

Wijaya, Liliana Inggrit et al.

Article

The impact of IT capability and organizational learning on halal food SMEs' performance

Cogent Business & Management

Provided in Cooperation with:

Taylor & Francis Group

Suggested Citation: Wijaya, Liliana Inggrit et al. (2023) : The impact of IT capability and organizational learning on halal food SMEs' performance, Cogent Business & Management, ISSN 2331-1975, Taylor & Francis, Abingdon, Vol. 10, Iss. 3, pp. 1-14,
<https://doi.org/10.1080/23311975.2023.2264562>

This Version is available at:

<https://hdl.handle.net/10419/294666>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.



<https://creativecommons.org/licenses/by/4.0/>

The impact of IT capability and organizational learning on halal food SMEs' performance

Liliana Inggrit Wijaya, Bobby Ardiansyahmiraja, Adhika Putra Wicaksono, Andri Rianawati, Faizal Susilo Hadi, Marwin Antonius Rejeki Silalahi, Muhammad Izharuddin & Zunairoh

To cite this article: Liliana Inggrit Wijaya, Bobby Ardiansyahmiraja, Adhika Putra Wicaksono, Andri Rianawati, Faizal Susilo Hadi, Marwin Antonius Rejeki Silalahi, Muhammad Izharuddin & Zunairoh (2023) The impact of IT capability and organizational learning on halal food SMEs' performance, Cogent Business & Management, 10:3, 2264562, DOI: [10.1080/23311975.2023.2264562](https://doi.org/10.1080/23311975.2023.2264562)

To link to this article: <https://doi.org/10.1080/23311975.2023.2264562>



© 2023 The Author(s). Published by Informa UK Limited, trading as Taylor & Francis Group.



Published online: 06 Oct 2023.



Submit your article to this journal [↗](#)



Article views: 853



View related articles [↗](#)



View Crossmark data [↗](#)



Received: 03 April 2023
Accepted: 15 September 2023

*Corresponding author: Bobby Ardiansyahmiraja, Department of Management, Faculty of Business and Economics, Universitas Surabaya, Surabaya, Indonesia
E-mail: bobbymiraja@staff.ubaya.ac.id

Reviewing editor:
Job Rodrigo-Alarcón, Business Administration, University of Castilla-La Mancha: Universidad de Castilla-La Mancha, Spain

Additional information is available at the end of the article

MANAGEMENT | RESEARCH ARTICLE

The impact of IT capability and organizational learning on halal food SMEs' performance

Liliana Inggrit Wijaya¹, Bobby Ardiansyahmiraja^{1*}, Adhika Putra Wicaksono¹, Andri Rianawati¹, Faizal Susilo Hadi¹, Marwin Antonius Rejeki Silalahi¹ and Muhammad Izharuddin Zunairoh¹

Abstract: Halal food is an especially important sector in many developing countries. Many of the halal food in those countries are supplied by SMEs. Although the importance of this sector is certain, studies investigating the organizational aspect of halal food SMEs are still limited. The present study tries to expand the knowledge of organizational behaviour aspects in halal food SMEs since it is crucial in creating the sustainability of halal food SMEs. The present study uses partial least square structural equation modelling (PLS-SEM). The questions used to measure the variables used in this study were developed by adopting previous studies' instruments. This research discovered the importance of IT capability and organizational learning on organizational performance. IT capability, Knowledge transfer effectiveness, and Absorptive capacity are found to have a significant relationship with organizational performance measured by Balanced Scorecard (BSC). Furthermore, the effect of IT capability and Knowledge transfer effectiveness are not only direct but also mediated by Absorptive capacity. From the findings, there are key implications. First, by utilizing digital capabilities in their business processes, SMEs can more easily obtain new knowledge. Second, when SMEs learn new things from digitalization, they can associate their knowledge with new information. Third, the ability to use technology helps human resources in SMEs to increase knowledge, thus encouraging SMEs to create innovation and business competitiveness. This ultimately has an impact on increasing sales and cost-effectiveness.

Subjects: Management of Technology; Small Business Management; Human Resource Management; Food and Beverage Management;

Keywords: organizational learning; IT capability; knowledge transfer effectiveness; absorptive capacity; organizational performance; Smes

1. Introduction

The interest towards the Muslim market is currently increasing (Henderson, 2016). The Muslim market commercial interest impacted all of the sectors inside the boundaries of the "halal industry", which consists of halal finance, tourism, pharmaceuticals, fashion, cosmetics, and food (Ahyar & Wibowo, 2019; Elasrag, 0000). Alongside the overall growth and interest in the halal industry, each halal sector has also shown positive growth and academic interest. Studies such as those done by (Rasul, 2019) revealed how academic interest is expanding in terms of the volume



of publications related to halal tourism and the many dimensions investigated to enrich the current body of knowledge of halal tourism. Not just in tourism, similar studies were conducted to achieve the same goal in other halal sectors, such as halal finance and halal food (Abedifar et al., 2015; Secinaro & Calandra, 2020).

The present study is particularly interested in the food sector. The halal food sector has a special place in the halal industry context since it represents the largest pie of the whole halal industry (\$1,267 billion) and how, when compared to halal tourism or fashion, halal food affects most significantly the daily life of a Muslim (Alzeer et al., 2018; DinarStandard, 2022). This sector is also reported as one of the fastest-growing industries globally (Iranmanesh et al., 2021). In predominantly Muslim countries, the halal food sector has a relatively important role since the sector provides most of the food in those countries. In Indonesia, for example, holding the title of the biggest Muslim-populated country, the availability of the halal food sector is a necessity for the 268 million Muslims living and in need of daily halal food (Muryanto et al., 2021; Sumarlia et al., 2023).

In countries with a high demand for daily halal food, such as Indonesia, Pakistan, India, Bangladesh, and Nigeria, the emergence of halal food SMEs is critical to their food security. SMEs support the provision of halal food by serving food that is allowed by Islamic principles or deemed “halal”. Halal itself refers to anything that is allowed in Islam. In a more commercialized context, halal foods are defined as any product or service authorized for use or consumption under Islamic teachings (Battour & Ismail, 2016). Previous studies reflect the importance of SMEs as a provider of halal food in countries with a big Muslim populations (Bashir, 2019; Deku et al., 2022; Mohani et al., 2013; Muhammad & Bin Ngah, 2020). These studies focus on sub-topics under the umbrella of halal food SMEs: customer behaviour, marketing, and certifications. However, the aforementioned studies focused on one aspect of the halal food and SMEs: the product or market. The present study is trying to complete the picture by focusing on another aspect of halal food and SMEs: the organizational aspect or the SMEs.

Although limited, there are previous studies that has a similar aim to the present study, Soltanian et al. (2016) tried to explore the variables influencing halalpreneurial propensity among SME entrepreneurs, Othman et al. (2019) found a significant positive correlation between level of halal practices and the performance of halal food industry in Malaysia, binti Nor et al. (2021) also discovered that important technological factors is integral to a halal food SME's performance and competitiveness, Deku et al. (2022) investigates the relevance of Entrepreneurial marketing dimension (EMD) as an alternative marketing approach and its influence towards Ghanaian halal food and beverage SMEs performance (Binti nor et al., 2022; Deku et al., 2022; Othman et al., 2019; Soltanian et al., 2016). Previous studies have tried to explore the significance of organizational aspects in halal SMEs, however, emphasis on how technological capabilities interrelationship with organizational learning has yet to be explored. This study thus looks to expand the current understanding of technology and organizational behaviour aspects in halal food SMEs since it is crucial in creating the sustainability of halal food SMEs. This objective is in line with the recommendation from a comprehensive literature review of halal food done by Secinaro and Calandra, which recommends future halal food research focus the sustainability, innovation, and technology (Secinaro & Calandra, 2020). Considering the criticality of halal food SMEs, the limited studies on the organizational aspect of halal food SMEs, and the need for studies focusing on sustainability, innovation, and technology, the present study thus seeks to understand what affects SMEs to improve measured by organizational performance. A theoretical framework from Iyengar et al. was used to answer the present study's research purpose (Iyengar et al., 2015).

2. Literature reviews

2.1. Halal food SMEs

The word halal is an Arabic word that translates to “lawful” or “allowed”; when something is “halal”, it means Muslims can do/consume that particular thing. An example of activities that are

unlawful or “haram”, which is the opposite word for halal, is gambling. As opposed to gambling, activities that are outside of the haram criterion, such as working out and studying, is considered halal. Both of these examples follow a set of rules which is known as the sharia law (Iranmanesh et al., 2021; Mukhtar & Butt, 2012). Although halal covers every activity/thing, it is especially important for foods, or more broadly, consumable products. Most of the halal certification bodies, the institution that certifies whether a product is halal, such as the Indonesian organizing body of halal product assurance (BPJPH), covers a specific range of things that can be halal certified; this includes foods, beverages, medicine, cosmetics, and food-related services (Penyelenggara Jaminan Produk Halal, 0000). The Indonesian BPJPH acknowledges the importance of halal food produced by SMEs by introducing free halal certification services for SMEs (Pamuji, 2021). As noted by (Deku et al., 2022), the definition of Halal SMEs is specific to the country’s economic condition. In Ghana, a business lies under the category of SME when its assets are less than 10 million Ghanaian Cedi and the number of employees is not more than 9 (Deku et al., 2022), while in Indonesia, SME is defined as businesses with annual sales that are less than IDR 500 billion (Presiden Republik Indonesia, 2021). As noted by a previous study by Hendijani Fard Seyyed Amiri (2018), most of the research trying to understand the halal food market was done in Malaysia (Hendijani Fard & Seyyed Amiri, 2018). Since SMEs can differ by definition and Muslim sharia laws can also vary from country to country (reflected by how each country has its own halal authority), understanding SMEs from a different point of view and context, such as done by the present study, can be especially insightful.

2.2. IT capability and SMEs performance

Companies allocate resources to their IT in the hope that it will provide financial returns to the company (Santhanam & Hartono, 2003). A company that can combine IT-related resources to create IT capability will get a more competitive advantage (Awamleh & Ertugan, 2021; Bharadwaj, 2000). In addition, IT capability also allows companies to improve organizational learning through the capture, representation, storage, retrieval, and communication related to information and knowledge that exists both inside and outside the company (Robey et al., 2000). There are three reasons why IT can affect organizational learning (Tippins & Sohi, 2003). First, IT speeds up the process of obtaining and distributing information and knowledge throughout the company. Second, IT allows an individual’s interpretation of information to be developed. Third, IT serves as a mechanism for storing and retrieving information and knowledge within the organization. Therefore, in this study IT capability was conceptualized as an organizational learning mechanism where IT capability allows companies to collect, store, and disseminate knowledge and information.

Previous literature has investigated the relationship between IT capability, organizational learning, and performance. Organizational performance can be measured by using several approaches. Some literature associates *IT capability* with organizational performance measured only through *financial* performance (Bharadwaj, 2000; Mukhtar & Butt, 2012), while others compare the organization’s performance with competitors (Akter et al., 2016; Iyengar et al., 2015; Popović et al., 2018; Santhanam & Hartono, 2003). There are still few studies that measure *organizational* performance using the Balanced Scorecard (BSC) to measure SMEs performance (Alani et al., 2018; Tuan, 2020). Using the BSC model, companies can identify advantages and disadvantages which can improve their business processes (Dudic et al., 2020). Measuring *organizational* performance in halal food SMEs can be interesting. This is because although SMEs do not have resources as sufficient as large companies, SMEs are easier to communicate with *customers* and have an informal (unstructured) decision-making process which can be one of the advantages. Unfortunately, not many SMEs use BSC to measure *organisational* performance (Dudic et al., 2020). Even though by using BSC, SMEs can find out the causes of the change in performance not only seen from the *financial report* but also from the customer side, internal business processes, and learning and growth.

Some literature has also examined the relationship between IT capability, organizational learning, and performance in different research contexts. Previous studies associate *IT capability* with *organizational learning* in the context of *franchise* companies (the relationship between *franchisees* and *franchisors*) (Hua et al., 2020; Iyengar et al., 2015); some compare company size as a control variable and use SMEs as research objects (Hooi & Ngui, 2014; Popović et al., 2018; Tian et al., 2020).

Although there is no debate that IT capability is the core of a company's performance, the relationship between *IT capability* and *organizational performance* is still inconclusive (Nwankpa & Roumani, 2016). A holistic and systematic understanding of *IT capability* in *organizational learning* remains elusive (Bharadwaj et al., 2013). Therefore, this study seeks to affirm the understanding of the relationship between *IT capability* and *organizational performance* moderated by *organizational learning* variables.

2.3. Hypothesis development

An IT system allows a company to acquire, store, and transfer knowledge (Alavi & Leidner, 2001; Iyengar et al., 2015; Markus, 2001). A previous study by Merminod and Rowe (2012) has explored the relationship between a company's IT capability and knowledge transfer effectiveness, and the study suggested that the use of IT, data transparency, and networking can increase knowledge transfer effectiveness (Merminod & Rowe, 2012). The use of IT in the form of a supply chain e-business interface positively impacts the exchange of information in a company (Malhotra et al., 2005). In a smaller company scale, such as halal food SMEs, the capability of using IT can also be more important since it facilitates most of the basic operational activities such as communication and transaction recording; thus the first hypothesis is proposed:

H1: *IT capability has a positive influence on knowledge transfer effectiveness.*

A previous study done by Pavlou (2006) has investigated the use of information technology in the context of new product creation and their effect on absorption efficiency and found positive relationships (Pavlou & El Sawy, 2006). Another study done by Malhotra et al., (2005) has also examined how information systems in the context of the supply chain can impact absorption efficiency (Malhotra et al., 2005). The use of IT is able to facilitate the three main function which makes up the potential absorptive capacity of an organization, namely the ability to identify, assimilate, and apply information. In the context of halal food SMEs, information can be absorbed more effectively when there is a capability of using IT. The capability of using IT in halal food SMEs could facilitate the three aspects of absorptive capacity through the use of specific IT tools such as productivity tools and communication tools (Malhotra et al., 2005; Pavlou & El Sawy, 2006). Thus, the next hypothesis is proposed:

H2: *IT capability has a positive influence on absorptive capacity.*

A previous study has stated that IT capability has a positive effect on organizational performance (Bharadwaj, 2000; García-Sánchez et al., 2018; Mithas et al., 2011; Nwankpa & Roumani, 2016; Tan & Teo, 2000). As widely recognized, IT plays an important role in improving business and company performance (Akter et al., 2016). The use of IT in companies can increase productivity in both tangible (e.g. with technology, the company can reduce the number of paper reports produced) and intangible ways (e.g. company reputation and more effective information flow) (Wang et al., 2018).

IT capability allows companies to enhance their business processes and perform more effectively and efficiently (Tan & Teo, 2000). According to a previous study, companies with better IT capability have higher operating performance in terms of profit ratio and operating costs (Bharadwaj, 2000; Santhanam & Hartono, 2003). Additionally, prior studies have shown that companies with IT capability can mobilize, disseminate, and utilize IT resources with other resources to achieve better organizational performance (Bharadwaj, 2000; Mithas et al., 2011; Nwankpa & Roumani, 2016; Tan & Teo, 2000). Thus, the proposed hypothesis is:

H3: *IT capability has a positive effect on organizational performance (BSC).*

Previous research has emphasized that knowledge transfer across all units in a company is an important factor in developing absorptive capacity (Liao et al., 2007; Merminod & Rowe, 2012). Several previous studies have also stated that absorptive capacity is influenced by the effectiveness of knowledge transfer (Argote & Miron-Spektor, 2011; Cohen & Levinthal, 1990; Iyengar et al., 2015; Roberts et al., 2012; Teigland & Wasko, 2003). The absorptive capacity of the recipient of knowledge in the knowledge transfer relationship depends on the degree of similarity of the recipient of the knowledge and the source (Iyengar et al., 2015). This is because the new ideas learned will be linked to what the recipient already knows. Therefore, the effectiveness of knowledge transfer is necessary to generate the necessary associations to absorb new knowledge. Knowledge transfer effectiveness is an important driver for the development of absorptive capacity. Previous research reviewed the construction of absorptive capacity and noted that enterprise absorptive capacity depends on the transfer of knowledge across organizational boundaries (Tan & Teo, 2000). Thus, the following hypothesis is:

H4: *Knowledge transfer effectiveness has a positive influence on absorptive capacity.*

A previous study argued that absorptive capacity has an impact on performance as a mediating variable. Organizations that have good absorption capabilities will be better able to continuously increase knowledge and utilize it to react appropriately to any changes in their environment. Previous research has found that improving a team's absorption ability leads to better team outcomes (García-Sánchez et al., 2018; Lane et al., 2006; Lee et al., 2014; Malhotra et al., 2005; Pradana et al., 2020)

IT capability enables companies to improve the company's business processes and enables companies to operate effectively and efficiently (Dudic et al., 2020). This means that by utilizing IT capability, the company will be able to improve its financial performance. IT capability enables companies to create market opportunities and reinforce the differentiation of products offered to customers in an increasingly competitive business environment (Merminod & Rowe, 2012). (Nwankpa & Roumani, 2016; Tan & Teo, 2000) Companies with a greater degree of absorption capacity are able to continuously integrate new knowledge with existing knowledge, replenish knowledge, and leverage that knowledge to respond to potential customer needs (Mukhtar & Butt, 2012). Thus, the last hypothesis is proposed:

H5: *Absorptive capacity has a positive influence on organizational performance (BSC).*

According to the previous development of hypotheses, it can be presumed that absorptive capacity may have a more substantial role in the relationships between IT capability, knowledge transfer effectiveness, and organizational performance (Wu et al., 2021). IT Capability translates to

increased efficiency and effectiveness of business processes. However, performance, which has many facets, especially when measured by Balanced Scorecard dimensions, can not only be seen as an efficiency-based or an effectiveness-based construct. Organizational performance aspects other than financial or internal business process performance, which in the perspective of Balanced Scorecard are known as Organization performance toward customers and Growth and learning, are more closely tied to how an organization can identify, assimilate, and apply information—the absorption capacity.

The mediation effect of Absorptive capacity was also investigated by previous studies. In Stoffels and Leker (2018) study, Absorptive capacity was found to have a fully mediating effect of IT assets (measured partially by IT Capability) towards Firm innovation performance (Stoffels & Leker, 2018). In Al-Shami et al. (2022) study, three out of four dimensions of IT were found to be mediated by Absorptive capacity, whether it is a partial or full mediation (Al-Shami et al., 2022). Absorptive capacity also mediates the relationship between Knowledge transfer effectiveness and Organizational Performance. Previous studies have found that the relationship between Knowledge transfer effectiveness and organizational performance is not only directly, but also mediated by Absorptive capacity (Sikombe, 2021; Zhao et al., 2021).

H6: *Absorptive capacity mediate the relationship between IT Capability and organizational performance (BSC).*

H7: *Absorptive capacity mediate the relationship between Knowledge Transfer Effectiveness and organizational performance (BSC).*

The proposed hypotheses is illustrated in the conceptual model in Figure 1.

3. Methods

3.1. Respondent characteristics

In this study, the target population is SMEs providing halal food in Indonesia. There are 65 million MSMEs in Indonesia (Prakoso, 2021) and only 1% have halal certification. Therefore, the estimated population of MSMEs providing halal food in Indonesia is 650,000. Using sample size calculators developed by (Soper, 0000) with the theoretical foundation of (Cohen, 1988; Westland, 2010) with 0.3, 0.8, 8, 34, and 0.05 used as the parameters for anticipated effect size, desired statistical power level, number of latent variables, number of observed variable, probability level respectively, the minimum required sample is 177. After the questionnaire was distributed, the number of respondents who took part in the survey was 402 people. All the respondents are owners or managers of an SME in the halal food sector spread throughout Indonesia. The demographic and relevant information of the respondent is shown in Table 1.

3.2. Measures and instrument development

The present study uses partial least square structural equation modelling (PLS-SEM), a multivariate analysis technique that is used to test the relationship between variables in a model. PLS-SEM is able to overcome the limitations of previous techniques, such as regression analysis, path analysis, and confirmatory factor analysis. Analysis using PLS-SEM requires two stages of evaluation: model evaluation and relationship evaluation. At the model evaluation stage, the results of the inner model and outer model will be used to determine whether the hypothesized model's instruments or indicators are representative of their constructs and have good predictive capabilities (Hair et al., 2021) This research will run an additional set of tests to improve the robustness of the PLS-

Figure 1. Conceptual model.

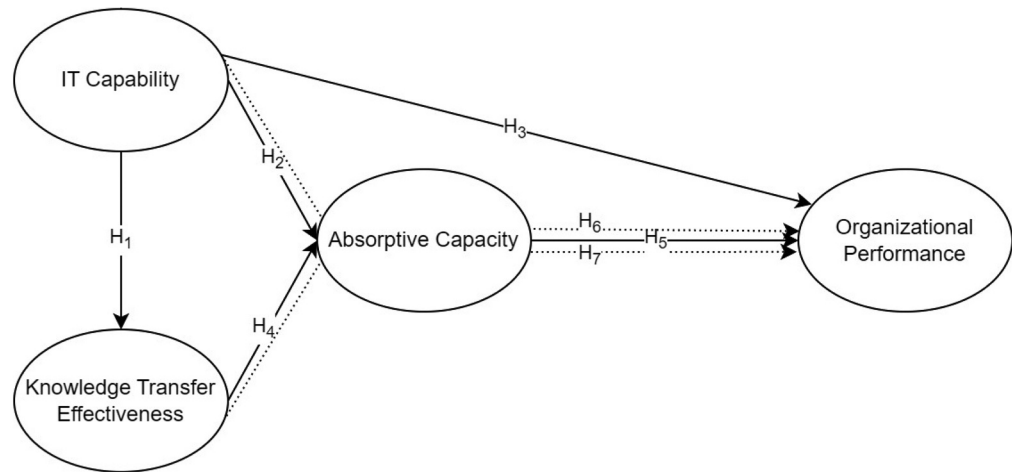


Table 1. Respondent characteristic

		Percentage	Total
Location	Sumatra	22.14%	89
	Java	58.71%	236
	Borneo	5.97%	24
	Sulawesi and Maluku Islands	8.21%	33
	Bali and Nusa Tenggara	3.98%	16
	Papua	1.00%	4
IT Usage	Online Food Delivery Services (OFDS)	45.27%	182
	E-wallet	72.89%	293
	Social Media	98.51%	396
Founding of the SME	<1 year	26.37%	106
	1–3 year	40.55%	163
	>3 year	33.08%	133
Number of Employee	<10	93.78%	377
	10–20	4.48%	18
	20–50	1.49%	6
	>50	0.25%	1
Capital	< IDR 50 million	66.67%	268
	IDR 50–500 milion	28.61%	115
	IDR 500 juta – 10 billion	4.73%	19

SEM method, especially to ascertain in terms of non-linear effects, endogeneity, and unobserved heterogeneity.

The questions used to measure the variables used in this study were developed by adopting previous studies' instruments. The measurements of IT Capability adopt the set of questions developed by (Bi et al., 2019). Organizational learning utilizes an instrument previously used by (Iyengar et al., 2015). Lastly, to measure halal food SME's performance, a BSC-based instrument was adopted from (Dudic et al., 2020). There are several steps that are carried out in the process of formulating the questionnaire to increase clarity and validity. The steps include 1. Internal FGD to perfect the contents of the questionnaire; 2. External Expert review of each question point; 3. Randomization of the order of

questions; 4. Back-translation; 5. FGD with halal SMEs and experts; and 6. Pilot test. These approaches have been used by various studies with SME objects with the aim of minimizing bias (Bagheri & Harrison, 2020; Deku et al., 2022; Fard & Amiri, 2018; Mendes & Lourenço, 2014). The questionnaire was distributed online using Google Forms between June 2022 to September 2022.

4. Results

4.1. Measurement Model

The data in this study was analyzed using SmartPLS 3. Since the SEM approach was used, there is a need to test the reliability and validity of the data. To do the necessary tests, several measures, which include loadings, composite reliability, and convergent validity *average variance extracted* or AVE, will be evaluated (Hair et al., 2021)

According to (Risher & Hair, 2017) the *outer loading* indicator should be greater than 0.6. The lowest *loading* value in the model is 0.640, as can be seen in Table 2. The CR indicator, which must be greater than 0.70, is used to assess the reliability of the model (Hair et al., 2021) Table 2 shows that all constructs/variables have CR values greater than 0.70, indicating that constructs can be considered reliable. Next, the AVE value is used to assess convergent validity. A minimum AVE of 0.50 can be considered appropriate as it implies that the construct accounts for 50% of the variance (Hair et al., 2021) Table 2 shows that AVE is greater than 0.50 for all constructs, indicating that AVE for all constructs is acceptable for subsequent analysis.

Furthermore, to assess the discriminant validity, the the heterotrait-monotrait ratio of correlations (HTMT) test was conducted. Table 3 shows that discriminant validity is achieved since the HTMT value is below 0.9 among all the variables.

4.2. Structural Model

Since the measurement model was showing adequate results, an evaluation of the structural model can then be conducted. Figure 2 and Table 4 show the result of the structural model.

From the result, IT capability was found to have a positive and significant influence on knowledge transfer effectiveness ($\beta = 0.724$; $p < 0.001$). The magnitude of the influence of IT Capability on knowledge transfer effectiveness is relatively strong, giving support to the first hypothesis. IT capability is also found to have a significant influence on absorptive capacity ($\beta = 0.421$; $p < 0.001$), and H2 is declared significantly supported. Furthermore, a positive and significant effect was also found between IT capability and organizational performance ($\beta = 0.485$; $p < 0.001$), supporting the third hypothesis. Knowledge transfer effectiveness was found to have a positive and significant effect on absorptive capacity ($\beta = 0.329$; $p < 0.001$), which means that H4 supported. Following H4, it was discovered that absorptive capacity has a positive influence on organizational performance ($\beta = 0.457$; $p < 0.001$). Lastly, the two hypotheses related to the mediating effect of AC on the relationship of IC \rightarrow Performance and KTE \rightarrow Performance also show positive and significant effect ($\beta = 0.192$; $p < 0.001$ and $\beta = 0.151$; $p < 0.001$), supporting H6 and H7.

5. Discussion

The acceptance of the first hypothesis was supported by the results of previous studies (Alavi & Leidner, 2001; Iyengar et al., 2015; Markus, 2001). IT capabilities of SMEs have an influence on the ability of SMEs to have higher effectiveness in terms of disseminating and transferring new knowledge. By utilizing IT in their business processes, SMEs can get new information and knowledge. The SMEs are then enabled to transfer the new information or knowledge to all parts of the organization (SMEs). The support for the second hypothesis is also in line with previous research, such as the study done by (Pavlou & El Sawy, 2006) that investigated the use of information technology in terms of the creation of new products enhanced by absorption capacity. The result of the present study provides evidence that the IT capabilities of SMEs have a significant influence on their absorption capacity. By having higher IT capabilities, SMEs can improve their ability to acquire, exploit, assimilate and transform knowledge into real action

Table 2. Reliability and validity tests result

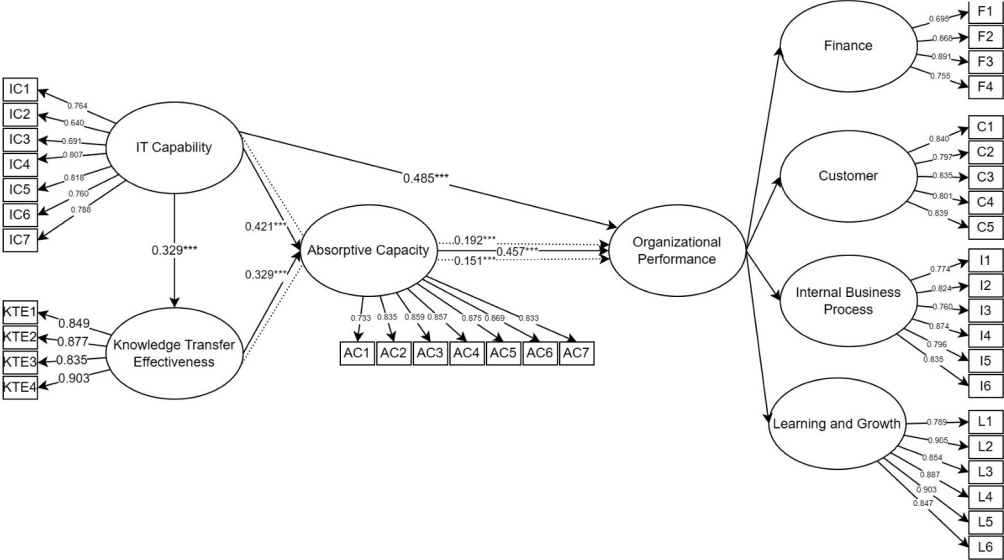
Constructs	Items	Loadings	Composite Reliability (CR)	Average Variance Extracted (AVE)
IC	IC1	0.764	0.902	0.570
	IC2	0.640		
	IC3	0.691		
	IC5	0.807		
	IC6	0.818		
	IC7	0.760		
KTE	KTE1	0.788	0.923	0.751
	KTE2	0.849		
	KTE3	0.877		
	KTE4	0.835		
AC	AC1	0.903	0.943	0.703
	AC2	0.733		
	AC3	0.835		
	AC4	0.859		
	AC5	0.857		
	AC6	0.875		
	AC7	0.869		
F	F1	0.833	0.880	0.650
	F2	0.695		
	F3	0.868		
	F4	0.891		
C	C1	0.755	0.913	0.677
	C2	0.797		
	C3	0.835		
	C4	0.801		
	C5	0.839		
I	I1	0.774	0.920	0.658
	I2	0.774		
	I3	0.824		
	I4	0.760		
	I5	0.874		
	I6	0.796		
L	L1	0.835	0.947	0.749
	L2	0.789		
	L3	0.905		
	L4	0.854		
	L5	0.887		
	L6	0.903		

(Iyengar et al., 2015). In support of the third hypothesis, IT capability increases effectiveness and efficiency in SME activities. The capability of IT in an SME facilitates the coordination of operational activities from production to customer relationships. IT capability increases the speed of capturing information and consumer needs so that SMEs can respond well (Bai et al., 2022) IT capability helps HR increase knowledge, encouraging SMEs to innovate through the exploration and exploitation of

Table 3. Discriminant validity test result

	AC	IC	KTE
AC			
IC	0.725		
KTE	0.698	0.818	
Performance	0.825	0.880	0.757

Figure 2. Structural model result.



information. By doing this, SMEs will have an increased competitive advantage (Wu & Ding, 2020). The effectiveness and efficiency created through IT capability within the organization will ultimately impact increasing sales, reducing costs, and improving the overall performance of SMEs. The fourth hypothesis is in line with findings in previous studies (Iyengar et al., 2015; Liao et al., 2007). The result of the fifth hypothesis is in line with research (Iyengar et al., 2015) *absorptive capacity* has a positive influence on *organizational performance* (Lee et al., 2014)(Iyengar et al., 2015). This is because the absorption of knowledge from changing situation and learnings affects an organisation’s performance speed. An SME that absorb new knowledge well such as emerging business trends or new business technology, will inevitably gained a competitive leverage compared to their competitors.

Table 4. Structural model result

Path	β-values,	t-values,	Bias Corrected Lower and Upper Limits		F2
			2.5%	97.5%	
IC→KTE	0.329	21.957	0.652	0.777	1.101
IC→AC	0.421	7.333	0.301	0.523	0.164
IC→Performance	0.485	11.734	0.403	0.554	0.504
KTE→AC	0.329	4.865	0.182	0.438	0.100
AC→Performance	0.457	11.068	0.383	0.534	0.448
IC→AC→Performance	0.192	7.596	0.145	0.241	
IC→KTE→Performance	0.151	4.297	0.090	0.231	

The relationship between knowledge transfer effectiveness and absorption capacity shows that there is an overlap between the knowledge obtained by halal food SMEs when utilizing IT and these SMEs' ability to absorb new knowledge. When an SME learns new things from the use of IT, the SME can then associate the knowledge that has been learned with new information that was previously meaningless. An SME that previously did not understand and see the positive values of financial records may later absorb, manage, and utilize knowledge of financial records. This can happen when the SME has previously interacted with a particular technology (e.g. digital wallets) and then associates the learning gained from using that technology with a new concept (e.g. financial recording). This means that when SMEs can transfer knowledge well, the knowledge absorption stage will also be good, which is aligned to the sixth and seven hypothesis.

6. Conclusion

Technology has become very commonly used in business. However, not all SMEs are able to utilize technology optimally. This research discovered the importance of IT capability and organizational knowledge, which act as mediators in predicting SMEs' performance. First, SMEs can more easily obtain new knowledge by utilizing digital capabilities in their business processes. Second, when SMEs learn new things from digitalization, they can associate their knowledge with new information. Third, the ability to use technology helps human resources in SMEs to increase knowledge, thus encouraging SMEs to create innovation and business competitiveness. This ultimately has an impact on increasing sales and cost-effectiveness. The effectiveness of information absorption and management is strongly influenced by the organization's learning ability to utilize IT by acquiring new knowledge that is absorbed internally by the organization to be commercially implemented. Governments need to increase support for SMEs, especially in the creation of digital SME governance across many aspects, such as access to capital, the institutionalization of SMEs, HR training, and business processes digitalization. We recommend increasing the SME digitalization program by strengthening the ability of SMEs to create and process their knowledge.

6.1. Limitation and future research

This study has several limitations, firstly the respondents technology are dominated by uses of social media, e-wallet, and OFDS, a more advanced business technology have not been used by SMEs in Indonesia. Secondly, studies using the specific variables in this study applied to the context of SMEs is limited, making comparison of findings not possible. The present research suggests that future studies should further examine the role of technology in improving organizational performance through various mediators, such as the culture of innovation and leadership. In addition, future studies should investigate the role of technology and organizational knowledge in SMEs across various sectors other than halal food, such as retail and fashion.

Funding

This work is part of the research entitled "The Effect of IT Capability Through Organizational Learning Processes on the Performance of Halal Food SME in Indonesia during the Post COVID-19 Economic Recovery Period," funded by Research Grant Bank Indonesia 2022 with grant number 24/4/PKS/BINS/2022. The conclusions, opinions, and views expressed in this paper are the authors' sole responsibility and do not necessarily reflect the official views of Bank Indonesia

Author details

Liliana Inggrit Wijaya¹
Bobby Ardiansyahmiraja¹
E-mail: bobbymiraja@staff.ubaya.ac.id
ORCID ID: <http://orcid.org/0000-0002-2705-3888>
Adhika Putra Wicaksono¹
Andri Rianawati¹
Faizal Susilo Hadi¹
Marwin Antonius Rejeki Silalahi¹
Muhammad Izharuddin¹

¹ Department of Management, Faculty of Business and Economics, Universitas Surabaya, Surabaya, Indonesia.

Disclosure statement

No potential conflict of interest was reported by the author(s).

Citation information

Cite this article as: The impact of IT capability and organizational learning on halal food SMEs' performance, Liliana Inggrit Wijaya, Bobby Ardiansyahmiraja, Adhika Putra Wicaksono, Andri Rianawati, Faizal Susilo Hadi, Marwin Antonius Rejeki Silalahi & Muhammad Izharuddin, *Cogent Business & Management* (2023), 10: 2264562.

References

- Abedifar, P., Ebrahim, S. M., Molyneux, P., & Tarazi, A. (2015). Islamic banking and finance: Recent empirical literature and directions for future research. *Journal of Economic Surveys*, 29(4), 637–670. <https://doi.org/10.1111/joes.12113>
- Ahyar, M. K., & Wibowo, M. Y. P. (2019). Halal industry and Islamic banking: A study of halal ecosystem regulation in Indonesia. *Journal of Finance and Islamic Banking*, 2(2), 165–182. <https://doi.org/10.22515/jfib.v2i2.1929>

- Akter, S., Wamba, S. F., Gunasekaran, A., Dubey, R., & Childe, S. J. (2016). How to improve firm performance using big data analytics capability and business strategy alignment? *International Journal of Production Economics*, 182, 113–131. <https://doi.org/10.1016/j.jpe.2016.08.018>
- Alani, F. S., Khan, M. F. R., & Manuel, D. F. (2018). University performance evaluation and strategic mapping using balanced scorecard (BSC): Case study–Sohar University, Oman. *International Journal of Educational Management*, 32(4), 689–700. <https://doi.org/10.1108/IJEM-05-2017-0107>
- Alavi, M., & Leidner, D. E. (2001). Knowledge management and knowledge management systems: Conceptual foundations and research issues. *MIS Quarterly*, 25(1), 107–136. <https://doi.org/10.2307/3250961>
- Al-Shami, S., Bakri, M. H., Adil, H., & Mamun, A. A. (2022). Information technology competencies as antecedents for absorptive capacity and innovation capabilities in a high-tech industry. *Foresight*, 24(5), 565–585. <https://doi.org/10.1108/FS-12-2020-0129>
- Alzeer, J., Rieder, U., & Abou Hadeed, K. (2018). Rational and practical aspects of halal and Tayyib in the context of food safety. *Trends in Food Science & Technology*, 71, 264–267. <https://doi.org/10.1016/j.tifs.2017.10.020>
- Argote, L., & Miron-Spektor, E. (2011). Organizational learning: From experience to knowledge. *Organization Science*, 22(5), 1123–1137. <https://doi.org/10.1287/orsc.1100.0621>
- Awamleh, F., & Ertugan, A. (2021). The relationship between information technology capabilities, organizational intelligence, and competitive advantage. *SAGE Open*, 11(2), 21582440211015201. <https://doi.org/10.1177/21582440211015201>
- Bagheri, A., & Harrison, C. (2020). Entrepreneurial leadership measurement: A multi-dimensional construct. *Journal of Small Business and Enterprise Development*, 27(4), 659–679. <https://doi.org/10.1108/JSBED-01-2019-0027>
- Bai, B., Um, K.-H., & Lee, H. (2022). The strategic role of firm agility in the relationship between IT capability and firm performance under the COVID-19 outbreak. *Journal of Business & Industrial Marketing*, 38(5), 1041–1054. <https://doi.org/10.1108/JBIM-08-2021-0406>
- Bashir, A. M. (2019). Effect of halal awareness, halal logo and attitude on foreign consumers' purchase intention. *British Food Journal*, 121(9), 1998–2015. <https://doi.org/10.1108/BFJ-01-2019-0011>
- Battour, M., & Ismail, M. N. (2016). Halal tourism: Concepts, practises, challenges and future. *Tourism Management Perspectives*, 19, 150–154. <https://doi.org/10.1016/j.tmp.2015.12.008>
- Bharadwaj, A. S. (2000). A resource-based perspective on information technology capability and firm performance: An empirical investigation. *MIS Quarterly*, 24(1), 169–196. <https://doi.org/10.2307/3250983>
- Bharadwaj, A., El Sawy, O. A., Pavlou, P. A., & Venkatraman, N. V. (2013). Digital business strategy: Toward a next generation of insights. *MIS Quarterly*, 37(2), 471–482. <https://doi.org/10.25300/MISQ/2013/37:2:3>
- Bi, R., Davison, R., & Smyrniotis, K. (2019). The role of top management participation and IT capability in developing SMEs' competitive process capabilities. *Journal of Small Business Management*, 57(3), 1008–1026. <https://doi.org/10.1111/jsbm.12380>
- Binti nor, N. F., Bin Hashom, H., Bin Subri, N. I., & Bin Sabri, M. A. Z. (2022). Adaption of technological implementation towards SMEs' perlis performance in halal industry. *Proceedings of the International Conference on Tropical Agrifood, Feed and Fuel (ICTAFF 2021)*, Samarinda (pp. 139–143). Atlantis Press.
- Cohen, J. (1988). *Statistical Power Analysis for the Behavioral Sciences* (2nd ed.). L. Erlbaum Associates.
- Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative Science Quarterly*, 35(1), 128–152. <https://doi.org/10.2307/2393553>
- Deku, W. A., Wang, J., & Das, N. (2022). Innovations in entrepreneurial marketing dimensions: Evidence of halal food SMEs in Ghana. *Journal of Islamic Marketing*, 14(3), 680–713. <https://doi.org/10.1108/JIMA-03-2021-0098>
- DinarStandard. *State of the global Islamic economy report 2022*; 2022.
- Dudic, Z., Dudic, B., Gregus, M., Novackova, D., & Djakovic, I. (2020). The innovativeness and usage of the balanced scorecard model in SMEs. *Sustainability*, 12(8), 3221. <https://doi.org/10.3390/su12083221>
- Elasrag, H. Halal industry: Key challenges and opportunities. *SSRN Electronic Journal*, 2016. <https://doi.org/10.2139/ssrn.2735417>
- Fard, M. H., & Amiri, N. S. (2018). The effect of entrepreneurial marketing on halal food SMEs performance. *Journal of Islamic Marketing*, 9(3), 598–620. <https://doi.org/10.1108/JIMA-12-2016-0097>
- García-Sánchez, E., García-Morales, V. J., & Martín-Rojas, R. (2018). Influence of technological assets on organizational performance through absorptive capacity, organizational innovation and internal labour flexibility. *Sustainability*, 10(3), 770. <https://doi.org/10.3390/su10030770>
- Hair, J. F., Jr.; Hult, G. T. M.; Ringle, C. M.; Sarstedt, M. (2021). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications. <https://doi.org/10.1007/978-3-030-80519-7>
- Henderson, J. C. (2016). Halal food, certification and halal tourism: Insights from Malaysia and Singapore. *Tourism Management Perspectives*, 19, 160–164. <https://doi.org/10.1016/j.tmp.2015.12.006>
- Hendijani Fard, M., & Seyyed Amiri, N. (2018). The effect of entrepreneurial marketing on halal food SMEs performance. *Journal of Islamic Marketing*, 9(3), 598–620. <https://doi.org/10.1108/JIMA-12-2016-0097>
- Hooi, L. W., & Ngui, K. S. (2014). Enhancing organizational performance of Malaysian SMEs: The role of HRM and organizational learning capability. *International Journal of Manpower*, 35(7), 973–995. <https://doi.org/10.1108/IJM-04-2012-005>
- Hua, N., Huang, A., Medeiros, M., & DeFranco, A. (2020). The moderating effect of operator type: The impact of information technology (IT) expenditures on hotels' operating performance. *International Journal of Contemporary Hospitality Management*, 32(8), 2519–2541. <https://doi.org/10.1108/IJCHM-09-2019-0753>
- Iranmanesh, M., Senali, M. G., Ghobakhloo, M., Nikbin, D., & Abbasi, G. A. (2021). Customer behaviour towards halal food: A systematic review and agenda for future research. *Journal of Islamic Marketing*, 13(9), 1901–1917. <https://doi.org/10.1108/JIMA-01-2021-0031>
- Iyengar, K., Sweeney, J. R., & Montealegre, R. (2015). Information technology use as a learning mechanism. *MIS Quarterly*, 39(3), 615–642. <https://doi.org/10.25300/MISQ/2015/39:3:05>
- Lane, P. J., Koka, B. R., & Pathak, S. (2006). The reification of absorptive capacity: A critical review and

- rejuvenation of the construct. *Academy of Management Review*, 31(4), 833–863. <https://doi.org/10.5465/amr.2006.22527456>
- Lee, J., Lee, H., & Park, J.-G. (2014). Exploring the impact of empowering leadership on knowledge sharing, absorptive capacity and team performance in IT service. *Information Technology & People*, 27(3), 366–386. <https://doi.org/10.1108/ITP-10-2012-0115>
- Liao, S.-H., Fei, W.-C., & Chen, C.-C. (2007). Knowledge sharing, absorptive capacity, and innovation capability: An empirical study of Taiwan's knowledge-intensive industries. *Journal of Information Science*, 33(3), 340–359. <https://doi.org/10.1177/0165551506070739>
- Malhotra, A., Gosain, S., & Sawy, O. A. E. (2005). Absorptive capacity configurations in supply chains: Gearing for partner-enabled market knowledge creation. *MIS Quarterly*, 29(1), 145–187. <https://doi.org/10.2307/25148671>
- Markus, L. M. (2001). Toward a theory of knowledge reuse: Types of knowledge reuse situations and factors in reuse success. *Journal of Management Information Systems*, 18(1), 57–93. <https://doi.org/10.1080/07421222.2001.11045671>
- Mendes, L., & Lourenço, L. (2014). Factors that hinder quality improvement programs' implementation in SME: Definition of a taxonomy. *Journal of Small Business and Enterprise Development*, 21(4), 690–715. <https://doi.org/10.1108/JSBED-03-2014-0054>
- Merminod, V., & Rowe, F. (2012). How does PLM technology support knowledge transfer and translation in new product development? Transparency and boundary spanners in an international context. *Information and Organization*, 22(4), 295–322. <https://doi.org/10.1016/j.infoandorg.2012.07.002>
- Mithas, S., Ramasubbu, N., & Sambamurthy, V. (2011). How information management capability influences firm performance. *MIS Quarterly*, 35(1), 237–256. <https://doi.org/10.2307/23043496>
- Mohani, A., Hashanah, I., Mazlina, M., & Hadri, K. (2013). Indonesian small medium enterprises (SMEs) and perceptions on halal food certification. *African Journal of Business Management*, 7(16), 1492–1500. <https://doi.org/10.5897/AJBM11.2926>
- Muhammad, T., & Bin Ngah, B. (2020). Islamic financial institutions and their impact on the development of halal SMEs in Nigeria. *Azka International Journal of Zakat & Social Finance*, 2020, 01–24. <https://doi.org/10.51377/azjaf.vol1no01.6>
- Mukhtar, A., & Butt, M. M. (2012). Intention to choose halal products: The role of religiosity. *Journal of Islamic Marketing*, 3(2), 108–120. <https://doi.org/10.1108/17590831211232519>
- Muryanto, Y. T., Kharisma, D. B., & Nugraheni, A. S. C. (2021). Prospects and challenges of Islamic FinTech in Indonesia: A legal viewpoint. *International Journal of Law and Management*, 64(2), 239–252. <https://doi.org/10.1108/IJLMA-07-2021-0162>
- Nwankpa, J. K., & Roumani, Y. (2016). IT capability and digital transformation: A firm performance perspective. *Proceedings of the 37th International Conference on Information Systems*, Dublin (pp. 1–16).
- Othman, B., Shaarani, S. M., Bahrn, A., & Naw, N. H. M. (2019). The influence of halal Practices on organizational performance among food industries (SMEs) in Malaysia. *Halal Journal*, 3, 40–60.
- Pamuji, S. (2021). Ingin Daftar Sertifikasi Halal Gratis, UMK Bisa Cek sehati.halal.go.id. *Kemenag*. <https://kemenag.go.id/nasional/ingin-daftar-sertifikasi-halal-gratis-umk-bisa-cek-sehati-halal-goid-ejmfdd>
- Pavlou, P. A., & El Sawy, O. A. (2006). From IT leveraging competence to competitive advantage in turbulent environments: The case of new product development. *Information Systems Research*, 17(3), 198–227. <https://doi.org/10.1287/isre.1060.0094>
- Penyelenggara Jaminan Produk Halal, B. Informasi Penting - Halal.go.id. Available online: <http://www.halal.go.id/infopenting> (accessed on
- Popović, A., Puklavec, B., & Oliveira, T. (2018). Justifying business intelligence systems adoption in SMEs: Impact of systems use on firm performance. *Industrial Management & Data Systems*, 119(1), 210–228. <https://doi.org/10.1108/IMDS-02-2018-0085>
- Pradana, M., Pérez-Luño, A., & Fuentes-Blasco, M. (2020). Innovation as the key to gain performance from absorptive capacity and human capital. *Technology Analysis & Strategic Management*, 32(7), 822–834. <https://doi.org/10.1080/09537325.2020.1714578>
- Prakoso, J. P. (2021). *Kemenkeu Catat Cuma 1 Persen UMKM Indonesia Punya Sertifikasi Halal*. Bisnis Indonesia.
- Presiden Republik Indonesia. PERATURAN PEMERINTAH REPUBLIK INDONESIA NOMOR 7 TAHUN 2021. 2021.
- Rasul, T. (2019). The trends, opportunities and challenges of halal tourism: A systematic literature review. *Tourism Recreation Research*, 44(4), 434–450. <https://doi.org/10.1080/02508281.2019.1599532>
- Risher, J., & Hair, J. F., Jr. (2017). The robustness of PLS across disciplines. *Academy of Business Journal*, 1, 47–55. https://www.researchgate.net/publication/332354144_The_Robustness_of_PLS_Across_Dis
- Roberts, N., Galluch, P. S., Dinger, M., & Grover, V. (2012). Absorptive capacity and information systems research: Review, synthesis, and directions for future research. *MIS Quarterly*, 36(2), 625–648. <https://doi.org/10.2307/41703470>
- Robey, D., Boudreau, M.-C., & Rose, G. M. (2000). Information technology and organizational learning: A review and assessment of research. *Accounting, Management and Information Technologies*, 10(2), 125–155. [https://doi.org/10.1016/S0959-8022\(99\)00017-X](https://doi.org/10.1016/S0959-8022(99)00017-X)
- Santhanam, R., & Hartono, E. (2003). Issues in linking information technology capability to firm performance. *MIS Quarterly*, 2003(1), 125–153. <https://doi.org/10.2307/30036521>
- Secinaro, S., & Calandra, D. (2020). Halal food: Structured literature review and research agenda. *British Food Journal*, 123(1), 225–243. <https://doi.org/10.1108/BFJ-03-2020-0234>
- Sikombe, S. (2021). Knowledge transfer in institutionalised supplier development and organisational performance: Evidence from the construction industry in Zambia. *Cogent Business & Management*, 8(1). <https://doi.org/10.1080/23311975.2021.1935184>
- Soltanian, M., Zailani, S., Iranmanesh, M., & Aziz, A. A. (2016). Motivations of SME entrepreneurs to become halalpreneurs. *Journal of Science and Technology Policy Management*, 7(2), 173–189. <https://doi.org/10.1108/JSTPM-07-2015-0023>
- Soper, D. S. A-priori sample size calculator for structural equation models [software]. Available online: <https://www.danielsoper.com/statcalc> (accessed on
- Stoffels, M., & Leker, J. (2018). The impact of IT assets on innovation performance—the mediating role of developmental culture and absorptive capacity. *International Journal of Innovation Management*, 22

- (8), 1840011. <https://doi.org/10.1142/S136391961840011X>
- Sumarlah, E., Li, T., Wang, B., Khan, S. U., & Khan, S. Z. (2023). Blockchain technology adoption in halal traceability scheme of the food supply chain: Evidence from Indonesian firms. *International Journal of Emerging Markets*. <https://doi.org/10.1108/IJOEM-05-2021-0678>
- Tan, M., & Teo, T. S. (2000). Factors influencing the adoption of Internet banking. *Journal of the Association for Information Systems*, 1(1), 1–44. <https://doi.org/10.17705/1jais.00005>
- Teigland, R., & Wasko, M. M. (2003). Integrating knowledge through information trading: Examining the relationship between boundary spanning communication and individual performance. *Decision Sciences*, 34(2), 261–286. <https://doi.org/10.1111/1540-5915.02341>
- Tian, H., Dogbe, C. S. K., Pomegbe, W. W. K., Sarsah, S. A., & Otoo, C. O. A. (2020). Organizational learning ambidexterity and openness, as determinants of SMEs' innovation performance. *European Journal of Innovation Management*. <https://doi.org/10.1108/EJIM-05-2019-0140>
- Tippins, M. J., & Sohi, R. S. (2003). IT competency and firm performance: Is organizational learning a missing link? *Strategic Management Journal*, 24(8), 745–761. <https://doi.org/10.1002/smj.337>
- Tuan, T. T. (2020). The impact of balanced scorecard on performance: The case of Vietnamese commercial banks. *The Journal of Asian Finance, Economics & Business*, 7(1), 71–79. <https://doi.org/10.13106/jafeb.2020.vol7.no1.71>
- Wang, T., Wang, Y., & McLeod, A. (2018). Do health information technology investments impact hospital financial performance and productivity? *International Journal of Accounting Information Systems*, 28, 1–13. <https://doi.org/10.1016/j.accinf.2017.12.002>
- Westland, J. C. (2010). Lower bounds on sample size in structural equation modeling. *Electronic Commerce Research and Applications*, 9(6), 476–487. <https://doi.org/10.1016/j.eierap.2010.07.003>
- Wu, S.-M., & Ding, X.-H. (2020). Unpacking the relationship between external IT capability and open innovation performance: Evidence from China. *Business Process Management Journal*, 26(7), 1789–1805. <https://doi.org/10.1108/BPMJ-06-2019-0242>
- Wu, S., Ding, X., Liu, R., & Gao, H. (2021). How does IT capability affect open innovation performance? The mediating effect of absorptive capacity. *European Journal of Innovation Management*, 24(1), 43–65. <https://doi.org/10.1108/EJIM-02-2019-0043>
- Zhao, S., Jiang, Y., Peng, X., & Hong, J. (2021). Knowledge sharing direction and innovation performance in organizations: Do absorptive capacity and individual creativity matter? *European Journal of Innovation Management*, 24(2), 371–394. <https://doi.org/10.1108/EJIM-09-2019-0244>