

THE INFLUENCE OF RESOURCES DIMENSIONS AND INNOVATION SOLUTION ON VALUE CREATION: A CASE STUDY OF HALAL LOGISTICS SERVICE IN THAILAND

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Abstract: This study examines the influence of the relationship between resources dimensions and the value creation of logistics service providers (LSPs), in the economic crisis caused by the coronavirus disease 2019 (COVID-19). It also explores the mediating role of innovation solutions in halal logistics in the relationship between resources dimensions and value creation. Halal logistics play an important role in Muslim countries, and there has been a growing demand for halal products from non-Muslims. Despite its importance, there is limited knowledge of halal logistics problems in Thailand among the LSPs. To understand these issues, the study uses a questionnaire to collect data from 200 Thai LSPs selected through purposive sampling based on their logistics experience in halal, agricultural, or food products. We test the hypotheses using structural equation modeling. The results show a direct relationship between resources dimensions and the value creation of LSPs. The resource dimension is indirectly related to value creation through innovation solutions that mean it acts as a partial mediator in the relationship between resources dimensions and value creation. This study has important implications for LSPs in Thailand in that it demonstrates that they can promote innovation through resources utilization and thereby enhance financial and business performance.

1 Introduction

Since its onset, the coronavirus disease 2019 (COVID-19) has been adversely impacting the economy of several countries. This can be attributed to the impact of the virus control measures on production operations, service sector businesses, and people's livelihoods. This impact has been most prominent on agricultural consumption, which is key to the survival of the population and an important economic driver of every country. In the given context, this study considers Thailand's upstream food chain. Thailand's economy heavily depends on its export volume, including agricultural and processed agricultural products. Thailand's export products are recognized for their quality in Asia, North America, and Europe [1]. However, these exports and their volumes have been impacted owing to the current economic slowdown. On comparing the overall situation of agricultural products exported from Thailand between 2019 and 2020, the volume of Thai agricultural exports decreased by 3.2 percent [1]. The Ministry of Agriculture and Cooperatives in Thailand encourages entrepreneurs to control the quality of agricultural products throughout the supply chain without viral contamination, which is safe for the consumer. In addition, they are considering the opportunities market to the replacement value.

Based on the impact of this crisis, agricultural and food entrepreneurs should seek business opportunities and undertake process development aimed at inhibiting

spoilage and maintaining the shelf-life of their products. Although this crisis has affected agricultural consumption, the demand for certain food products, such as halal products, has remained positive. A survey conducted by the Export-Import Bank of Thailand [2] during the pandemic showed steady growth in the global food demand for halal products. Especially, this demand has been rising in the member countries of the Gulf Cooperation Council (GCC), which include the United Arab Emirates, Qatar, Saudi Arabia, Oman, Kuwait, Bahrain, and Brunei. In these countries, the steady demand can be attributed to the high income and purchasing power of the people and the strict compliance of the imported halal products to the same halal standards [3]. The food safety and hygiene standards of halal products have further increased their demand among non-Muslim consumers. Thus, in this pandemic scenario, the demand for halal products has increased across countries [2].

Concerning demand, it must be noted that its change impacts businesses adapting their strategies to survive; these businesses include logistics service providers (LSPs) required to cope with supply chain fluctuations who must focus on the effective allocation and utilization of tangible and intangible resources. This approach helps businesses to create competitive advantages and transfer the value of products and services from upstream to downstream users and match the rapid demand and supply fluctuations [4].

Concurrent to resource utilization, service innovation improves service quality by changing the operating process; this leads to the creative differentiation of products and services [5]. In this regard, notably creative products and services can reduce the competitiveness of (LSPs) in Thailand. Most of the products and services focus on the mass market; a basic service assesses service efficiency with speed and reduced operating costs rather than a constructive change [6].

The literature review found that the effective utilization of organizational resources can lead to the development of value-added goods and services. In particular, inventive resources allocation to innovations can create utility by responding to customers' needs [7]. This literature review lends an in-depth character to this study. First, this study provides a case study of the resource dimension and innovation solutions that can create value through a supply chain, which draws on the resource-based theory and the literature on value creation with resources dimensions and innovation solutions. Second, the findings of this study emphasize the indirect role of innovation solutions in mediating the relationship between resource dimension and value creation. The final contribution of this study pertains to the development of a LSP in Thailand.

2 Literature review

2.1 Resource-based theory (RBT)

The resource-based theory provides valuable insight into a firm's competitive and sustained advantages. Sharma and Vredenburg [8] and Barney [4] discussed the resource-based theory that competitive advantage reflects on the firm performance based on the utilization of resources and capabilities. The first category of resources includes tangible resources. They refer to substantial resources in organizational control such as human resources, factories, warehouses, tools, and equipment. Talib, Rahim, Chin, and Hamid [9] explain the importance of tangible resources in logistics activity and supply chain management. They show that tangible resources comprise basic resources supporting basic services and advanced technology resources connecting upstream to downstream logistics activities. The second category of intangible resources refers to information and management that bring substantial value to an organization and are difficult to replicate. The benefits of intangible resources are manifested through effective communication and avoiding the impact of supply chain management [10-11]. The third category of capabilities includes firm expertise, which uses resources about objectives and achieves organizational goals [12] such as knowledge, establishing, and maintaining relationships in the supply chain network.

2.2 Value Creation

Porter [13] discusses the difference between supply chain and value chain. The supply chain refers to the integration of all activities involved in sourcing,

purchasing, transforming, and logistics from upstream to downstream. However, the concept of the value chain focuses on finding activity links to transform inputs into products or services, which benefit goods and services proposed by the firm to enhance customer value. This value is evaluated based on customer satisfaction level and the willingness to pay for goods and services. The value added to products and services is a result of several factors. The first factor is effective resource utilization. Second, the relevant intangible resources are used to manage supply chain relationships influencing the value creation at a service level; specifically, these resources are used to respond to customers' needs and gain their trust, thereby cultivating positive customer perception [14]. Finally, tangible resources are allocated in blockchain information technology to facilitate data sharing between business partners, which moderate unexpected situations from market changes and improve operational flexibility [15]. In this COVID-19 context, it is necessary to implement organizational innovation to solve problems emerging from rapid changes in supply and demand. A service business addresses these problems and responds to customers' needs in changing situations through service innovation. This approach helps organizations to reduce the financial impact of crises [16].

On the resource-based theory and value creation, organizations integrate tangible and intangible resources and capabilities to provide a competitive advantage through unique patterns. In this regard, Phillips, Thai, and Halim [17] prove that the value chain impacts organizational performance in terms of financial and non-financial measures, and the intangible resources in the value chain eventually affect sustainable organizational performance. Through the resource-based theory and value creation concepts, LSPs can gain insights into effective resource utilization. This approach can enable them to combine resources and supply chain resources to create value in response to customer needs, thereby gaining a competitive advantage.

Hence, we hypothesize as follows:

Hypothesis 1 (H1): Resources dimensions have a positive relationship with value creation

2.3 Innovation Solution

According to the Organization for Economic Co-operation and Development [18], innovation is results from activities that improve and develop the basics in the creative process; these basics are different from basic resources and advanced resource utilization. Data transformation, tools, equipment, and human resource management are necessary to conduct the research and development for products and services having competitive advantage and different types of economic utility—form, time, place, and possession. Given this, the role of organizational innovation is to apply knowledge, capabilities, creativity, skills, experience, technology, or organizational management principles to strategic service

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enhancement and to apply restructured processes to new services [19-20].

Concerning halal logistics, it is a service innovation, different from basic service. It is based on compliance with the beliefs and religious practices of Islam throughout the process—from the source to the end-user. It requires an inspection of all activities per the indicators of halal certification; for example, it uses separate equipment for halal and non-halal products [21-22]. The halal logistics providers focus on the segregation and contamination issues between halal and non-halal products to achieve the halal integrity supply chain. Concerning supply chain failure, the literature demonstrates that its failure is caused by a lack of collaboration between stakeholders, such as suppliers, manufacturers, warehouses, retailers, and distributors. A non-compliance to halal standards will negatively impact the halal integrity of the halal products. The poor performance of the halal supply chain, both qualitatively and quantitatively, may disrupt the halal integrity; the chances of contamination increase when the halal products are delivered to end customers. This problem can be addressed by integrating halal supply chain operations of organizations with improved innovations and better traceability systems. Further, Talib and Wahab [23] explained that the exponential growth rate in the halal industry encourages LSPs to offer halal logistics services. It motivates service differentiation by implementing halal logistics and prominence from the saturated logistics industry. Thus, services innovation influences the market value.

Almost all organizations compete in an innovation view that organizational innovation should be the challenging capabilities of their company, observed as a solution to dynamic capabilities in rapidly changing environments for organizational success.

Therefore, we hypothesize as follows:

Hypothesis 2 (H2): Resources dimensions have a positive relationship with innovation solutions for halal logistics.

Hypothesis 3 (H3): Innovation solutions for halal logistics have a positive relationship with value creation.

A literature review of the relationship between innovation, resources dimensions, and value creation in the service sector showed that the use of resources dimensions (e.g., technology development, information technology, knowledge, infrastructure, organizational strategy) to create innovation has a positive influence on the performance of organizations that are growing exponentially and possess the ability to survive in a fiercely competitive environment. Utilization of resources in innovation creation can also create better service levels and unique qualities. Based on a previous study result, innovation is a mediator of the relationship between resources and organizational performance. Safari and Saleh [24] considered determinants of RBV and found that marketing data is an essential source to forecast and

respond to customers' needs. These are impacts on the performance of the small and medium-sized export businesses of Vietnam. Innovation is an important factor that defines export strategy achievement. Thus, competition, environmental changes, and strategic planning enable organizations to develop business models to achieve competitive advantage and seize opportunities in emerging markets [25-26]. Latifah et al. [7] examined variables that innovation is directly related to the competitive advantage that succeeds in narrowing the gap between supply and demand with differentiated products and services to create value-addition for customers. Although, innovation can create unique qualities, the organization must simultaneously adjust its operation strategy with the development, which leads to the hypothesis test that found that organizational strategy has a positive influence on organizational performance when it focuses on innovation. Moreover, Guerreiro and Pacheco [27] and Phillips, Thai, and Halim [17] studied the mediation between business capabilities and firm performance in response to changes in the business environment. Several studies have shown that innovative processes and products define a firm's performance when facing fierce competition. Hence, it can be stated that innovation solutions mediate the influence between resources dimensions and value creation. Innovation solutions encompass the development processes in organization management, production, and services to target a specific market and enter a new market.

Given this, we hypothesize as follows:

Hypothesis 4 (H4): Innovation solution for halal logistics mediates the relationship between resources dimensions and value creation.

Based on a literature review, we found the following elements of the resources dimensions' variable: basic resources, advances resources, information, relationship management, and knowledge. The organization, environment, assurance, and technology factors are elements of the innovation solution variable. Differentiation, reputation, flexible processes, and cost leadership are the elements of value creation.

Resources dimensions' utility is related to value creation and innovative creation through halal logistics services. Halal logistics generates value through firm performance from financial and marketing perspectives. This study tests the mediating relationship between resources dimensions and value creation through innovation solutions for halal logistics that are more than basic services based on price competition. There are reasons for the change in the relationships between the resource dimension and the value creation of LSPs in Thailand. Based on the relationship between variables, we formulate a hypothesis and concept model, as shown in figure 1.

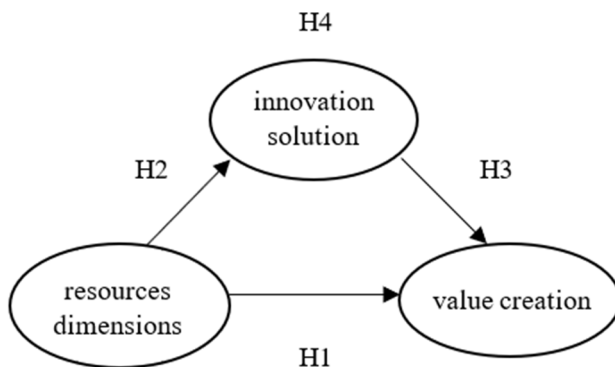


Figure 1 Conceptual model

3 Data collection and methodology

3.1 Data collection

We collected quantitative data using a questionnaire designed and based on the conceptual framework and distributed it to 200 LSPs. We chose the purposive sampling approach, selecting an executive director (e.g., the CEO, director, freight manager) from the LSPs registered as juristic persons in the service sector in transportation and storage facilities from the Department of Business Development Ministry of Commerce. Our sample comprised LSPs with experience in halal products, agricultural products, or food products; this was one of the selection criteria consistent with the aims of the study. While collecting data, the researcher inquired about the preliminary information of the logistics provider experience. When the qualification of a logistics provider is met through the specific objectives of the research, it leads to the appointment process: collecting data from the executive director with the face-to-face method, and checking the questionnaire completed after the survey. Given a limited number of samples, N = 200 also fulfilled the criteria for conducting the structural equation model [28].

3.2 Methodology

Content validity

Questionnaires had a validity between 0.67 and 1.00, which is greater than the criteria 0.50 [29], and reliability with Cronbach's alpha coefficient between 0.76 and 0.9, which is greater than the threshold of 0.70 [30]. Thus, it can be concluded that the questionnaire was an accurate and reliable tool.

Construct validity

Table 1 summarizes the latent variables, including resources dimensions, innovation solutions, and value creation. A structural equation model was employed to examine convergent validity and discriminant validity before its hypotheses testing and testing the mediating variable. Convergent validity shows that the values of composite reliability (CR) are greater than the criteria 0.7 [31]. For discriminant validity, the square roots of average variance extracted (AVE) should be higher than the

correlation coefficient of constructs given under the diagonal. The results showed that all of the AVE exceeds the criteria 0.5 [32]. Thus, the questionnaire and methodologies were qualified for use in the study according to the theory.

Table 1 Matrix of length

	Resources Dimension	Innovation Solution	Value Creation
Correlation matrix			
Resources Dimension	1	-	-
Innovation Solution	0.581**	1	-
Value Creation	0.487**	0.514**	1
Mean	4.23	4.05	4.22
S.D.	0.395	0.490	0.425
Average variance extracted (AVE)	0.86	0.87	0.90
Composite Reliability (CR)	0.992	0.992	0.995

*p < 0.05; **p < 0.01; ***p < 0.001

4 Result

4.1 Company information

This section presents the results of the demographic characteristics of the 200 LSPs. The number of firms that had a juristic person status, limited partnership/juristic partnership, and public limited status accounted for 172 firms (86%), 19 firms (9.5%), and 9 firms (4.5%), respectively. Based on firm location, most of the firms were located in the central region. The number of firms exceeding 16 years of operations accounted for 110 firms (55%). Respondents had various characteristics. Table 2 shows the descriptive statistics of the company information.

4.2 Assumption Tests

Based on data in Table 3, this section presents the hypotheses testing below:

We used structural equation modeling to examine the hypotheses and showed the construct variable relationships. The results show the direct positive relationship between resources dimension and value creation in halal logistics; this finding is based on the coefficient (β) of 0.308 and the 0.05 significance level, which supports H1. The resources dimensions share a positive relationship with innovation solutions; this finding is based on the coefficient (β) of 0.707 and a significance level of 0.001 level, which supports H2. The result further reveals a positive and significant direct effect of innovation

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solutions and value creation on halal logistics, given its coefficient (β) of 0.355 and significance level of 0.001 level, which supports H3.

The indirect influence of innovation solutions as the mediating variable.

First, we found a mediating effect of innovation solutions on the relationship between resources dimensions and value creation in halal logistics; this is based on the coefficient (β) of 0.255. Second, concerning the mediating role of innovation solutions, we compared the difference between the direct and indirect influences of resources dimension and value creation to halal logistics. The results showed that innovation solutions reduce the direct influence coefficient significantly between the resources

dimension and value creation. Thus, the innovation solution is a partial mediator, which supports H4.

Based on the results, we adopt a model fit to investigate the mediating role of innovation solutions in the relationship between the resources dimension and value creation. In line with Hair, Black, Babin, and Anderson [31] and Hu and Bentler [33], we used the chi-square criteria, chi-square to degrees of freedom, standard root mean square residual (SRMR), root mean square error of approximation (RMSEA), goodness of fit (GFI), and adjusted goodness of fit index (AGFI) to evaluate the overall goodness of fit ($\chi^2 = 133.057$, $df = 62$, $\chi^2/df = 2.146$, $SRMR = 0.076$, $GFI = 0.905$ and $AGFI = 0.860$). Consequently, the results show that the hypothesized model fits the empirical data well.

Table 2 Company information

Company Group	Frequently (LSP)	Percent (%)
Companies Registration		
Public Company	Limited 9	4.5
Limited company	172	86
Limited Partnership/ Ordinary Partnership	19	9.5
Total	200	100
Location		
North	15	7.5
Central	71	35.5
South	26	13
Eastern	39	19.5
Western	21	10.5
Northeast	28	14
Total	200	100
Age of the establishment and operation		
less than 5 years	15	7.5
5–10 years	30	15
11–15 years	45	22.5
more than 16 years	110	55
Total	200	100

Table 3 Hypothesis testing results

Hypothesis	Path	Direct effect	indirect effect	Note
Direct hypothesis				
H1	resources → value	0.308*	-	Support
H2	resources → innovation	0.707***	-	Support
H3	innovation → value	0.355***	-	Support
Mediation hypothesis				
H4	resource → innovation → value	-	0.255	Support

Note: Chi-Square = 133.057; $df = 62$; $SRMR = 0.016$; $RMSEA = 0.076$; $GFI = 0.905$; $AGFI = 0.860$
 significance level: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

5 Discussion

5.1 The influence of resources dimension on value creation

There is a significant relationship between the resources dimension and value creation. This is consistent with the resource-based theory, in which a firm's performance reflects a competitive advantage based on the

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organization's resource utilization and capabilities [1,8]. Furthermore, the effective utilization of supply chain resources, through which the tangible and intangible resources add value, include the following three areas: 1) value added from a common goal of supply chain management, 2) value added from joint development, and 3) value added from solving supply chain problems [34]. The result of the effective utilization of supply chain resources, as mentioned above, the performance evaluation outcomes (e.g., corporate growth, survival in the market) can include customer satisfaction and financial performance. While examining the relationship between resource dimensions and value creation in the role of the halal industry, Othman et al. [35] confirmed that knowledge in halal practice is a significant resource. These ensure that operators comply with halal standards to obtain halal products and quality services. In a similar approach, Tarmizi et al. [36] provided the supporting information that halal customer's confidence includes supply chain integrated systems and separation of facilities, equipment, and infrastructure for Halal products and services.

5.2 The influence of resources dimension on innovation solutions

Based on the hypothesis test, there is a positive influence of resources dimensions on innovation solutions. This means the ongoing global pandemic affects consumer behavior. Consumers have become increasingly hygiene conscious, which determines their decision to buy hygiene products; they have also become aware of the security measures to manage product and process quality. Thus, LSPs must manage the changing consumer behavior by employing effective strategic management measures [21,20]. For example, information sharing among supply chain partners to reduce the risks associated with internal and external factors [37,38] and creative inputs for new products, services, and process development can attract diverse customers [39]. Further, the role of the halal LSPs involves operational supervision and control following halal standards while transferring the control of products and services to other activities in the supply chain. Technology can provide more efficient monitoring of the halal supply chain that has supported services innovation to halal logistics [40].

5.3 The influence of innovation solutions on value creation

The results of the data analysis show a positive influence of innovation solutions on value creation in halal logistics. The findings agree with the research conducted by Mikl, Herold, Cwiklicki, and Kummer [41]. Their study compared the value added from different service types between basic logistics services and innovative logistics services. They found that basic logistics services emphasize mass markets with specific expertise to create value from the ability to manage redundant logistics

activities. However, innovative logistics services are focused on process development and technological factors creating value beyond that emerging from a chain of linked activities and the ability to fulfill customer needs in the industry.

The innovation solution for halal logistics is related to value creation in terms of the quality of halal products and services compliant across the upstream and downstream supply chains. The level of services provided to customers reflects the LSPs' expertise, which could show a positive increase in customer satisfaction levels, customer trust, and confidence [42-43].

5.4 The influence of resources dimensions on value creation through innovation solutions

The results show a positive and significant relationship between resources dimensions and value creation through innovation solutions. Hence, it can be concluded that the innovation solutions have been successful in partial mediation of the influence of the resources dimensions on value creation. We also conclude that effective utilization of resources in various dimensions will improve the value of the halal logistics service levels if supported by innovative solutions. These findings can be explained by the fact that halal logistics service utilizes resources from five dimensions—basic resources, advanced technology, information sharing, relationship management, and knowledge management [14,15,43]. Resource utilization can facilitate service innovation by halal logistics services providers in the areas of compliance. For example, halal products must be kept separate from non-halal products, cleaning activities for the dirt and stains removal should ensure non-contamination, and attention should be paid to halal documentation. These measures can enhance the innovation impact, a mechanism to increase service choice that LSPs can add value to the firm and integrity in the halal food chain.

6 Conclusion

6.1 Theoretical contributions

This study applied resource-based theory to examine the value added by LSPs. However, there are limitations as an empirical study on the value-added factors of halal LSPs in Thailand. The resource-based theory is also related to resource utilization adopted to create value through products and services in social context differences and crises [11,37,44]. Through this lens, it has been proven that resource utilization can be used to facilitate service innovation [21]. This study extends the definition of innovation in previous studies. Innovation can enhance competitive advantage by facilitating the development of better products and services at a faster and worth. This study contributes to the development of service levels through innovation in halal logistics and thereby responds to customer needs in changing situations [21,45,46]. Thus, the findings increase the knowledge of value creation in

logistics services by connecting three concepts: resources dimensions, innovation solutions, and value creation.

6.2 Practical implications

This study has important implications for LSPs in Thailand. First, resources utilization from five dimensions can create value in terms of financial and market for LSPs. Resources utilization can be described as follows: Basic resources, LSPs should consider flexible choices about using limited resources to obtain the maximum benefit (e.g., basic service coupled with other services). Advanced resources, the advanced technology may bring benefits that make it worth the difference in services. Halal logistics services is a service innovation of LSPs in Thailand that differs from basic services. They can set their prices in a fair market value transaction without price competition. Therefore, there is an opportunity for LSPs' faster payback period to influence technology investment. Information, a key of business opportunities, involves information from customers and stakeholders. Customer information sharing help in understanding customer needs with a lack of responses and creating products and services of great value. Moreover, information sharing between stakeholders in the supply chain enhances the quality control of halal logistics services. In terms of relationship management, LSPs need to build trust in a relationship with partners making provisions to deliver value in halal logistics services throughout the supply chain and reduce contamination errors between halal and non-halal products during operation. Additionally, knowledge is the significant limitation of halal logistics services in Thailand; Buddhism being the most common practice of Thai people is a reason for operators lacking knowledge and understanding of Islamic practices. Thus, the organization has a role in providing knowledge and understanding to operators to increase the operation efficiency following the halal standard. Second, resources play a critical role in facilitating service innovation, enabling LSPs to adapt their knowledge base to gain a competitive advantage. As a service innovation for LSPs in Thailand, halal logistics can facilitate the development of value-added services. Specifically, it can build customer trust during the ongoing COVID - 19 crisis by offering products and services that meet food quality, hygiene, and halal standards. Although LSPs are interested in halal logistics service innovation, there is no concrete government support and promotion to enter the potential halal market. The government should begin to promote halal logistics with clear standardization and rule of halal. There is no difference between the standards of Muslim countries and halal logistics provides extensive supports to businesses, both domestic and international. Finally, this study suggests that LSPs focus on promoting innovation in their organizations through resources utilization for improving their business performance, particularly in terms of creation of value-addition from finite resources in a crisis.

6.3 Limitations and future research

This study collected data during the pandemic. Therefore, the information was collected from logistics providers in non-normal operating circumstances. Because this scenario was influenced by rapid changes in demand and supply factors, the logistics providers may have paid less attention to innovation and focused on risk management. Moreover, innovation solutions partially mediate the relationship between the resources dimension and value creation; given this, there may be more than one mediator in this relationship. The future study can be replicated with additional mediators of more than one of these conditions (e.g., consumer demand and thriving halal industries) to describe the relationship between resources dimensions and value creation of LSPs in changing situations.

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