructions, and seamless navigation, e-commerce platforms can enhance users' confidence and comfort, ultimately facilitating adoption (Dang Lang et al., 2022).

H3: There is a significant positive relationship between perceived trust and security and e-commerce adoption.

Ho3: There is no significant relationship between perceived trust and security and e-commerce adoption.

Trust and security are essential considerations for users when engaging in e-commerce activities. Perceived trust refers to users' confidence in the reliability, integrity, and ethical conduct of e-commerce platforms, while perceived security relates to users' perceptions of the protection of their personal information and transactional data (Perera & Lanka, 2021). Prior research consistently indicates a positive relationship between perceived trust and security and e-commerce adoption (Aamer et al., 2022). Perceived trust and security significantly impact users' behaviors and attitudes in the context of e-commerce adoption (Bernardes & Wuest, 2020). When users hold favorable perceptions regarding the trustworthiness and security of e-commerce platforms, their confidence increases in sharing sensitive information, engaging in online transactions, and establishing enduring relationships with e-commerce providers.

H4: There is a significant positive relationship between perceived competitive advantage and e-commerce adoption.

Ho4: There is no significant relationship between perceived competitive advantage and e-commerce adoption.

Prior studies suggest that perceived competitive advantage is a key construct in strategic management, and plays a crucial role in organizations' decisions to adopt e-commerce technologies (Lang et al., 2022). Furthermore, it's influencing organizations' decisions to adopt and utilize e-commerce technologies. In line with prior research, the resource-based view (RBV) and strategic management theories provide a solid foundation for understanding the relationship between perceived competitive advantage and e-commerce adoption. Existing empirical studies (Ulas, 2019) consistently demonstrate a positive relationship between perceived competitive advantage and e-commerce adoption. The perceived advantages include increased market reach, cost reductions, improved customer targeting, enhanced customer relationships, and the ability to offer personalized and customized products or services.

H5: There is a significant positive relationship between e-commerce adoption and Halal SME business competitiveness.

Ho5: There is no significant positive relationship between e-commerce adoption and Halal SME business competitiveness.

Existing empirical studies consistently support a positive relationship between e-commerce adoption and SME business competitiveness (Alzarooni et al., 2022). Market reach is expanded through e-commerce platforms, allowing SMEs to access new customer segments and penetrate new markets. Cost efficiency is achieved by streamlining business processes, reducing overhead expenses, and optimizing supply chain management. E-commerce adoption facilitates the development of stronger customer relationships through personalized marketing, efficient customer service, and targeted promotions. Furthermore, innovation is fostered as SMEs leverage e-commerce technologies to explore new business models, develop new products or services, and improve operational efficiency (Lányi et al., 2021; Peng & Tao, 2022).

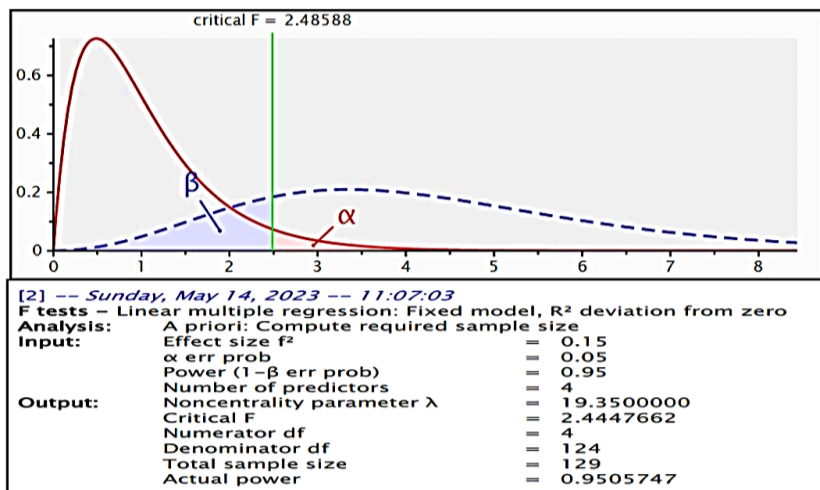
## RESEARCH METHODOLOGY

### Context and Subject

In this study, a total of 311 respondents filled out a survey form distributed in 2022-2023, a self-filling approach was used to collect data between November 2022 and February 2023 in a cluster sampling of Halal SMEs in Malaysia, divided by categories of business types and nature. SME entrepreneur and business

manager data has been obtained from SME Corp Malaysia, a group of entrepreneurs registered with the Companies Commission of Malaysia (SSM), and also small and micro traders of halal products in online business platforms. The participants took part in the study and agreed not to receive any refund for their participation. The study data was collected using a Google Form, by a convenience sampling method, and the strength of sampling with a cross-confidence G-Power analysis set the cut-off  $\beta$  ( $1-\alpha$ ) = 0.8. An analysis through the G-Power application found that the statistical value reached a power of 8.0 at the 129th sample size. This shows that the study has reached the minimum population value set ( $n=311$ ), as shown in diagram 1 below:

Diagram 1 Statistical power by G-power manual



## Study instruments

The study used a research instrument consisting of two parts. The first is allocated to collect participants' demographic data, while the second part is devoted to collecting responses on conceptual model factors. The "7-point Likert Scale" is used to Measure the model in the second approach.

## Coding of factorial items

Each item that is an instrument of study is encoded with a specific series of figures and is a reference for the link between the constructs in the PLS-SEM analysis. In testing the validity of each factor, a preliminary test was conducted. Marking \* is placed on factor items that have been isolated from the actual survey on the target population of this study as below:

Table 1 Coding of factorial items

Construct	Questions Based On Thematic Items	Code
Perceived ease of use (PEOU)	1. I can easily use digital gadgets	PEOU1
	2. Online sales platform is easy to use	PEOU2
	3. Marketing through the website is simple and uncomplicated.	PEOU3
	4. Trading through the website is easy and convenient	PEOU4
Perceived usefulness (FPU)	1. E-commerce can benefit my business operation	FPU1
	2. Access to digital business platforms is cheap and affordable	FPU2
	3. My business can operate effectively with E-commerce	FPU3
	4. E-commerce can be a good marketing platform for my business	FPU4
Perceived trust and security (PTS)	1. I am confident in the advantages of business digitalization.	PTS1
	2. The use of digital gadgets has always helped my business without problems.	PTS2
	3. Businesses through E-commerce are safe and secure	PTS3
	4. I trust to use the E-commerce platform	PTS4
	5. I can easily monitor my transaction online*	PTS5



Perceived competitive advantage (PCA)	1. My customers like to buy online.	PCA1
	2. My business is more innovative with the advent of digital technology	PCA2
	3. I interact with customers better with the availability of online business platforms.	PCA3
	4. I can better interact with suppliers and business partners over the Internet.	PCA4
E-commerce adoption (ECA)	1. I had already registered on the E-commerce platform.	ECA1
	2. I trust online transactions in E-commerce.	ECA2
	3. My business already operated on e-commerce platform.	ECA3
	4. My business already employs ICT utility.*	ECA4
SME Business Competitiveness (SBC)	1. My business is growing with digital applications.	SBC1
	2. I got more profit after using an online business platform.	SBC2
	3. I can grow my business with the advent of digital technology	SBC3
	4. I benefited greatly as a result of using an online business platform	SBC4

\*Isolated items in post-preliminary test with alpha <0.6 and composit reliability <0.5.

## RESULTS AND DISCUSSIONS

The study used a two-stage approach as suggested by Anderson and Gerbing (1988) and (Ken & Kay, 2019). First, this reflective assessment-based study assesses the validity of convergence between items and constructs, alpha reliability, and the validity of discrimination. Convergence validity can be ensured if loading is greater than 0.5 (Hair et al., 2019), composite reliability is greater than 0.7 (Sarstedt et al., 2014), and the average variance extracted greater than 0.5. The structural models were first tested. (Hair et al., 2019).

### Reliability and validity

In the analysis of the reliability of the proposed model, the  $R^2$  obtained is 0.668 (ECA) and 0.387 (SBC) respectively. In terms of reliability,  $R^2$  can Measure variance, which is described in each endogenous construction (Shmueli and Koppius, 2011).  $R^2$  is also referred to as the predictive power in the sample (Henseler et al., 2009; Hair et al., 2011). Thus based on the R-squared of this study, it was found to be large for ECA and low for SBC, as shown in Table 2 below:

Table 2 R-square

	R Square
ECA	0.668
SBC	0.387

Hair et al., 2019 suggest the use of composite reliability as a substitute for the reliability of internal consistency that measures in social science research, rather than conventional Alpha Cronbach. Therefore, this study uses it to measure the reliability of internal consistency. In this case, the measurement of the composite reliability coefficient of internal consistency and reliability has been evaluated and reported in Table 3.0 below. In this study, the value of the composite reliability coefficient ranged from 0.864 to 0.924, showing adequate and excellent respectively. Only item PTS 5 and ECA 4 are removed because it is below the minimum alpha value ( $\alpha$ ) of 0.5 and has been removed from the list of factorial items. According to Cohen (1992), The value of  $R^2$ . 12 or below indicates a low, between values of .13 to .25 indicating a medium value, and .26 or above and above indicates a high effect size.

Thus, it can be established that the instrument is reliable and can be proceeded to the analysis of the hypothetical test. The reliability value of n alpha ( $\alpha$ ) is around 0.8 is considered sufficient (Taber, 2018). In addition, the reliability analysis can be completed with the calculation of Compound Reliability (CR) per construction, which is expected to exceed 0.5. Table 3.0 lists the alpha values of Cronbach, Compound Reliability (CR) as proposed by Hair et al., (2019); All of them are equally adequate with standard cut-off points respectively.

Table 3 alpha ( $\alpha$ ), composite reliability.

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
ECA	0.816	0.879	0.647
FPU	0.885	0.921	0.743
PCA	0.858	0.903	0.700
PEOU	0.862	0.906	0.707
PTS	0.891	0.924	0.753
SBC	0.806	0.864	0.561

Note: ECA=E-commerce adoption, FPU=Perceived usefulness, PCA= Perceived competitive advantage, PEOU=Perceived ease of use, PTS=Perceived trust and security, SBC=SME business competitiveness.

The study also tested the validity of the discriminant using a heterotrait-monotrait correlation ratio (HTMT) assessment (Ringle, 2016; Sarstedt et al., 2022). Using HTMT as a criterion to access the legality of discrimination, researchers need to compare it with a predetermined threshold. Therefore, if the value of HTMT is greater than the established threshold, the researcher can conclude that there is no discriminatory validity. As shown in Table 4:

Table 4 Heterotrait-Monotrait Ratio (HTMT)

	ECA	FPU	PCA	PEOU	PTS	SBC
ECA						
FPU	0.780					
PCA	0.890	0.648				
PEOU	0.661	0.647	0.821			
PTS	0.580	0.588	0.495	0.627		
SBC	0.742	0.602	0.871	0.704	0.503	

Note: ECA=E-commerce adoption, FPU=Perceived usefulness, PCA= Perceived competitive advantage, PEOU=Perceived ease of use, PTS=Perceived trust and security, SBC=SME business competitiveness.

The results showed that all construct correlation values were lower than the threshold level, indicating a satisfactory degree of discriminatory validity between constructions (Henseler et al., 2015). According to the HTMT criteria, the value of the built mutual relationship must be below 0.90 (Dan & Dan, 2019; Sarstedt et al., 2022). After identifying that each item and construct has passed the validity and reliability test, this study conducted a path coefficient analysis with 5000 subsamples as suggested by Hair et al, (2019), as shown in Table 5:

Table 5 Structuring Model Assessment

	Sample Mean (M)	T Statistics	P Values
ECA -> SBC	0.004	0.090	0.928*
FPU -> ECA	0.337	6.237	0.000
FPU -> SBC	0.093	1.532	0.125*
PCA -> ECA	0.573	7.662	0.000
PCA -> SBC	0.567	7.756	0.000
PEOU -> ECA	-0.112	1.744	0.081*
PEOU -> SBC	0.108	1.852	0.064*
PTS -> ECA	0.137	2.973	0.003
PTS -> SBC	0.070	1.261	0.207*

\*P-value below cut off 0.05

Note: ECA=E-commerce adoption, FPU=Perceived usefulness, PCA= Perceived competitive advantage, PEOU=Perceived ease of use, PTS=Perceived trust and security, SBC=SME business competitiveness.

## Hypothesis Test and Determination Coefficient

Together with the PLS-SEM approach with the maximum possible estimate, the structural equation model is used to measure interdependence on various theoretical constructions of structural models. Thus, the proposed hypothesis was evaluated.

H1: There is a significant positive relationship between perceived usefulness and e-commerce adoption.

Ho1: There is no significant relationship between perceived usefulness and e-commerce adoption.

The study shows that the relationship between the relationship between perceived usefulness and e-commerce adoption has a significant influence, along with rejected null hypotheses Ho1 ( $t$  value=6.237,  $p$ -value = 0.000). The results provide robust evidence that individuals who perceive e-commerce as a useful tool are more likely to adopt and utilize it. Furthermore, prior research suggested that perceived usefulness can influence individuals' attitudes and intentions toward e-commerce adoption (Bernardes & Wuest, 2020; Johnson & Schaltegger, 2020).

H2: There is a significant positive relationship between perceived ease of use and e-commerce adoption.

Ho2: There is no significant relationship between perceived ease of use and e-commerce adoption.

The relationship between perceived ease of use and e-commerce adoption showed a slightly insignificant relationship ( $t$  value= 1.744,  $p$ -value= 0.081). The findings of the research indicate that the relationship between perceived ease of use and e-commerce adoption is not statistically significant. Despite its intuitive expectation as a facilitator of e-commerce adoption (Carla et al., 2021; K. L. Lee et al., 2022; Liu et al., 2022), the lack of a significant relationship suggests that the perceived ease of use alone may not be a decisive factor in driving halal SME's to adopt and utilize e-commerce technologies. This finding is not aligned with the prior studies that simpler and more user-friendly e-commerce platforms inherently lead to higher adoption rates. Further research can be conducted to explore additional factors that may interact with or mediate the relationship between perceived ease of use and e-commerce adoption to gain a deeper understanding of the complexities underlying individuals' adoption decisions in the context of e-commerce.

H3: There is a significant positive relationship between perceived trust and security and e-commerce adoption.

Ho3: There is no significant relationship between perceived trust and security and e-commerce adoption.

Perceived trust and security have a significant impact on the e-commerce adoption of Halal SME's ( $t$ -value= 2.973,  $p$ -value= 0.003). The findings of the research provide substantial evidence supporting the significant impact of perceived trust and security on the e-commerce adoption of Halal SMEs. Based on prior research, perceived trust and security encompass the subjective perception of individuals regarding the reliability, credibility, and protection of their personal and financial information when engaging in e-commerce activities (Sunardi et al., 2022). The significant impact of perceived trust and security indicates that when Halal SMEs perceive e-commerce platforms as trustworthy and secure, they are more inclined to adopt and utilize them. (Konstantopoulou et al., 2019; Perera & Lanka, 2021; Qurniawati et al., 2020).

H4: There is a significant positive relationship between perceived competitive advantage and e-commerce adoption.

Ho4: There is no significant relationship between perceived competitive advantage and e-commerce adoption.

The study shows that *the* relationship between perceived competitive advantage and e-commerce adoption has a significant value ( $t$ -value= 7.662,  $p$ -value=0.000). The study reveals a significant relationship between perceived competitive advantage and e-commerce adoption in Halal SMEs. Perceived competitive advantage refers to the subjective perception of Halal SMEs regarding the benefits and advantages they believe they can attain by adopting e-commerce technologies compared to their competitors. The significant  $t$ -value of 7.662 and the associated  $p$ -value of 0.000 indicate a strong statistical significance, suggesting that perceived



competitive advantage significantly influences the adoption of e-commerce in Halal SMEs. This finding highlights the importance of perceived competitive advantage as a motivating factor for Halal SMEs to embrace e-commerce technologies (Abed, 2020; Juni Marianti et al., 2022; Schaefer et al., 2021).

H5: There is a significant positive relationship between e-commerce adoption and Halal SME business competitiveness.

Ho5: There is no significant positive relationship between e-commerce adoption and Halal SME business competitiveness.

The study shows that *the* relationship between e-commerce adoption and Halal SME business competitiveness showed an insignificant relationship with failed to reject Ho5 (t value= 1.090, p-value= 0.928). The research findings indicate an insignificant relationship between e-commerce adoption and Halal SME business competitiveness, as evidenced by a non-significant t-value of 1.090 and a p-value of 0.928. This result suggests that the adoption of e-commerce technologies alone may not have a direct impact on enhancing the competitiveness of Halal SMEs in the market. Furthermore, the study reveals that e-commerce adoption does not qualify as a mediator between perceived usefulness (PU), perceived ease of use (PEOU), perceived competitive advantage, perceived trust and security, and Halal SME business competitiveness. This implies that e-commerce adoption does not significantly mediate or influence the relationship between these factors and the competitiveness of Halal SMEs. These findings are not aligned with prior research (Devasena, 2014; Marcysiak & Pleskacz, 2021; Rahim et al., 2019; Ulas, 2019) that suggests e-commerce adoption automatically leads to improved business competitiveness for Halal SMEs.

## CONCLUSION

Based on the overall research findings, it can be concluded that the adoption of e-commerce technologies among Halal SMEs has significant implications for their growth, market reach, and competitiveness. The study identified several important factors influencing e-commerce adoption, including perceived usefulness, perceived ease of use, perceived trust and security, and perceived competitive advantage. The findings demonstrated that perceived usefulness plays a crucial role in driving e-commerce adoption. However, the relationship between perceived ease of use and e-commerce adoption was found to be insignificant, suggesting that simplicity and user-friendliness alone may not be decisive factors in adoption decisions. Moreover, the research highlighted the significance of perceived trust and security. When Halal SMEs perceive e-commerce platforms as trustworthy and secure, they are more confident in engaging in online transactions, sharing sensitive information, and establishing long-term relationships with e-commerce providers. This perception fosters positive attitudes toward e-commerce platforms and enhances users' intentions to continue using and recommending them. However, the research did not find a significant relationship between e-commerce adoption and Halal SME business competitiveness, and e-commerce adoption was not identified as a mediator for other factors toward business competitiveness. This suggests that e-commerce adoption alone may not directly impact the overall competitiveness of Halal SMEs.

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