

THE MODERATOR EFFECTS OF OWNER-MANAGER KNOWLEDGE ON THE INTENTION TO ADOPT ISLAMIC FINANCING FACILITIES IN MALAYSIA

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ABSTRACT

Purpose — The research aims to investigate owner-manager knowledge as a moderator variable enhancing the intention to adopt Islamic financing facilities (IFF).

Design/Methodology/Approach — The research obtained primary data by conducting a survey of 237 participants from halal-certified companies in Malaysia. The data were evaluated using the partial least squares (PLS) method to verify the hypothesis.

Findings — The findings demonstrate a considerable positive influence of relative advantage, top management support, owner-manager knowledge and competitive pressure on the intention to adopt IFF. It was also demonstrated that owner-manager knowledge had a negative and significant effect on the relationship between complexity, top management support, and the intention to apply IFF.

Originality/Value — The research identifies a number of gaps in the current literature. Firstly, it addresses the limitations of previous research on the adoption of IFF at an organisational level. Secondly, it examines the role of owner-manager knowledge as a moderating factor in the relationship between innovation, organisational and environmental (IOE) characteristics, and adoption intention, which has not been explored in any empirical studies to date.

Research Limitations — This study has two main limitations. Firstly, the data analysis is based on a cross-sectional design, which cannot provide empirical evidence to support causal inferences. Secondly, the majority of the respondents are from the food/beverage/food supplement industry, as revealed in the results.

Practical Implications — These findings can guide stakeholders in developing effective strategies to enhance the adoption of IFF by halal-certified companies in Malaysia.

Keywords — Diffusion of innovation (DOI) theory, Halal-certified company, Islamic financing facilities (IFF), Technology, organisation and environment (TOE) framework

Article Classification — Research paper

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INTRODUCTION

The idea of combining the halal industry with Islamic finance was introduced at the 2011 World Halal Forum held in Kuala Lumpur, Malaysia (CrescentRating, 2011). This integration encourages halal-certified companies to adopt Shari'ah-compliant financing for their operations and provides them with ethical financing options (Malaysia International Islamic Financial Centre, 2014). In this regard, Islamic banks in Malaysia can encourage halal-certified companies to utilise comprehensive Islamic financing facilities (IFF) for businesses of various sizes, including fixed asset financing, trade finance working capital and expansion financing, treasury functions, and capital markets (Malaysia International Islamic Financial Centre, 2014).

Bank Negara Malaysia (BNM) has noted several advances in recent years and has made efforts to support this integration. These include: (1) the inclusion of the Islamic finance sector in the Malaysian International Halal Showcase (MIHAS); (2) business engagement programmes between halal-certified companies and Islamic financial institutions (IFIs); (3) partnerships between the industry and regulators; and (4) increasingly tailored financial solutions for halal-certified companies (World Bank Group, 2022). However, halal-certified companies have come into the spotlight primarily because of the low adoption of IFF. The latest findings from the World Bank Group (2022) revealed that only 43 per cent of halal-certified companies in Malaysia use IFF. Therefore, halal-certified companies still have to deal with the issue of prohibition of *ribā* (interest).

The Qur'ān (2:278–279) clearly states that Allah (SWT) declares war on those who deal in *ribā*. Allah (SWT) has forbidden *ribā* because it has dire consequences for moral, social and economic issues (Shahar *et al.*, 2016). From an economic perspective, *ribā* has implications on the investment and distribution of wealth, promoting the exploitation of the needy and economic instability (Shahar *et al.*, 2016). Attahiru (2022) shows that transactions in companies that involve some form of *ribā* would lead to higher economic destruction.

The sources of finance for halal-certified companies have been controversial since the 2000s. The extensive literature and research reports describe various measures and methods to encourage halal-certified companies to adopt Shari'ah-compliant financing throughout their supply chain. This involves looking at the factors that impact the intention to adopt IFF. However, there are still important issues that require further research and deliberation. First, although most studies (e.g., Balushi *et al.*, 2019; Asad *et al.*, 2021; Rasheed & Siddiqui, 2022) have focused on the individual level, halal-certified companies need to consider the adoption of IFF as an essential strategic advantage that helps organisations achieve their goals. Therefore, the objective of this study aims to determine the variables that influence the intention of halal-certified companies in Malaysia to adopt IFF at the organisational level. The results of this study will add to the knowledge base of what drives an organisation's intention to adopt IFF.

Secondly, the results of previous studies on the influence of innovation, organisational and environmental (IOE) characteristics on the adoption of innovative strategies are inconsistent. Baron and Kenny (1986) proposed a test for moderation effects to explain this inconsistency. Indeed, Thong (1999), Yan (2010) and Chen *et al.* (2010) confirmed that owner-manager knowledge is critical to innovate change in their companies. Owner-manager knowledge refers to the information and understanding possessed by the owner or manager of an organisation concerning IFF. Furthermore, Balushi *et al.* (2019) showed that greater knowledge of Islamic

financial products makes it easier for the owner-manager to make informed and confident decisions.

Hence, the purpose of this study is to discover the characteristics of IOE that have an impact on the intention to adopt IFF and examine the moderating influence of owner-manager knowledge on the relationship between IOE characteristics and IFF adoption. The paper then moves on to review previous studies on IFF and the theories that support the study. It also explores the variables that determine the IFF adoption intention in existing literature and the role of owner-manager knowledge as a moderator. Furthermore, the paper outlines the findings, encompassing the evaluation of both the measurement and structural models, and discusses the results related to each objective. Finally, the paper presents the conclusion of the study, comprising a summary of the research and delineating the research limitations.

LITERATURE REVIEW

Studies on Adoption of Islamic Finance by Businesses

Table 1 shows that previous studies on the adoption of IFF have utilised various theories. Most of the studies discussed have focused on the individual level, with only a few studies examining the factors that influence the intention to adopt IFF at the organisational level. Specifically, the most commonly used individual-level theory in IFF studies is the theory of planned behaviour (TPB) (Ajzen, 1985), which comprises an individual's attitude, subjective norms and perceived behavioural control. Nevertheless, Usman *et al.* (2022) argued that internal and external factors within the organisation are also crucial for the success of innovation adoption. In their study, Usman *et al.* (2022) only emphasised the external factors, specifically employing the institutional theory approach to determine the intention to adopt Islamic finance. Another study conducted by Mat Soha *et al.* (2023) focuses on internal and external organisational perspectives. To close this gap, this study aims to study internal and external organisational factors on the intention to adopt IFF among halal certified companies in Malaysia.

Table 1: Theories Used in Islamic Finance Adoption Studies

Theories	References
Individual level theories	
Theory of planned behaviour (TPB)	Jaffar & Musa (2016), Balushi <i>et al.</i> (2019), Rasheed & Siddiqui (2022)
Unified theory of acceptance and use of technology (UTAUT)	Bananuka <i>et al.</i> (2020)
Technology acceptance model (TAM)	Thaker (2018)
Decomposed theory of planned behaviour (DTPB)	Badaj & Radi (2018)
Diffusion of innovation (DOI) and UTAUT	Abdulkadir <i>et al.</i> (2022)
Organisational level theory	
Institutional theory	Usman <i>et al.</i> (2022)
Technology, Organisation, and Environment (TOE) framework and DOI theory	Mat Soha <i>et al.</i> (2023)

Source: Authors' own

Underpinning Theories

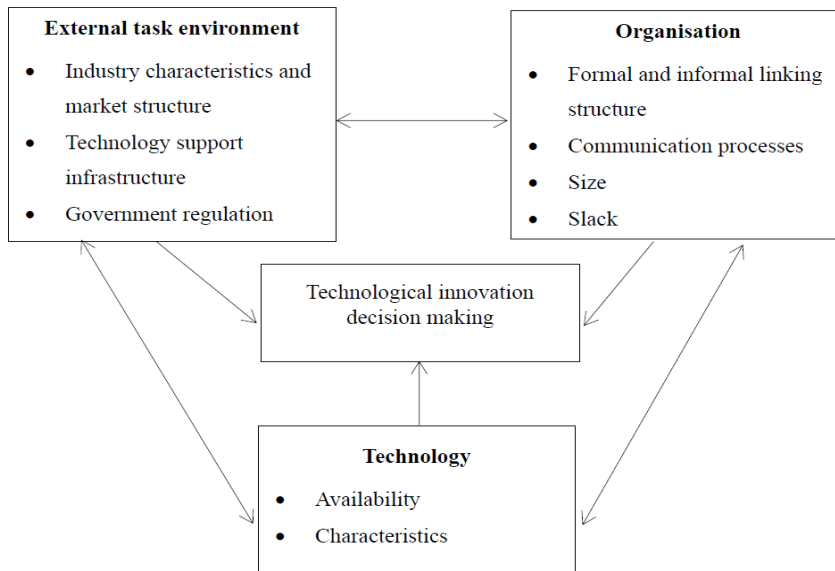
This study combines the technology, organisation and environment (TOE) framework with the diffusion of innovation (DOI) theory to describe the factors impacting the adoption intention of

IFF. Oliveira and Martins (2011) suggest that the DOI and TOE frameworks complement each other. The TOE framework lacks the inclusion of individual characteristics such as top management support, which is addressed by the DOI theory. On the other hand, the DOI theory does not consider the impact of environmental characteristics, which is included in the TOE framework. Combining both theories results in a more comprehensive and reliable explanation of technology/innovation adoption (Amin *et al.*, 2013) and has been shown to increase explanatory power in earlier studies (Wang *et al.*, 2010; Oliveira *et al.*, 2014).

Technology, Organisation and Environment (TOE) Framework

The TOE framework was formulated by Tornatzky and Fleischer (1990) who argued that an organisation's structure should align with both its internal needs and the external environment. This framework is a widely adopted model that explains the adoption of technology and innovation. **Figure 1** highlights three main factors that impact the adoption of technology and innovation: technological, organisational and environmental characteristics. Specifically, technological characteristics refer to the available technology pool and its suitability for the company. Organisational characteristics include the descriptive traits of the company, such as its structure, size, management style and centralisation, as well as its resources and communication processes. Environmental characteristics relate to the business environment in which the company operates and how it can act either as a barrier or an opportunity for innovation.

Figure 1: TOE Framework



Source: Tornatzky and Fleischer (1990)

Diffusion of Innovation (DOI) Theory

The DOI theory examines how, why and at what pace new ideas and technologies are adopted and spread across organisations and cultures. The DOI theory states that innovations spread over time through specialised channels within a given social system (Rogers, 1995). According to the

DOI theory, relative benefit, compatibility, complexity, trialability and observability are five factors that may be crucial for the acceptance of a new innovation. Based on previous studies (e.g., Amin *et al.*, 2013; Yahaya *et al.*, 2014), this study emphasises, in particular, relative benefit, compatibility and complexity as variables influencing the IFF adoption intention. These factors are deemed to be significant in explaining the adoption behaviour in the context of IFF, as opposed to observability and trialability, which are not commonly used in IFF studies. The study seeks to determine how relative benefit, compatibility and complexity affect the decisions of Malaysian halal-certified companies to adopt IFF.

Relative Advantage

The relative advantage of an innovation is determined by how it is perceived as being better than previous ideas (Rogers, 1995). Relative advantage has been demonstrated to have a major impact on the adoption of various technologies or innovations, including cloud computing (Skafi *et al.*, 2020), green supply chain management (Lin *et al.*, 2020) and halal transportation (Ngah *et al.*, 2022). In each of these cases, relative advantage is considered a positive predictor of adoption and a key determinant in decision making. This study, therefore, explores the role of relative advantage in the intention to adopt IFF by halal-certified companies in Malaysia. The first hypothesis is spelt out as follows:

H1: Relative advantage positively impacts on the intention to adopt IFF.

Compatibility

Compatibility is the extent to which an innovation fits with current values, prior experiences, and the demands of future customers (Rogers, 2003). Many scholars have identified compatibility as a crucial factor in the adoption of innovation. For example, Lin *et al.* (2020) indicated that a higher level of compatibility is related with a greater intention to adopt green supply chain management. Alam *et al.* (2022) found that compatibility had a substantial influence on augmented reality technology adoption intention. Based on this, the subsequent hypothesis is proposed:

H2: Compatibility positively impacts on the intention to adopt IFF.

Complexity

According to Rogers (2003), complexity is the degree to which an innovation is viewed as being somewhat challenging to apply and understand. Previous studies have found that complexity is a barrier factor and is negatively related to innovation adoption. For example, Ngah *et al.* (2022) found that complexity has a negative impact on the intention to adopt halal transportation. Parvand and Rasiah (2022) indicated that complexity has a negative impact on millers' adoption of advanced milling technology. Considering the significant influence of complexity that could affect the intention to adopt IFF, the hypothesis below is proposed:

H3: Complexity negatively impacts on the intention to adopt IFF.

Top Management Support

Kor (2003) states that the top management is the highest-ranking executive which includes the chief executive officer, chief operating officer, business unit heads, and vice presidents. Top

management support is a key factor that influences the innovation adoption in organisations. Wahab *et al.* (2022) discovered that top management support positively influences the adoption of automated material handling equipment, while Ahmed *et al.* (2022) indicated that top management shows its support and provides the necessary resources for the adoption of building information modelling. Therefore, the adoption intention of IFF relies mostly on top management support. This leads to the subsequent hypothesis:

H4: Top management support positively impacts on the intention to adopt IFF.

Owner-Manager Knowledge

Previous scholars found that the knowledge of the owner-manager has an impact on the adoption of innovation. Balushi *et al.* (2019) pointed out that owner-manager knowledge about *mushārah*, *muḍārah* and *murābahah* influences the intention to adopt Islamic financial services. Awang *et al.* (2020) also found that knowledge of Islamic finance has a substantial and positive relationship on the adoption of Islamic financial management among halal-certified small and medium enterprises (SMEs) in Malaysia. Shahzad *et al.* (2020) found that e-commerce knowledge has a substantial and favourable impact on e-commerce usage in the Malaysian healthcare industry. Therefore, owner-managers who have more knowledge of IFF prefer to adopt IFF. The following hypothesis is thus presented:

H5: Owner-manager knowledge positively impacts on the intention to adopt IFF

Competitive Pressure

According to Lertwongsatien and Wongpinunwatana (2003), competitive pressure relates to the degree of competitive environment within the industry in which companies conduct their businesses. Competitive pressure is one of the important factors that drive halal businesses to fulfill the Muslims' demand. Alam *et al.* (2022) discovered that competitive pressure is a significant influence on the adoption of augmented reality among SMEs. Usman *et al.* (2019) also identified competitive pressure as having a positive significant influence on the adoption of cloud enterprise resource planning. Hence, that the following hypothesis is suggested:

H6: Competitive pressure positively impacts on the intention to adopt IFF

Customer Pressure

Customer pressure is defined as the degree of pressure that companies face in order to satisfy their customers' demand (Sophonthummapharn, 2009). In the halal industry, halal-certified companies are responsible to follow the halal certification procedure to ensure that Muslim customers receive halal goods and services. Customers may even boycott the products or services in case of any concern about their halal status. In previous studies, Abed (2020) highlighted that customer pressure is substantially and favourably related to the social commerce adoption intention in Saudi Arabian SMEs. Lin *et al.* (2020) pointed out that customer pressure significantly affects the adoption of green supply chain management. In addition, Ngah *et al.* (2022) emphasised that customer pressure is a significant influence on the halal transportation services adoption while Alam *et al.* (2022) discovered that customer pressure significantly influences the adoption of augmented reality. Consequently, the following hypothesis is proposed:

H7: Customer pressure positively impacts on the intention to adopt IFF.

Owner-Manager Knowledge as Moderator

Owner-manager knowledge of innovations has a strong influence on technology/innovation adoption. Since previous studies documented that the effects of IOE characteristics on IFF adoption intention are inconsistent, this study examines the moderator factor of owner-manager knowledge of IFF as a moderator of the relationship between IOE characteristics and IFF adoption intention.

Regarding the characteristics of innovation, the knowledge of the owner-manager could play a key role in enhancing IFF values. In particular, there are still many issues that need to be clarified about IFF. These include the contention that IFF is exclusively for Muslims (Muhamad *et al.*, 2020); that Islamic financing and conventional financing are the same (Yusof & Fahmy, 2008; Zin *et al.*, 2019; Shabbir & Rehman, 2019); that Islamic financing is more complicated than conventional financing (Swastika & Tobibatussaadah, 2019); and that Islamic financing is more expensive than conventional financing (Yusof & Fahmy, 2008). However, if the owner-manager has a high level of knowledge about IFF, the value of IFF will likely be increased. For example, Balushi *et al.* (2019) demonstrated that SMEs with business owners who know more about IFF understand their benefits.

In an organisational context, the owner-manager with higher innovation knowledge strengthens top management support. Top management has high influence on the path and success of knowledge management in an organisation (Nguyen & Mohamed, 2011). Moreover, top management is responsible for tracking the sources of knowledge and employs action plans to turn an individual's knowledge base into knowledge that is useful for the organisation (Khan *et al.*, 2020). A study by Štemberger *et al.* (2011) found that adequate knowledge is critical to gaining top management support in improving operational efficiency, implementing strategy and achieving competitive advantage. For example, Kuar *et al.* (2022) highlighted that top managers with environmental knowledge have a better understanding of business operations and environmental impacts, which can enhance their commitment to actively implement environmentally-friendly practices. Therefore, it is important that the owner-manager has sufficient knowledge to gain top management support for the adoption of IFF.

Within environmental characteristics, it is believed that the owner-manager with high knowledge of IFF has more positive responses to external pressure. Knowledge resources have special properties that contribute to the creation and maintenance of competitive advantages (King & Zeithaml, 2003). Knowledge would increase an owner-manager's motivation to recognise, evaluate and take advantage of an opportunity (Alvarez & Busenitz, 2001; Sommer & Haug, 2011). Hence, the owner-manager with IFF knowledge responds to external pressure as market opportunities by focusing on competitors' strategies, competing for market share, and meeting consumer demands.

This study addresses the literature gap since no previous research has examined how owner-manager knowledge affects the relationship between IOE characteristics and the intention to adopt IFF. Hence, the following hypotheses are proposed:

H8: Owner-manager knowledge moderates the relationship between relative advantage and intention to adopt IFF

H9: Owner-manager knowledge moderates the relationship between compatibility and intention to adopt IFF

H10: Owner-manager knowledge moderates the relationship between complexity and intention to adopt IFF

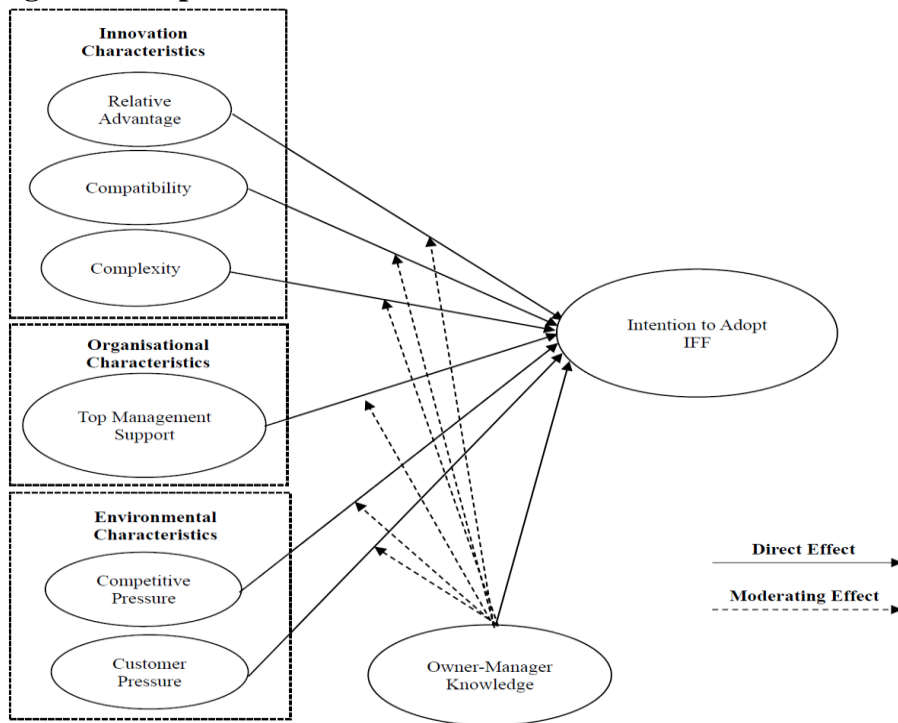
H11: Owner-manager knowledge moderates the relationship between top management support and intention to adopt IFF

H12: Owner-manager knowledge moderates the relationship between competitive pressure and intention to adopt IFF

H13: Owner-manager knowledge moderates the relationship between customer pressure and intention to adopt IFF

Figure 2 illustrates the proposed research model adopted in this study.

Figure 2: Proposed Research Model



Source: Authors' own

METHODOLOGY

Sample and Data Collection

Malaysian halal-certificate companies are the population of this study. This study uses simple random sampling to target owner-managers of halal-certified companies that participated in the Malaysia Halal Expo (MHE), Penang International Halal Expo (PIHEC) and Malaysian International Halal Showcase (MIHAS). The questionnaire was administered in 2019 during three events: MHE from 24 to 26 January, PIHEC from 1 to 3 March, and MIHAS from 3 to 6 May. Data collection involved conducting a questionnaire survey. Two hundred fifty-two people agreed to answer the 322 questionnaires that were handed out during the events. However, due to

their hectic schedules, 15 respondents did not complete the questionnaires. Therefore, 237 sets of questionnaires were used for data analysis after sorting.

Table 2 shows the profile of halal-certified companies. About 48.1 per cent of the companies have more than ten years of operating experience. In addition, 30 per cent of the companies have been registered with Malaysian halal certificate for more than ten years. About 80.6 per cent were small enterprises. In addition, more than 70 per cent of the companies were in the food product/beverages/food supplement sector.

Table 2: Company Profiles

Items	Frequency	Percentile (%)
Operational Age		
<3 years	35	14.8
3–5 years	56	23.6
6–10 years	32	13.5
>10 years	114	48.1
Total	237	100
Age of Halal Certification		
<3years	60	25.3
3–5 years	66	27.8
6–10 years	40	16.9
>10 years	71	30.0
Total	237	100
Number of Employees		
<5 employees	43	18.1
6–75 employees	158	66.7
75–200 employees	33	13.9
>200 employees	3	1.3
Total	237	100
Halal Sectors		
Consumer goods	10	4.2
Pharmaceutical	5	2.1
Cosmetic and personal care	6	2.5
Logistic	1	0.4
Food premise	49	20.7
Food product/Beverages/Food supplement	166	70
Total	237	100

Source: Authors' own

Measurement

The questionnaire was made up of two sections. The company's demographic information was gathered in Section A which includes operational age, age of halal certification, number of employees and halal sectors. The variables were presented in Section B, which were measured through a Likert-scale question varying between '5 = strongly agree' to '1= strongly disagree'. The items of the questionnaire of this study were adapted from previous studies (Shimp & Kanvas, 1984; Moore & Benbasat, 1991; Grover, 1993; Premkumar & Roberts, 1999; Wu *et al.*, 2003; Soliman & Janz, 2004; Al-Qirim, 2005; Son & Benbasat, 2007; Elliot & Boshoff, 2007; Sophonthummapharn, 2009; Wang *et al.*, 2010; Amin *et al.*, 2011; Yoon & George, 2013;

Oliveira *et al.*, 2014; Safari *et al.*, 2015; Kung *et al.*, 2015; Maduku *et al.*, 2016; AlBar & Hoque, 2017).

RESULTS

Assessment of the Measurement Model

In order to assess the measurement model, items loading, reliability and validity analyses were conducted. **Table 3** shows that all the items' loadings fulfilled the criteria requirements except relative advantage², compatibility⁴, complexity³, owner-manager⁴ and competitive pressure³. Ramayah *et al.* (2018) supported that the items loading below 0.708 can be preserved if the minimum of average variance extracted (AVE) of 0.5 is met. Therefore, the four items are appropriate since the AVE is above 0.5. For convergent validity, this study adopted Dijkstra-Henseler's rho (rhoA) because Ringle *et al.* (2017) stated that rhoA gives a more precise indication of data consistency than Cronbach's alpha and composite reliability. The results in **Table 3** indicate that all the constructs have rhoA values over 0.70, suggesting that they have enough internal consistency. Additionally, the AVE values exceed 0.50, indicating that the convergent validity met the criteria of Henseler *et al.* (2016) and Henseler (2017).

This study deployed the heterotrait-monotrait correlation ratio (HTMT) (Henseler *et al.*, 2015) since this analysis has a high sensitivity and can detect issues with discriminant validity (Ab Hamid *et al.*, 2017) compared to the Fornell-Larcker criteria (Fornell & Larcker, 1981) and cross loadings (Chin, 1998). **Table 4** shows that all scores are in accordance with the HTMT.90 (Gold *et al.*, 2001) and HTMT.85 (Kline, 2011).

Assessment of the Structural Model

The path coefficients of four direct effects in **Table 5** exhibit a t-value > 1.645, which is significant at the level 0.05. Relative advantage ($\beta = 0.097$; $p < 0.05$), top management support ($\beta = 0.643$; $p < 0.05$), owner-manager knowledge ($\beta = 0.120$; $p < 0.05$) and competitive pressure ($\beta = 0.095$; $p < 0.05$) are all positive and significant for intention to adopt IFF. Thus, H1, H4, H5 and H6 are supported. The R^2 value of this study is 0.578, indicating that the model used in this study is adequate.

Assessment of the Moderating Test

Owner-manager knowledge is a moderator for all hypothetical relationships given in the path model. For this study, six latent interaction constructs were developed to reflect the relationship between owner-manager knowledge and all mentioned relationships.

The result indicated that the relationship between complexity and the intention to adopt IFF was shown to be negatively moderated by owner-manager knowledge ($\beta = -0.999$, $p < 0.05$). Thus, H10 is accepted. **Figure 3** shows that when the owner-manager has a high level of IFF knowledge, the intention to adopt IFF is not strongly correlated with complexity. Also, the moderator effect of owner-manager knowledge between the relationship of top management support and the intention to adopt IFF is negative and significant ($\beta = -0.108$, $p < 0.05$). Thus, H11 is accepted. **Figure 4** shows that when owner-manager possesses a high level of IFF knowledge, the intention to adopt IFF is not strongly correlated with top management support.

Table 3: Results of the Assessment of the Measurement Model

Constructs	Loadings	rhoA	AVE
Intention to adopt			
We intend to adopt IFF.	0.890	0.867	0.690
It is likely that our company will take some steps to adopt IFF in the future.	0.753		
We have a firm intention to adopt IFF in our company.	0.880		
We will definitely recommend IFF to other companies.	0.791		
Relative advantage			
IFF enhance the corporate image.	0.735	0.764	0.537
IFF increase the profitability of the company.	0.666		
IFF are useful to expand our market.	0.712		
IFF help to reduce overall cost.	0.810		
Compatibility			
We believe that IFF are compatible with the existing financial infrastructure.	0.790	0.819	0.607
We believe that IFF are fully compatible with our business strategy.	0.841		
We believe that IFF are compatible with our company's corporate culture and value system.	0.830		
We believe that IFF are compatible with the corporate work style.	0.640		
Complexity			
We believe that the process for IFF is a complex one.	0.794	0.800	0.594
Integrating IFF in our current workflows will be difficult.	0.820		
We expect that the use of IFF will be complicated for us to learn.	0.694		
The use of IFF is frustrating.	0.786		
Top Management Support			
Top management enthusiastically supports the adoption of IFF.	0.821	0.846	0.592
Top management is aware of the benefits of IFF.	0.744		
Top management is willing to take risks associated with the adoption of IFF.	0.827		
Top management is likely to be interested in the adoption of IFF to gain competitive advantage.	0.711		
Top management likely views the adoption of IFF as strategically important.	0.736		
Owner-Manager Knowledge			
We have sufficient knowledge of IFF.	0.811	0.824	0.584
We understand the issues related to IFF.	0.787		
We have sufficient knowledge of the differences between conventional financing facilities and IFF.	0.754		
We are familiar with IFF.	0.686		
We have experience in using IFF.	0.778		
Competitive Pressure			
Our main competitors that have adopted IFF have benefited greatly.	0.879	0.811	0.634
Our main competitors that have adopted IFF are perceived favourably by other companies in the same industry.	0.871		
Our decision to adopt IFF would be strongly influenced by what competitors in the industry are doing.	0.608		
Customer Pressure			
Many of our customers would expect our company to adopt IFF.	0.810	0.830	0.613
Our customers will view us as forward-looking if we adopt IFF.	0.767		
Our company needs to maintain good relationships with our key customers who have adopted IFF.	0.736		
Our key customers who have adopted IFF are the largest customers in the industry.	0.816		

Source: Authors' own

Table 4: Heterotrait-Monotrait Ratio (HTMT) Results

	Intention to Adopt	Compatibility	Complexity	Competitive Pressure	Customer Pressure	Owner-Manager Knowledge	Relative Advantage
Intention to Adopt							
Compatibility	0.467						
Complexity	0.393	0.273					
Competitive Pressure	0.395	0.263	0.448				
Customer Pressure	0.280	0.349	0.375	0.661			
Owner-Manager Knowledge	0.447	0.438	0.280	0.249	0.195		
Relative Advantage	0.410	0.214	0.229	0.254	0.204	0.364	
Top Management Support	0.824	0.625	0.463	0.441	0.430	0.398	0.359

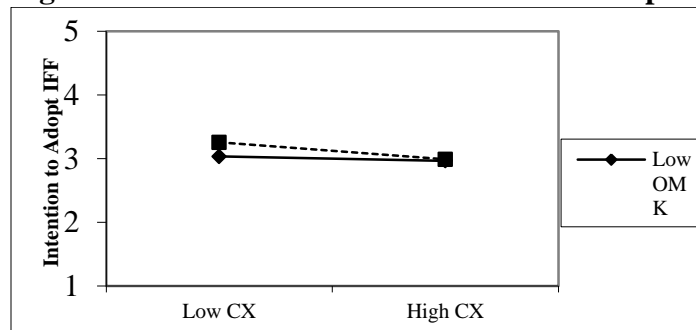
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Table 5: Direct Effect of Hypotheses Results

Casual Path	Hypothesis	Path Coefficients	t-value	Supported
Relative Advantage → Intention to Adopt	H1	0.097	1.999	Yes
Compatibility → Intention to Adopt	H2	0.003	0.053	No
Complexity → Intention to Adopt	H3	-0.034	0.676	No
Top Management Support → Intention to Adopt	H4	0.643	10.994	Yes
Owner-Manager Knowledge → Intention to Adopt	H5	0.120	2.682	Yes
Competitive Pressure → Intention to Adopt	H6	0.095	1.946	Yes
Customer Pressure → Intention to Adopt	H7	-0.080	1.484	No

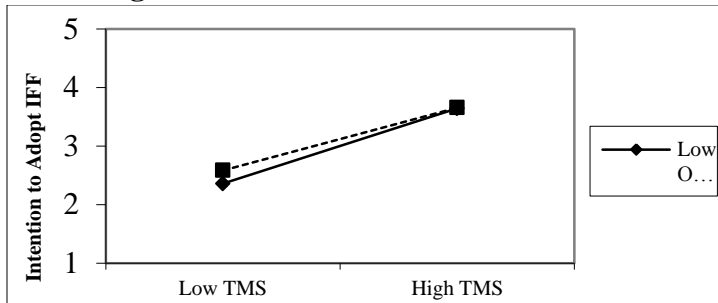
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Figure 3: The Interaction Effect Between Complexity and Owner-Manager Knowledge



Source: Authors' own

Figure 4: The Interaction Effect Between Top Management Support and Owner-Manager Knowledge



Source: Authors' own

The R^2 change takes on significance in moderation analysis. Previously, the main effects model's R^2 was 0.578, while the interaction model's R^2 was 0.601. This shows that the R^2 changes by 5.8 per cent with the addition of the interaction effect (additional variance). Therefore, the effect size (f^2) of this study represents a small effect according to Cohen (1988). However, Chin *et al.* (2003) supported that the small effect size is also important for evaluating the effect of the interaction term.

DISCUSSION

The results of this study are discussed in four separate categories: innovation, organisation, environment, and owner-manager knowledge as a moderator.

For innovation characteristics, relative advantage was a positive significant influence on the intention to adopt IFF among halal-certified companies in Malaysia. This finding is supported by Pateli *et al.* (2020), Malik *et al.* (2021) and Ngah *et al.* (2022), which discovered the positive significant influence of relative advantage on innovation adoption. However, one of main differences between this study and prior studies is the innovation adoption context. This study highlighted on the benefits that halal-certified companies gain from adopting IFF over conventional loans. The survey data confirmed that halal-certified companies are aware of the following benefits of IFF: improving company's image, increasing the company's profitability, expanding market share, and reducing costs. Hence, this study expands the scope of the body of knowledge about the relative advantages of IFF adoption in organisational perspectives.

Regarding the influence of compatibility, this study found that compatibility was not a significant influencing factor on the intention to adopt IFF among halal-certified companies in Malaysia. The findings are consistent with several studies that found an insignificant role of compatibility in adoption (e.g., Skafi *et al.*, 2020; Ahmed *et al.*, 2022; Parvand & Rasiah, 2022). One possible explanation could be that the owner-managers of halal-certified companies are less concerned about how IFF align with their practices.

Complexity also has no impact on Malaysian halal-certified companies' intention to adopt IFF. This result is in contrast to Skafi *et al.* (2020), Sayginer and Ercan (2020), Owusu (2020) and Malik *et al.* (2021), who found a significant negative relationship between complexity and intention to innovate. A plausible reason for this is that respondents are not familiar with the process of IFF. Although halal-certified companies are aware of the relative advantage of IFF,

knowledge of the IFF procedure is still limited. Moreover, the lack of product expertise among Islamic banks' employees (Shamsudheen & Chowdhury, 2022) may affect the halal-certified companies' interest in IFF. In terms of organisational characteristics, the findings indicate that top management support is a positively significant influence on the intention to adopt IFF among Malaysian halal-certified companies. This result is consistent with the study of Asiaei and Rahim (2019), Pateli *et al.* (2020), Sayginer and Ercan (2020), and Skafi *et al.* (2020) in terms of confirming the hypothesis, but this study is different from the previous studies as it has a much higher predictive power and is new in the context of IFF adoption. Top management support is the most significant predictor of adoption of IFF, as it has a higher t-value ($t = 10.944$) compared to the other factors.

Moreover, empirical findings are consistent with the notion that owner-manager knowledge is essential for the adoption of IFF. The outcome demonstrates a favourable correlation between owner-manager knowledge and the ambition of Malaysian halal-certified companies to adopt IFF. These findings are supported by Balushi *et al.* (2019), Awang *et al.* (2020) and Zaib *et al.* (2021), who found that owner-manager knowledge is important for the adoption of IFF. However, these results differ from other studies in terms of the method and measurement used in this study. For example, Balushi *et al.* (2019) conducted a non-parametric modelling of Kruskal-Wallis one-way ANOVA to test the level of awareness of SMEs' owner-managers in Muscat, Oman. With regard to environmental characteristics, competitive pressure has a substantial and positive influence on the intention to adopt IFF among halal-certified companies in Malaysia. The findings are supported by previous studies such as Usman *et al.* (2019), Owusu (2020) and Sun *et al.* (2020). The explanation for the significant impact of competitive pressure on the intention to adopt IFF may be that competitors benefit from Islamic banks' programmes. For example, CIMB Islamic offered RM100 million in financing through CIMB HalalBizReady (May, 2019); Alliance Islamic Bank offered RM400 million in financing to help SMEs in the halal sector (Business Today, 2022); and HSBC Amanah partnered with and supported the Halal Development Centre (HDC) to help grow the halal export market (The Sun Daily, 2022). As a result, halal-certified companies are being pressured by their competitors to succeed.

In contrast, customer pressure is an insignificant influence on the intention to adopt IFF among halal-certified companies in Malaysia. Previous studies such as Chen *et al.* (2019), Okyere-Kwakye & Nor (2021) and Abbasi *et al.* (2022) supported the results of this study. The result proves that halal-certified companies do not feel pressured by their customers to adopt IFF. One of the plausible reasons could be that IFF has not been used as a benchmark for financial activities of halal-certified companies. According to the Manual Prosedur Pensijilan Halal Malaysia (Malaysia Halal Certification Procedure Manual) (third revision), a company is not required to adopt IFF for its activities.

Based on the role of moderator of owner-manager knowledge as a moderator variable, the findings of the interaction test show that the relationship between complexity and the intention to adopt IFF is negatively and considerably moderated by owner-manager knowledge. It is important to note that halal-certified companies whose owner-managers have knowledge of IFF believe that IFF is a complex process that is difficult to integrate into current workflows, that it is complicated to learn, and that it is frustrating to use IFF. However, owner-manager knowledge

could play a key role in increasing the value of IFF. Therefore, owner-manager knowledge moderates the relationship between complexity and the intention to adopt IFF.

In addition, owner-manager knowledge also moderates the negative and substantial correlation between top management support and intention to adopt IFF in halal-certified companies in Malaysia. The explanation for this result is that the owner-manager with high knowledge of IFF is better able to adopt IFF. This exciting result could be due to the fact that owner-managers with high knowledge about IFF do not need support from top management to adopt IFF. According to Elbeltagi *et al.* (2013), the owner-manager has the power to make long-term planning decisions and is able to participate in innovative decisions. Therefore, owner-manager knowledge moderates the relationship between top management support and the intention to adopt IFF.

CONCLUSION

The purpose of this study was to investigate the IOE characteristics and the intention to adopt IFF in Malaysian halal-certified companies. The TOE framework and DOI theory served as the foundation of this investigation. This study also aimed to investigate the moderating impact of owner-manager knowledge on the relationship between IOE characteristics and intention to adopt IFF.

The findings of this study empirically supported six hypotheses, including four direct relationships and two indirect relationships, with owner-manager knowledge as a moderator. Relative advantage, top management support, owner-manager knowledge and competitive pressure were found to be positively significant on the intention to adopt IFF. While, owner-manager knowledge moderated the relationship between complexity and top management support on the intention to adopt IFF. As such, the research model explained 57.8 per cent and the interaction model explained 60.1 per cent in the study.

This study is important for advancing current knowledge in theory and practice. In terms of theoretical contributions, this study adds value to the existing research on the adoption of IFF by investigating the organisational level. The role of owner-manager knowledge as a moderator can contribute to the advancement of literature on the adoption of innovation within organisations. In terms of practical implications, this study offers valuable insights for Islamic financial institutions to customise marketing strategies and tailor product development to better meet the needs of halal-certified companies. For halal-certified companies, the findings enable owner-managers to develop strategic positions and sustain their competitiveness in the market.

The study has two major limitations, and these limitations offer recommendations for future studies in this field. Firstly, the data analysis is based on cross-sectional design, which cannot provide empirical evidence to support causal inferences. Secondly, majority of the respondents are from the food/beverage/food supplement sector. Therefore, future studies should apply the longitudinal approach to investigate IFF adoption in another halal sector. Furthermore, since there are many programmes initiated by Islamic banks to support the halal industry, this study suggests that future studies consider the role of Islamic banks as a moderating factor.

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DECLARATION

Credit Authorship Contribution Statement

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- Md. Aminul Islam: Supervision; Interpretation of output; Review and editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interest or personal relationships that could have influenced the research work.

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Data Availability

Data will be made available on request.

Appendix

None