

The Factors influencing Value Creation of Halal Logistics Service during Crisis: A Case Study of Halal Logistics Service Providers in Thailand

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Abstract

This study aims to investigate the causal factors influencing value creation of halal logistics services during the business crisis caused by COVID-19. The study constructs a model to explain the causal factors in relation to resources dimension, risk management, and innovation solution. It uses a questionnaire survey to collect data from 200 Thai logistics service providers experienced in delivering logistics services for healthy and safe halal, agricultural, and food products. The findings reveal a positive association between innovation solution and value creation. This implies that, during crises, the use of tangible and intangible resources can help organizations gain competitive advantage. The innovation of halal logistics services can help organizations maximize the use of their limited resources. Risk management can positively influence value creation by identifying, evaluating, and preventing the risks associated with halal supply chain management. The innovation solutions and risk management mediate the relationship between resource dimensions and value creation. These findings can guide halal logistics providers during crises to deliver value in markets with a high Muslim population and consumer demand for high-quality goods and services.

Keywords: Value creation, Resource dimension, Innovation solution, Risk management, Halal logistics, Crisis.

Introduction

The COVID-19 pandemic has caused considerable damage to public health, the society, and the economy of Thailand. This damage has also been attributed to the food crisis resulting from disruptions in food supply chains caused by COVID-19 (Sharma, Tyagi & Bhardwaj 2021). Overall, this pandemic has directly affected the supply chain management of both upstream and downstream suppliers, who, in turn, have been affected by the shortage of imported raw materials used for manufacturing and changes in the consumer spending habits, respectively. The lack of consumer data on downstream companies makes it difficult to obtain an accurate prediction of customer needs, which, in turn, contributes to the bullwhip effects between the manufacturers and suppliers (Mollenkopf, Ozanne & Stolze 2020).

In the context of Thailand, the COVID-19 pandemic has been adversely impacting the country's export volumes since 2020. As per a report by Thailand's Office of the National Economic and Social Development Council, the policies implemented to control the pandemic have adversely affected domestic and international trade and the global economy. In 2020, the economic profit of Thailand's logistics service industry decreased by 2%, and the volume of international freight decreased by 3.59%. However, the volume of domestic transport increased by 0.88% (Office of the National Economic and Social Development Council 2019). Based on the above-mentioned information, the economic and social impact of the pandemic on Thailand's logistics industry can be described as follows: First, Thailand experienced a decline in export orders and restrictions on the processes of export goods (e.g., slower container turnover, reduction in production capacity, and operational disruptions at ports and airports). Hence, entrepreneurs should focus on the factors of production rate, inventory turnover, quantity distribution, opportunities to expand business into new markets, and find new markets for products with lower shelf life (Nguyen, Chen & Du 2021; Sarkar, Shankar & Kar 2021). Second, COVID-19 led to changes in consumer behavior. At the beginning of the pandemic, panic buying of storable consumer goods led to the shortage and increase in price of certain products. Panic buying is one of the buying behaviors manifested when consumers adapt to changing situations. In such scenarios, consumers purchase in larger quantities and less frequently. They increasingly purchase through online channels and prefer products from manufacturers that publish safety and hygiene information on the package. Owing to these preferences, halal-certified food products have gained popularity among non-Muslim consumers (Export-Import Bank of Thailand 2020). Thus, the change in buying behavior has triggered a business operations change affecting both innovation and the quality of food.

To survive the impact of COVID-19 on their business operations and sustain their businesses, supply chain stakeholders must consider changes in consumer behavior (Zainal 2020). In this regard, it must be noted that self-improvement is critical for survival in the logistics service industry. Logistics providers can also adopt a resource-based view to achieve success in resource management—tangible and intangible resources to gain competitive advantage (Aggrey et al 2021). A study on the resource management of halal logistics service providers showed that the effective management of organizational resources influences service innovation and generates a sustainable cost advantage (Masudin, Fernanda & Widayat 2018). Several studies have shown that information-sharing platforms in supply chains is a manifestation of service innovation. Such service innovation is driven by technology (Hendayani & Febrianta 2020).

Technological advancements help logistics service providers improve the speed and accuracy of operations. These innovations and permanent changes are driven by a creative process that facilitates the creation of products and services utility as well as better operational and financial performance (Zhou, He, Ma & Mahto 2021; Organization for Economic Co-operation and Development 2018).

Halal logistics is one of the service innovations of logistics service providers in Thailand. A transition to halal logistics can change the service process of logistics service providers and enable them to transition from basic to halal services. This is essential for logistics service providers to leverage organizational resources, add value to their services, and cater to customer needs during crises (Hidayat, Rafiki & Nasution 2021). Services innovation can help them create long-term wealth. There is a critical need for Thai logistics service providers to provide halal services, given that the Muslim population comprises approximately 5%–10% of the Thai population. However, logistics operators lack the knowledge of Islamic practices, which is also the reason for the cross-contamination between halal and non-halal products through tools and equipment not ritually cleaned for hygienic practices (Ismaeel & Blaim 2012). Thus, the logistics service providers should focus on the risks associated with halal supply chain management, a risk mitigation plan, products and process traceability, supply chain collaboration, and strategies to enhance employee knowledge and morale (Butt, Khong & Alam 2021; Tieman 2017). These measures are critical to the integrity of halal products and services.

In this context, this study adopts a resource-based view to develop a model to identify the factors influencing the value creation of halal logistics services providers. The results of this research support the following conditions. First, it confirms previous research findings of studies on factors influencing value creation and organizational performance. The findings provide insights into the effects of changing consumer behavior in a crisis environment. Second, this study demonstrates the knowledge and understanding of Thai logistics service providers regarding halal logistics services. Third, it provides guidelines for operation development of the government and promotes the market entry of Thai entrepreneurs into the global halal food market, which has been growing continuously.

Literature Review

This study develops the conceptual framework on the basis of the resource-based view and the value chain theory. Existing literature shows that an organization's ability to optimize resource utilization contributes toward creating a value chain in terms of customer value and utility. Pohjosenperä and Komulainen (2020) suggested that customer engagement challenges service providers to develop a proactive service model that adds value to the logistics services. In addition, there are various literatures on the idea of business value creation as below:

Value Chain of Logistics Services

Porter's value chain theory refers to the coordination of activities and the flow of information upstream and downstream. Value chain activities involve sourcing, purchasing, transforming processes, and providing products and services that fulfill

customers' needs. The customers' satisfaction levels and willingness to pay determine the growth of the value chain. Previous studies identified value-added logistics services, such as services per customer needs, reasonable cost of services, and continuous improvement process (Shapiro & Heskett 1985).

Among the studies on value-added services of logistics service providers, there is relatively in halal logistics services. From the perspective of logistics service providers, halal logistics involve the way employees work and lead to changes in processes that apply an organization's tools and equipment to develop a value-added service with parallels to the basic service, which creates the opportunity to reduce the impact of the competition with low prices. From the perspective of customers, halal logistics services connect the interdependent activities of the halal supply chain to achieve the integrity of halal. The concept of halal is related to Shariah law and a holistic approach to health. These are drivers of consumers' willingness to pay and shape consumers' confidence in the safety of food (Fathi et al. 2016). The concept is applied to food, products, and service standards (e.g., tourism, hotel accommodation, and logistics services) (Dabphet 2021; Han et al. 2019). However, there is ambiguity in the role of halal logistics practices in preserving halal integrity in non-Muslim countries because religious differences deprive potential consumers of the knowledge and understanding of the meanings of halal practices. Moreover, the terms and conditions for halal operation in different countries cause concern among Muslim consumers and influence their decision to buy goods and services from non-Muslim countries. Therefore, halal activities must be connected to ensure halal supply chain integrity. In this regard, the logistics service providers must be aware of the terms and conditions of halal standards and the essential needs of Muslim consumers. This is critical to building customer confidence in goods and services available in non-Muslim countries and seeking opportunities to enter the constantly growing international halal food market.

In this paper, four ways to offer value-added services that can be implemented into halal logistics services have been discussed: First, differentiation refers to creating new services through customer demand in accordance with their expectations and to making the services stand out in a crowded market. Second, the provider's reputation reflects the corporate image, service quality assurance, and a long-term customer relationship. Third, flexible process refers to customized services generated from the resource management process to achieve maximum efficiency. Finally, cost leadership emphasizes both quality control and cost reduction, which reduces the non-beneficial processes and promotes the efficient use of resources.

Innovative Solution to Halal Logistics

Innovation results from creative ideas implemented to improve or develop a product, service, or process to enhance customer benefits (e.g., place and time utility, etc.) and gain a competitive advantage. Innovative activities are implemented through research and development driven by basic resources (e.g., tools, equipment, and human resources) and technology (Organization for Economic Co-operation and Development 2018). In the service sector, innovation is a process that transforms basic services into advanced services, thereby increasing their efficiency and effectiveness. Saunila et al. (2021) suggested that, in the supply chain, knowledge sharing and collaborative relationships reinforce knowledge organization used to facilitate innovation for the development of products and services and product life cycle management, thereby

increasing the businesses' long-term competitiveness. Following Jaafar et al. (2011), they described halal logistics as an innovative service, different from basic services, which entails verifying the activities from the upstream to the end-user, as per the halal certification criteria based on religious law. In this context, it must be noted that both the halal industry and logistics services are booming globally. Under such circumstances, technology adaptation, blockchain technology, and the Internet of Things will help service providers survive, improve firm performance, and increase operational efficiency. This will also contribute toward the successful creation of a complete halal value chain.

This study discusses the elements necessary to drive the organization's innovation. First, an organizational factor is essential to be aware of the reasons to invest in resources (e.g., technology and new knowledge) and organizational acts to support creativity. Second, the environmental factor is important for the organization's decision to add new alternative service processes, such as government support and a sustainable competitive advantage. Third, the assurance factor means the organization ensures the safety and halal integrity of products throughout the supply chain. Finally, the technological factor refers to new practices and equipment suited to organizations for achieving business goals and increasing the organization productivity.

Therefore, following the above discussion, we formulate the following assumption:

- H1** There is a positive association between innovative solutions to halal logistics and value creation.

Risk Management

Risk management is a process or method adopted by an organization to identify and manage the various potential risks caused by natural and man-made disasters before it negatively influences organizational process (Hittle & Leonard 2011). The COVID-19 pandemic contributed toward unprecedented demand distortion in the supply chain—a phenomenon termed as the bullwhip effect. Several factors caused the bullwhip effect, such as the unexpected demand fluctuations caused by consumer hoarding and a reduction in labor supply due to COVID-19 restrictions, which increased the price of goods and services.

Based on a service business analysis, Mollenkopf, Ozanne, and Stolze (2020) revealed that COVID-19 exposed the vulnerabilities of the supply chain. Thus, service businesses have focused more on health and safety than price competition, thereby maintaining business flexibility. In this regard, Xiong et al. (2021) suggested that innovation creates economic value addition in corporate profitability and social values in response to market demands. Hence, organizations should focus on integrating innovative solutions with the value chain of activities. Sultan and Sultan (2020) showed that innovation plays an important role in achieving the quality of unique products and services. Moreover, the benefits of the innovation-driven gain affect an organization's international recognition and provides access to a larger market to achieve competitive advantages and sustainable development.

In the context of halal food supply chain, it must be noted that halal logistics involve fragile activities. In the halal supply chain, low-quality control processes during the movement and use of equipment increase the risks of cross-contamination between the halal and non-halal products. As a result, the halal products lose quality integrity (Kwag & Ko 2019). In this regard, it must be noted that the exhaustive literature on the halal market and logistics has failed to influence the halal logistics practice. In other words, the knowledge disseminated through research has failed to help the segment improve its practice. The halal food supply chain risks emerge because of the service providers' lack of genuine knowledge of the halal concept and the differences in the certification process. Thus, halal logistics services should manage process risks that violate Islamic practices and jeopardize supply chain traceability (Othman, Shaarani & Bahron 2016).

From the above, this study identifies the basic methods for risk management. First, process design and planning are internal control methods to avoid losses of products and services value and customer dissatisfaction. Second, the relationship refers to building trust and reducing the differences in cultures and languages of stakeholders in the halal supply chain. Third, integration is the key to transforming an individual player into a business partner working toward a common goal. Finally, agility refers to a dynamic capability in a crisis to change fast and the qualities of nimbleness and responsiveness.

Following the literature review, we propose the following hypotheses:

- H2** There is a positive association between risk management and value creation.
- H3** There is a positive association between risk management and innovative solutions to halal logistics.

Impact of Resource Management on the Logistics Service Provider in the COVID-19 Crisis

From a theoretical perspective, resource management is the process of maximizing tangible resources (e.g., machinery, equipment, and raw materials) and intangible resources (e.g., organizational networks, collaboration, and capabilities) utilization. The resource-based view (RBV) helps firms focus on effective resource management and operational efficiency and gain competitive advantage (Barney 1991). A sustained competitive advantage is the output of an organization's ability to manage resources for creating value-added products and services difficult for competitors to copy in a short time (Day 1994).

The concept of resource-based view (RBV) is used to describe resource utilization that can give organizations innovative ideas to reduce operational risk and produce competitive advantages based on critical situations. In terms of innovation improvement, the relationship between resource utilization and innovation is manifested through the strategy implemented to expand into mature markets. These markets entail greater consumer decision-making and present a more significant challenge to organizations in achieving customer satisfaction. Santos et al. (2020) showed that, when expanding into emerging markets in an economic crisis, companies should focus on frugal innovation, which pertains to the use of the finitely available resources (e.g., budget, technology, and raw materials) to meet the basic needs of

customers. In this regard, a firm's innovative capability allows for the exploitation of knowledge and, in turn, facilitates a new approach for developing products, services, and operations beneficial to the supply chain. In halal logistics, service innovation facilitates the utilization of available resources and adds value to the logistics activities of the entire value chain.

The COVID-19 pandemic has changed the food supply chain to focus on food safety over brand image building and purchase intentions. In addition, the growth of e-commerce has allowed food businesses to take advantage of technology and provide contactless and fast-food delivery solutions. These options have increased competitive challenges and the market share gains (De Vijaya & Kannan 2022). Mitter, Postlmayr, and Kuttner (2020) showed that risk management is part of resource management involving the relationship between employees, customers, and stakeholders. This relationship embraces the risk integral to goods and services, prompt delivery of the right quantity and quality, and faster product development to retain customers. Accordingly, we propose the following hypothesis:

- H4** There is a positive association between resource dimensions and innovative solutions to halal logistics.
- H5** There is a positive association between resource dimensions and risk management.
- H6** There is a positive association between resource dimensions and value creation.

Mediating Role between Resource Dimensions and Value Creation

An analysis of the factors influencing the relationship between resource dimensions and value creation in service business showed that innovation factors mediate the relationship between resource management and organizational performance. A study on human resource management by Belso-Martinez, Palacios-Marqués, and Roig-Tierno (2018) showed that the highly competitive global market compels organizations to create value-added innovation using their human capital and ideas. This leads to efficient, effective, and flexible innovations, which enable organizations to respond quickly to a shift in demand.

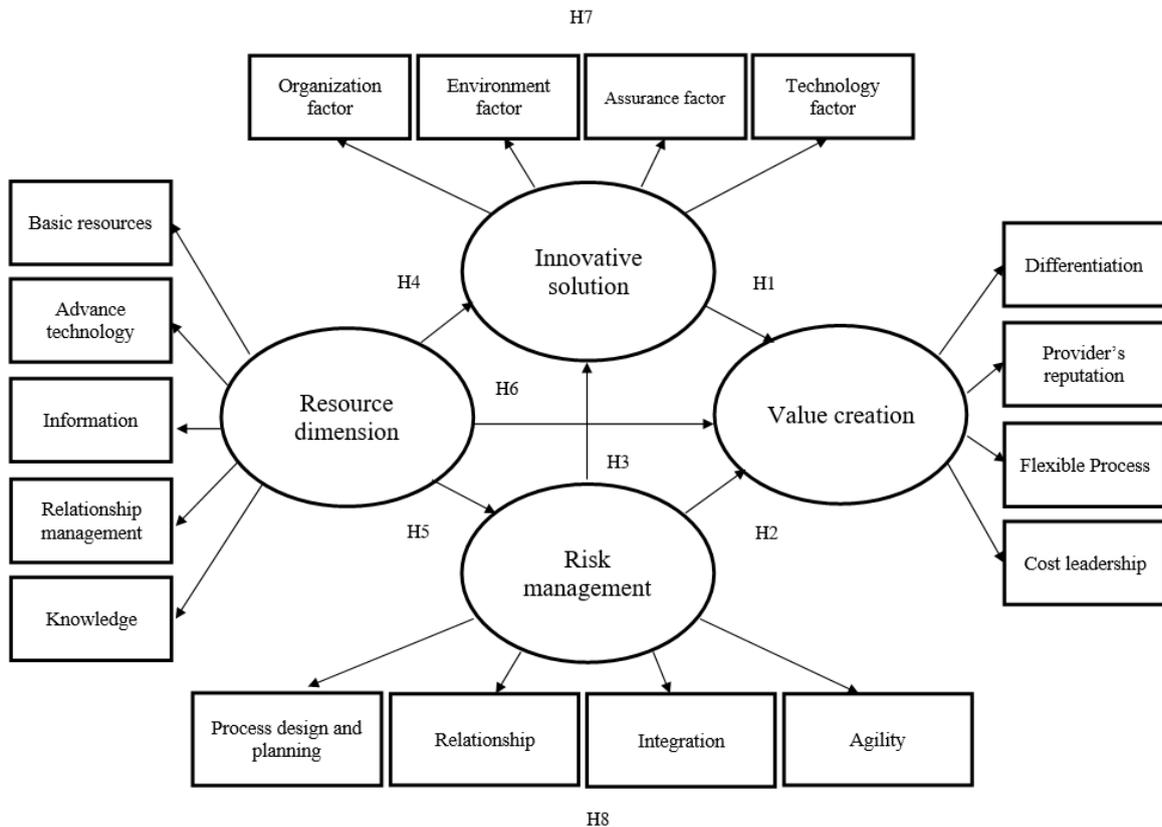
We would also like to point out that risk management mediates the relationship between resource management and value creation. DiPietro, Harris, and Jin (2020) explained this situation in the context of the food industry. Currently, the food industry and restaurant businesses are increasingly exposed to operational hazards harmful to consumers. These hazards are mainly attributed to food contamination (e.g., chemicals, glass shards, metal shavings, and ashes), which leads to financial losses and damages the organization's reputation. In addition, consumer safety concerns, quality inspection, and outbreaks of foodborne illnesses highlight the food industry's role in risk management. This role includes the effective management of the quality control process and the health and safety considerations of the operators. Thus, risk tolerance mediates the relationship between an organization's ability to understand and control risk to increase the efficiency and effectiveness of business operations.

Soltanizadeh et al. (2016) argue that risk factors, such as changes in the economy, environment, management, technology, and innovation, are barriers to business goals. Thus, risk management can effectively mediate the relationship between strategic capabilities and organizational effectiveness. This is similar to the definition of firm performance and value addition in previous studies; firm performance is the result of gaining a competitive advantage through effective resource management. Therefore, this research tests the relationships mentioned above to validate the definition of firm performance and value addition. To this end, the research proposes the following hypotheses:

- H7** The association between resource dimension and value creation is mediated by innovative solutions to halal logistics.
- H8** The association between resource dimension and value creation is mediated by risk management.

Based on the literature review discussed above, we have constructed a model to explain the positive relationship between resource dimension, risk management, and innovative solutions to halal logistics and value creation. Specifically, the resource dimension positively correlates with risk management and innovation solutions. Furthermore, risk management positively correlates with innovation solutions. Finally, risk management and innovation solutions moderate the relationship between resource dimension and value creation. The conceptual framework is shown in Figure 1.

Figure 1: Conceptual Framework



Methodology

Participants and Procedure

This quantitative research aims to identify factors influencing value creation through halal logistics services during crises. The study used a questionnaire to collect data from logistics service providers in Thailand that have an experience in logistics services for halal, agricultural, and food products. Data collection occurred between May–July 2021. The questionnaire consists of six sections. Section 1 collects general information from firms. Section 2 focuses on the five resource dimensions. Section 3 covers innovative solutions to halal logistics. Sections 4 and 5 focus on risk management and value creation, respectively. Section 6 is an open-ended question that seeks feedback or suggestions from halal logistics and logistics providers in a crisis. The participants selected the responses to close-ended questions in Sections 1–5 using a 5-point Likert scale. The rating scale represents the respondents' feedback in a comparative form. We validated the content of the questionnaire through three expert interviews. The index of item objective congruence was within the required range of 0.50–1.00 (Rovinelli & Hambleton 1977). We used Cronbach's α to conduct reliability testing. Cronbach's α value was in the range of 0.760–0.904, which is greater than 0.70, for resources dimension, innovation solution, risk management, and value creation (Tavakol & Dennick 2011).

Data Analysis

We collected primary quantitative data for our study through an online survey sent via email due to COVID-19 restrictions. We used the purposive sampling technique to select executive experts and experienced logistics service providers for the sample. Thus, they provided information on the overarching purpose of the research. We obtained the maximum number of samples; we also maintained the privacy and confidentiality of the respondents. Finally, we received 200 completed and usable questionnaires that fulfill structural equation modeling (SEM) requirements (Kline 2011). Specifically, we analyzed the descriptive statistics (e.g., percentage, mean, and standard deviation) and inferential statistics using SEM.

Results

Firm Demography and Sample Characteristics

The results of the descriptive statistics showed that most firms are juristic persons of a limited company. The sample comprised 172 (86%), 19 (9.5%), and 9 (4.5%) juristic persons, partnership/juristic partnership, and public limited firms, respectively. There were 110 firms (55%) with more than 16 years of experience. Among these, 65.5% had senior female corporate executives, of which 45.5% had 10 to 15 years of experience in the logistics industry. Table 1 presents the respondents' characteristics.

Table 2 shows the descriptive statistics pertaining to the mean, standard deviation, and the correlation between the variables. Resource dimension is the most significant factor of value creation, followed by innovative solutions, and risk management. There is a linear correlation between the variables, which shows that the variables are

independent. We used average variance extracted (AVE) (Table 3) to evaluate discriminant validity, which is higher than the correlation coefficient (Table 2). Thus, the variables supported the preliminary research.

Table 1: Firm Demography and Sample Characteristics

Firm Demography		Frequency (LSPs)	Percent (%)
Firm	Public Limited Company	9	4.5
	Limited company	172	86
Registration	Limited Partnership/ Ordinary Partnership	19	9.5
	Less than 5 years	15	7.5
Firm experience	5–10 years	30	15
	11–15 years	45	22.5
	More than 16 years	110	55
Sample Characteristics		Frequency (LSPs)	Percent (%)
Gender	Male	69	34.5
	Female	131	65.5
Work experience	Less than 10 years	61	30.5
	10–15 years	91	45.5
	16–20 years	42	21
	More than 21 years	6	3

Table 2: Mean, Standard Deviation, and Correlation Matrix

	Mean	SD	Resource Dimensions	Innovative Solution	Risk Management	Value Creation
Correlation estimates						
Resources Dimension	4.233	0.395	1	-	-	-
Innovative Solution	4.050	0.490	0.581**	1	-	-
Risk Management	4.017	0.515	0.614**	0.592**	1	-
Value Creation	4.215	0.425	0.487**	0.514**	0.597**	1

Note: ** significant at the 0.01 level

Measurement Model

The measurement model is the first step to ensure that the measured variables represent the number of constructs. We used confirmatory factor analysis (CFA) to confirm or reject the observed variables related to the latent variables. Table 3 shows that the measurement models—including the resource dimension, innovative solution, risk management, and value creation—are within the acceptable values.

The results reveal four latent variables with factor loadings between 0.645 and 0.836. CFA results are greater than 0.6 (Hair, Ringle & Sarstedt 2011). We also used the CFA to examine the convergent and discriminant validity. The values of composite reliability

(CR) and average variance extracted (AVE) are greater than the criterion of 0.7 (Hair et al. 2010) and 0.5 (Barclay, Higgins & Thompson 1995), respectively. Thus, convergent and discriminant validity findings are sufficient to present descriptive statistics and correlations.

Table 3: Measurement Model

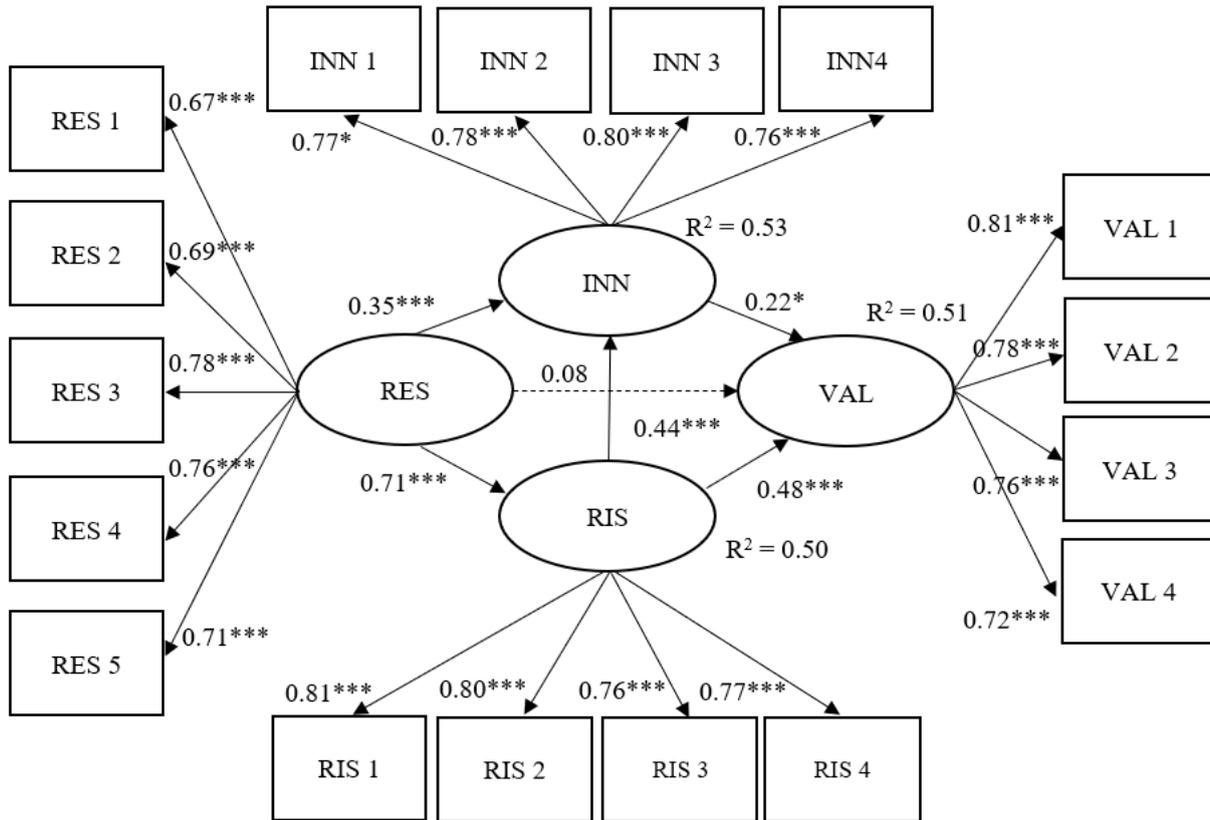
Variable	Construct	Indicators	Factor loading	CR	AVE
Resource Dimension	RES	RES 1	0.645	0.992	0.86
		RES 2	0.705		
		RES 3	0.806		
		RES 4	0.747		
		RES 5	0.690		
Innovative Solution	INN	INN 1	0.753	0.992	0.87
		INN 2	0.800		
		INN 3	0.804		
		INN 4	0.757		
Risk Management	RIS	RIS 1	0.830	0.993	0.88
		RIS 2	0.825		
		RIS 3	0.758		
		RIS 4	0.736		
Value Creation	VAL	VAL 1	0.836	0.995	0.90
		VAL 2	0.782		
		VAL 3	0.735		
		VAL 4	0.717		

Structural Model and Hypotheses Testing

The results of the independent variables predict the dependent variable of the testing dataset. The model predicts 53% of the variance in innovative solutions to halal logistics ($R^2 = 0.53$), 50% of the variance in risk management ($R^2 = 0.50$), and 51% of the variance in value creation ($R^2 = 0.51$). Figure 2 shows the R^2 estimates of the structural model. The SEM examining the relationships between variables uses a path coefficient for hypothesis testing. The results show that the structural model is consistent with empirical data. The values of the goodness of fit index (GFI) and adjusted GFI exceed 0.8 (Byrne 2001). The standardized root means square residual and root mean square error of approximation are smaller than 0.05 (Hair et al. 2010) and 0.08 (Hu & Bentler 1995), respectively.

Table 4 shows that the standardized estimates of the path coefficients are not greater than 1. Hypothesis testing and innovative solutions to halal logistics have a positive and significant relationship with value creation (H1) ($\beta = 0.22$, $p < 0.05$). Risk management has a positive and significant relationship with value creation (H2) ($\beta = 0.48$, $p < 0.05$) and innovative solutions (H3) ($\beta = 0.44$, $p < 0.05$). The resource dimensions have a strong and direct influence on risk management (H4) ($\beta = 0.71$, $p < 0.001$) and a positive and significant relationship with the innovative solutions (H5) ($\beta = 0.35$, $p < 0.001$). However, the path coefficient between the resource dimension and value creation is not significant (H6).

Figure 2: Structural Model



Chi-Square = 242.483; df = 112; $\chi^2/df = 2.165$; RMSEA = 0.077; GFI = 0.875; AGFI = 0.830; SRMR = 0.016

Table 4: Hypotheses Testing

Hypotheses	Paths	Path Coefficient	P-value	Relationship
H1	INN → VAL	0.22*	0.033	supported
H2	RIS → VAL	0.48***	0.001	supported
H3	RIS → INN	0.44***	0.001	supported
H4	RES → INN	0.35***	0.001	supported
H5	RES → RIS	0.71***	0.001	supported
H6	RES → VAL	0.08	0.467	not supported

Note: *, **, *** denote significance at the 0.05, 0.01, and 0.001 levels, respectively

Mediation Analysis

Mediation analysis is part of SEM. It is conducted to test the indirect effect between the causal variables for a certain variance with mediator variables. In the mediation test, we investigated the role of innovative solutions to halal logistics and risk management as mediators in the relationship between resource dimension and value creation. In the

first mediation test, we examined the mediating role of an innovative solution to halal logistics in the relationship between resource dimensions and value creation (H7). In the second test, we examined the mediating role of risk management in the relationship between resource dimensions and value creation (H8). We found a significant direct effect of an innovative solution in the relationship between resource dimensions and value creation ($\beta = 0.56, p < 0.001$). In H7, the mediator variable decreases the direct influence between the resource dimensions and value creation. The coefficient (β) for the indirect effect is 0.255, which is significant. Thus, the innovative solution to halal logistics is a partial mediator. In H8, the coefficient (β) for the indirect effect is 0.404, which is significant. Therefore, risk management is a full mediator. Table 5 presents these results.

Table 5: Mediation Analysis

Hypotheses	Paths	Direct Effect	Indirect Effect	Mediation
	RES → VAL	0.56***	-	-
H7	RES → INN → VAL	-	0.255	partial mediation
H8	RES → RIS → VAL	-	0.404	full mediation

Note: *** significant at the 0.001 level

Discussion

This paper presents a part of the difference between basic logistics services and halal logistics services in Thailand. Basic logistics services are dedicated to providing mass customers in a short time and low cost whereas halal logistics services need to initiate more quality control with handling tools and equipment ritually cleaned for hygienic practices. These are special services for niche customers through value creation and incremental utility mining.

Halal logistics service is a service innovation for logistics service providers in Thailand. This is because the service conditions for halal logistics are different from the basic services, given their compliance with Islamic religious beliefs and practices. The logistics operations of a halal supply chain are inspected according to halal standards (Jaafar et al. 2011). As an alternative logistics service, halal logistics services can increase customer utility in critical situations, such as the COVID-19 pandemic and enhance the service value to the operations (Othman, Shaarani & Bahron 2016; Dsouza & Sharma 2021). Based on this deduction, H1 is supported.

Concerning risk management (H2), the study analyzed the relationship between risk management and service performance in halal logistics services. It highlighted the need to address the risk of cross-contamination between halal and non-halal products to preserve the quality of halal (H2). Thus, halal risk management focuses on better design and planning, improved operational knowledge, and a better understanding of Islamic religious practices. The control processes based on the halal standard ensure the quality and integrity of the halal products and services (Kwag & Ko 2019). Based on this finding, H2 is supported. However, the service providers must adapt to overcome the

negative effects of the COVID-19 pandemic. Flexibility can help them respond to changes in consumer behavior and demand (Chowdhury et al. 2020). Given that halal logistics service is an innovative service that responds well to changes in supply or demand conditions, H3 is supported.

Concerning innovations (H4 and H5), fiercely competitive organizations innovate to encourage new and more efficient processes, provide value, and reduce the threat of imitation (Latifah et al. 2020). In addition, organizational innovation reduces the risk of internal, customer, and environmental factors (Wang et al. 2020). Based on this finding, H4 and H5 are supported.

Concerning resource dimensions (H6), according to Wernerfelt (1984), a firm's potential explains the performance differences between its utilization of tangible and intangible resources. However, we did not find significant results regarding the influence of the resource dimensions on value creation; thus, H6 is not supported. There is a possible explanation for these results. First, logistics service providers lack the knowledge, awareness, and understanding of the halal concept. Hence, we did not find any difference between the resource management adopted for halal logistics and basic services. Second, obsolete technologies are constraints to operational inefficiencies and increase the risk of halal quality control throughout the halal supply chain. And third, the COVID-19 crisis has resulted in reduced international flights and a limited quantity of containers for the export volume, regardless of the quality control of halal products that require specific containers. This adversely affected halal quality control. Thus, products and services were not completely halal in quality. Hence, H6 is not supported.

Finally, this study examined the indirect effects of the relationship between resource dimensions and value creation and found that innovative solutions to halal logistics and risk management moderate the relationship between the resource dimension and value creation. These findings are in line with the findings of Latifah et al. (2020), who highlight the significance of this mediating role in improving the performance of micro, small, and medium enterprises. Innovation is a new function of entrepreneurship in which value creation can come from ideas fitting the market needs. Therefore, organizations must determine which creative innovation capability to use to differentiate new products, services, or processes and create customer value (Byukusenge, Munene & Orobia 2021). The study also focused on the mediating effect of risk management. The results follow the findings of Liu, Pacho, and Xuhui (2019) and Flynn et al. (2013), who found that an entrepreneur must focus on risk management. Risk tolerance refers to a loss an entrepreneur is prepared to handle while making a decision that helps manage risk and optimally utilize resources, thereby protecting a business from threats. Therefore, H7 and H8 are supported.

Conclusion

Theoretical Contributions

This research applies the RBV and value chain theory by describing the relationship between resource dimensions and value creation. It extends these theories based on a literature review to examine a framework with mediation. These findings can help develop guidelines for logistics service providers. The findings can help Thai halal

logistics service providers overcome their limitations and achieve integrity in the halal supply chain. These findings also expand previous research on halal logistics services. Specifically, the results supported previous research findings that emphasize on applying a resource-based view. This view focuses on optimizing resource utilization and operational efficiency to enhance firm performance and customer's incremental utility from value creation activities in the supply chain (Porter 1985). Frugal innovation development provides a sustainable alternative for creating organizational value (Santos et al. 2020). Due to the supply chain's vulnerability due to the COVID-19 crisis, organizations should manage risks by enhancing operational flexibility and focusing on health and safety. In addition, there is a need to prevent the loss of revenue and build customer trust (DiPietro, Harris & Jin 2020). Hence, it is better to focus on quality than the low-price competition when under crisis.

In this context, it must be noted that the relationship between resource dimensions, innovative solution, and value creation is key to gaining competitive advantage and enhancing organizational development. Finally, this relationship reflects on the ability to handle risks, ensure business survival in the event of any change, and maintain the integrity of the halal supply chain.

Practical Contribution

This study provides some valuable insights to logistics service providers in understanding the importance of resource dimensions, risk management, and innovation on organizations' value creation. In times of business crisis, organizations depend on resources management to develop their processes and innovations as follows: First, human resource management needs to fulfill a comprehensive understanding of Islamic practices and evaluate the cost-effectiveness of the resources. Second, technologies in process control and inspection of halal standards can reduce trade barriers caused by the quality of products and services. Third, information sharing enhances collaborations and knowledge-sharing among collaborative partners and customers, which can help organizations gain data to develop their products and services. Fourth, halal supply chain integrity has a significant relationship with trust and common goal-setting in business partners. Finally, an organization's unique skills, experience, and expertise can create a solid competitive advantage for new opportunities and challenges.

The Thai government should provide support and intervention through effective policies to create clusters of halal products and services through the cooperative association of businesses in both Muslim and non-Muslim countries.

Limitations and Future Research

The study has some limitations. First, the data were collected during COVID-19. Therefore, some respondents may have been more susceptible to risk management than the other factors. Future research should compare the empirical relationship and influence of value creation during normal situations to a crisis period. This will enhance the accuracy of the business differentiation strategy. Second, the research design focused on the opinions of logistics service providers in the supply chain. However, halal integrity can be achieved when stakeholders coordinate and collaborate in the supply chain. Hence, further research can extend the findings to stakeholders involved

in other activities in the halal supply chain. Finally, future research should expand the conceptual framework with other factors, such as social norms and government support.

Practical Implications for Asian Business

The COVID-19 pandemic has led to rapid changes in global supply chain management practices in the food industry creating the scope for future academic research. In the food industry, sales of Halal-certified products, including drinks, cosmetics, and pharmaceuticals, have practically doubled, growing faster than pre-pandemic levels, in part due to an increased global population identifying as Muslim (World Population Review 2022). Moreover, the pandemic has led to greater consumer support from the non-Muslim population. COVID-19 has led to consumers having greater awareness of health and food safety. This awareness leads to consumers making smarter food choices. With official certification of Halal-based products, consumers can track products they've purchased back to the supplier. Growth of the Halal industry affects products and services not only within Muslim countries but globally. This has led to greater need for control and monitoring of Halal industry standards.

This study shows the current situation of logistics operations in Thailand concerning Halal-certified products to support Halal supply chain management in operation with the opportunity for growth. The results of this study can be applied to Asian businesses through cooperation from governments and private sectors as follows:

The role of government participation in the halal industry development is important. With an increasing Muslim population and greater demand for hygiene standards and food safety, stricter control measures could be a factor in attracting investors to Halal markets. After considering elements already implemented in businesses throughout Asia, it has been found that the industry has several factors already in place to support entrepreneurs, such as labor skills, plentiful raw material, pharmaceuticals, cosmetics, and fashion. Having dedicated Halal standards organizations in each country aids in controlling and monitoring processes, business practices, and logistics systems supporting warehouse and distribution of domestic and international operations. Research has shown this is a prime opportunity for Asian entrepreneurs to enter emerging Halal markets. Governments across Asia should support potential entrepreneurs in the following ways: First, providing information concerning Muslim people and their products and services to members of the supply chain including suppliers, logistics providers, and distributors (importer-exporter) to help entrepreneurs based in Muslim and Non-Muslim countries to understand and operate according to Halal standards. Second, improving Halal products and services that strictly follow Halal standards set by governing bodies in Muslim countries, e.g., Gulf Cooperation Council, to increase opportunities and build consumer trust in Halal products. Third, supporting business in Muslim and Non-Muslim Countries to promote information exchange and building Halal supply chain connections. Fourth, developing technology that connects organizations with the necessary information to reduce lead time delivery detail documents, certification documentation, and systematic monitoring of working processes.

In addition, RBV can create guidelines for enhancing the potential of logistics service providers in Asia follows. First, changing base processes of Halal logistics services challenges entrepreneurs in non-Muslim countries to focus more on improving human resources capabilities, offering development opportunities, and training of staff to assist in the understanding of Halal-based standards required to operate. Second, during fluctuating economies, minimizing wastage of limited organizational resources will help organizations reduce costs and increase cash flow during volatile situations. Using specialized Halal logistics services would be more beneficial and cost-effective as opposed to using general logistics services. Finally, sharing consumer information with entrepreneurs could help with understanding what products and services consumers need and also show where value can be added, e.g., providing hygienic products during the COVID-19 pandemic. Therefore, Halal-certified products and services would be the best choice for consumers to consider buying for personal use. Besides, information sharing between stakeholders in the supply chain would help to improve control measures for Halal-certified products and services in the future.

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