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Conceptualizing a Resilient Supply Chain Paradigm in Service Industry

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Globalization, disruption and unpredictable disaster are now playing notable roles which every business in all sectors need to be emerged a resilient supply chain. In this dynamic context, which risks and disruptions on supply chain are now raised, a resilient supply chain have been addressing to tackle problems simultaneously at the right ways and in a manner of time. A resilient supply chain is currently increasing attention from both academic and practitioners but resilient supply chain has attracted less attention in the service industry perspective. Due to the complex structure and unique characteristics of service industry, there is dearth on the extant literature review especially in service industry rather than manufacturing organizations. Therefore, this research is an exploratory study which aims to explore the importance of supply chain resilience and develop a resilient supply chain paradigm for service industry within Thailand context. The variety of Thai service businesses are selected as the sampling in this research. The raw data was conducted with key informants in Thai service industry. Thematic analysis was implemented as a data analysis method. Hence, the exploration from this research identifies the importance of a supply chain resilience paradigm in Thai service industry context to leverage organization performance, sales and customer satisfaction from organization disruptions. The research contribution aims to raise awareness and outlines the resilient supply chain paradigm as a guideline to Thai practitioners in service industry.

Additional Keywords and Phrases: service supply chain, supply chain resilience, supply chain disruption, supply chain management

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1 INTRODUCTION

According to various disruptions such as pandemics, disasters, globalization, economic crisis and so forth, supply chain resilience is a relative context in every sector which needs to implement for leveraging all unpredictable problems and maintaining organization performances [1], [2]. Supply chain resilience studies have been increasingly conducted to tackle organization issues by suitable approaches [3]. However, the mechanism of supply chain management in service industry is unlike manufacturing industry based on Unified Service Theory (UST) [4], [5], [6]. Therefore, the potential creation of suitable concept and paradigm of supply chain resilience within service industry is attracting from academics and practitioners. Moreover, this research is an exploratory study which aims to explore the importance of supply chain resilience and conceptualize a resilient supply chain paradigm for service industry within Asian context, in particular Thailand.

The structure of this research is as follows. The section 2 offers literature review of related topic while section 3 describes the research methodology. Semi-structure was used for data collection and thematic analysis was employed by data analysis section. Section 4 describes analysis process and findings. Then, discussion and knowledge implication are discussed in section 5 and the last section presents conclusion of this research.

2 LITERATURE REVIEW

Researcher aims to logically divide the related literatures and employ the appropriate theory in order to conceptualize the service supply chain resilience paradigm. Thus, Unified Service Theory has been employed to theoretical foundation [4], [5], [6]. An overview of Thai service industry and current state of supply chain resilience have been conduct from secondary studies.

2.1 Theoretical underpinning

This research focuses on service industry context which leads to apply the appropriate theory in this study, it is Unified Service Theory (UST) [5]. Researchers adopted the UST theory because it relates to service supply chain management and reflects about flow of customer feedbacks and quality improvement. [5] (2001: p.5) originally established The Unified Service Theory definition that;

"With service, the customer provides significant inputs into the production process. With manufacturing, groups of customers may contribute ideas to the design of the product, however, individual customers' only part in the actual process is to select and consume the output. Nearly all other managerial themes unique to services are founded in this distinction."

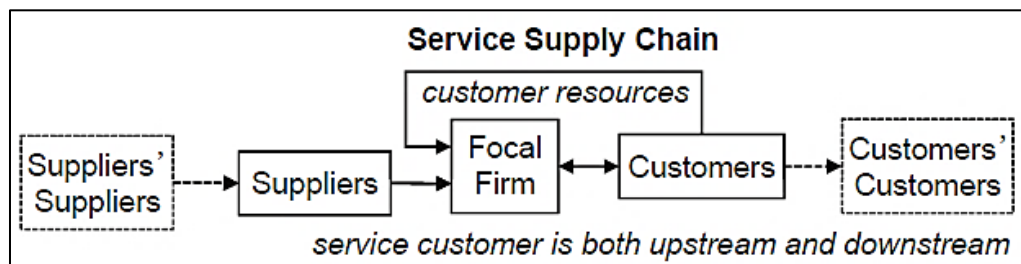


Figure 1: The focal concept of customer-supplier duality through service supply chain [6]

According to the nature of service industry has its own mechanism and unique characteristics, which means that customer demand management is crucial to consider about supply chain resilience context (see Figure 1) [7], [8], [9]. Three main focuses on UST theory including; inputs, customers and service process [4]. UST Theory highlights that customer need is basically determined as the important input to the service process following the concept of “Customer-supplier duality”. Customer-supplier duality refers to the bidirectional relationship within service process [4].

As stated by the above discussion, the Unified Service Theory (UST) is justified to the proposing paradigm of customer-supplier duality framework of a resilient service supply chain in Thai service industry [4], [5], [6], [9]. Moreover, UST Theory may help academics and practitioners investigate the gap of service performance and improve the potential customer journey.

2.2 Supply chain resilience in service industry perspective

Many scholars had attempted to define the definitions of supply chain resilience. For example, [10] suggest that supply chain resilience refers to the ability of company to predict and adapt their business operations against all disruption. [11] define that supply chain resilience is about the ability to tackle unpredictable changes, if its stable situation is still or if it's a new stable situation is improved. [12] propose that supply chain resilience is the ability to return to normal operations in a manner of time. [13] explain the supply chain resilience is the capability to deal with unpredictable circumstances. [14] describe that supply chain resilience is the ability of supply chain system to avoid disruptions and shorten the time to recover to normal operations. [15] explain that supply chain resilience is about anticipating the unexpected disruptions, proactively responding for all problems and recovering to the normal situations. Even though there have been vast studies conducted on supply chain resilience but there is no consensus and rigorous definition confirmation [16]. Then, the current state of supply chain resilience is defined mainly about the organization's abilities to leverage and react for unexpected crisis or disturbances [16], [17].

Service industry has played a significant role in many countries as one of drivers for the economy. Service industry has its own unique characteristics such as perishability, heterogeneity, simultaneity, intangibility [7], [8], [18]. The nature of service industry mechanism, for example education; tourism; healthcare; restaurant and so forth, requires to understand their patterns of customer behavior, high and low seasons and special customer needs in order to get competitive advantage and sales opportunities [9]. Based on service industry characteristics, all service products cannot be stored as manufacturing industry in advance and can be delivered when the customers arrive to the service point [4], [5], [7], [8]. Customers are counted as the main inputs to start the service process. Thereby, customer demand management is strongly relative and essential for service preparation during normal situations and unexpected crisis which would happen to customers.

Owing to the unpredictable disruptions and occurrences affecting to service industry revenues, the complexity of problem-solving supports academics and practitioners build the knowledge and awareness of supply chain resilience in order to mitigate emergent risks and occurrence. Hence, supply Chain resilience is one of crucial key factor for operating business and competitive advantage over competitors [17], [19].

3 RESEARCH DESIGN

According to the previous studies about supply chain resilience, many studies have been done in different topics under global perspective such as investigating relationships among variables, proposing

mitigated strategies, and offering the patterns of supply chain resilience dimensions. This research aims to explore the importance of supply chain resilience and develop a resilient supply chain paradigm for service industry within Asian context, in particular Thailand. The extensive information from Thai service industry can be reached by exploring practitioners' perspectives, opinions and attitudes on sites. Hence, this research is an exploratory study which adopts the interpretivism philosophy to explore the current situations by getting different viewpoints and judgements from various sources [20], [21], [22]. The main limitation of conducting primary data is data inaccessibility on sites. Researchers, therefore, employed qualitative approach based on the interpretivism philosophy which offers the perspective of seeking reality and insights from dynamic phenomenon within service industry.

3.1 Data collection Methods

Semi-structure interview was conducted to uncover insights and opinions from practitioners in Thai service industry. Researchers developed an interview protocol based on the existing literature reviews such as supply chain resilience in Thailand context, risk and disruption for service industry, and random three academics judgements. A pilot study interview took place to validate an interview protocol. All findings and feedbacks of a pilot study interview was brought to revise and modify an interview protocol before using in an empirical stage.

In the empirical stage, the researchers used an interview protocol to conduct primary data about a resilient supply chain in Thai service industry. An interview protocol includes 4 sections; general information of interviewees, companies' information, supply chain resilience perspective, and potential implementation for future trend of supply chain resilience. Purposive sampling was chosen in this research in order to ensure the target group [20]. The inclusion criteria for selecting respondents were: 1) they have more than 5 years of working experience; 2) the selected target group must work in any type of service industry; 3) they used to have front-line experience of delivering service to customers

Researchers recruited the amount of ten potential respondents from various types of service such as education, restaurant, transportation, telecommunication, tourism and healthcare industries base on [23]'s studies to express target respondents ideas and in-depth collected data in the analysis stage [9], [20], [24]. An interview protocol was allocated a week before having interview panels. The interview panel took time approximately 30-60 minutes on average.

3.2 Data Analysis Method

After collecting primary data by interviews approach from potential respondents within service industry, researchers, thereby, chose thematic analysis as the data analysis method to distribute, categorize, and group themes of supply chain resilience perspective and a suitable resilient supply chain context for Thai service industry. Researcher basically iterated the thematic analysis process based on [25], [26], [27] studies which mainly suggests the critical steps of raw data transformation into the data interpretation. Based on General Data Protection Regulations (GDPR), a European Union law to protect user directive, researchers removed all user data, anonymized their personal information and replaced data directive as codes of number. According to the nature of qualitative study validation approach, all collected data from the empirical data collection was refined and validated by academics and practitioners judgements to confirm the obtained insights and findings [25],

[26]. It is essential to clarify the understanding of supply chain resilience within service context. Thematic analysis process in this research was implemented based on [20], [25], [28] for the six stages; 1) familiarizing with collected data, 2) coding initial features, 3) searching relevant themes, 4) reviewing themes, 5) defining themes and 6) extracting and reporting results. To sum up, the justification of selecting thematic analysis as data analysis method in this research is about flexibility approach, which allows all processes doing back and forth as needed. Additionally, thematic analysis also provided rigorously to collected data and appropriateness of data analysis method in service industry context based on its characteristics.

4 ANALYSIS AND FINDINGS

This study follows the thematic analysis approaches based on [24], [25], [28] studies. A six steps approach to categorize, analyze and report is implemented. [25] & [28] recommend that first- and second-order codes are required for code initiation step. The collected data from primary study was arranged in the categorized into first-order codes or descriptive codes [20]. Then, the groups of refined first-order codes with related meaning were allocated to the second-order codes or interpretive codes [20]. There are 5 pillars that should be accounted for a resilient service supply chain including; 1) adaptation, 2) rapidity, 3) risks management, 4) connectivity, and 5) performance management. Then, Table 1. shows the originality of proposed supply chain resilience paradigm in service industry from thematic analysis process.

Table 1: Empirical evidence support resilient supply chain in service industry paradigm

Descriptive codes	Interpretive codes SC resilience themes	Supporting case from each type of industry					
		E	TP	TR	H	TC	R
‘... When troubles or disruptions hit us, we need to change and find the way out as soon as possible. We always take risks based on the nature of service industry especially demand and supply fluctuations. The faster we can solve the problems, the sooner we can offer our services to the potential customers.’ ‘... No matter how difficult we have faced so far during disruption, we are still available to serve customer and maintain service patterns ‘	Adaptation [1], [16]	✓	-	✓	✓	✓	✓
		-	✓	-	✓	✓	✓
‘ ... Time management is one of the key enabler for service industry. Being stable on steady state is essential. A short time to leverage disturbances matters, a simply recovery should be in a timely manner as well.’ ‘ ... After we know that some disruption may happen, we need to plan a quick alternative work methods for our current work. If possible, it would be better if we realize the upcoming problems before competitors.	Rapidity [10], [11], [16]	✓	-	✓	-	✓	-
		-	✓	✓	✓	✓	✓

Descriptive codes	Interpretive codes SC resilience themes	Supporting case from each type of industry					
		E	TP	TR	H	TC	R
'... The impact of COVID-19 pandemic since January 2020 has affected our business. There is no customers around 3-4 months. Our neighborhoods shut their business down. We do not even know when it has been started and when will be finished for this global pandemic disruption, perhaps until vaccines are developed.'	Risk management including; supply risks, demand risks, financial risks, political risks, and so forth [1], [10], [13], [16], [20]	-	✓	✓	-	-	✓
'... The main problem of service industry is the number of incoming customers or demand management. This issue is risky for every business. In case that customers are more than service provider, we might lose sale opportunities and decrease indirect customer satisfactions. On the other hand, if customers are less than service providers, our company still needs to pay for labor cost, time and surplus service goods preparation e.g. catering.'	[15], [17], [20]	✓	✓	✓	✓	✓	✓
'... All stakeholders should be incorporated during global crisis and been in steady state. We need to connect to our partnerships effectively responding to all disruptions.'	Connectivity [16], [18]	✓	✓	✓	✓	✓	-
'... Performance evaluation never stops being measured on steady states or disruptions. We need to be able to maintain the operations during crisis. Additionally, plans and goals need to change and adapt based on reality.'	Performance management [13], [14], [19]	✓	-	-	✓	✓	-

Remark: ^E Education, ^{TP} Transportation, ^{TR} Tourism, ^H Healthcare, ^{TC} Telecommunication, ^R Restaurant

5 RESEARCH CONTRIBUTION AND DISCUSSION

This study investigated the supply chain resilience pillars in service industry from theoretical foundation and empirical study. The generation of a resilient supply chain in service industry context was proposed based on the result from thematic analysis approach. We used the semi-structure interview to collect data on sites with Thai service industry academics and practitioners. The key findings of this study contribute to the existing knowledge of supply chain resilience while offer a resilient service supply chain paradigm from empirical evidences. This study also strengthen the research in supply chain resilience as research within this topic is still needed.

In addition, this study contributes to the managerial practice. The discussion panel during collecting data gives the practitioners awareness and encouragement to understand the overview of supply chain resilience within service industry. It also enables practitioners to take actions in advance to avoid unpredictable occurrence such as plant closure due to global pandemic crisis, strike and so forth.

6 CONCLUSION

To sum up, a deep understanding and knowledge of a resilient supply chain in service industry is essential for academics and practitioners. To achieve the purpose of this study and propose a resilient service supply chain paradigm, the empirical study had been conducted through the semi-structure interview with experienced practitioners in Thailand. The main results from empirical evidences indicate that there are 5 pillars that should be accounted for a resilient service supply chain including; 1) adaptation, 2) rapidity, 3) risks management, 4) connectivity, and 5) performance management.

Nevertheless, this research has its own limitations. Firstly, researchers spent some time to refine the purposive samplings in Thai service industry due to lack of deep understand and knowledge in supply chain resilience. Secondly, the empirical study was conducted in a limited number of potential respondents due to COVID-19 pandemic disruption. Thirdly, this research employed only the qualitative approach. Because of these, this research limitations open up future research and directions as follows:

- 1) The future research may implement quantitative approach or hybrid methods to find out about interrelationship among themes/variables of a resilient supply chain in service industry context.
- 2) The study results should be applied to other countries to test the general validity. Perhaps, potential research may employed surveys which would broader supply chain resilience in service industry insights and obtain international concerns or expert's opinion.
- 3) The driving research direction shows that the systematic review for supply chain resilience in service perspective is still required to fulfill the existing knowledge.

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REFERENCES

- [1] Chowdhury, M.M.H. & Quaddus, M. (2007). "Supply chain resilience: Conceptualization and scale development using dynamic capability theory". *Int. J. Production Economics*. 188: 185-204
- [2] Alfarsi, F., Lemke, F. & Yang, Y. (2019). "The Importance of Supply Chain Resilience: An Empirical Investigation". *Procedia Manufacturing*. 39: 1525-1529

- [3] Robson, C. (2002). *Real world research*. 2nd ed. Blackwell. Oxford
- [4] Sampson, S. E. (2000). Customer-supplier duality and bidirectional supply chains in service organizations. *International Journal of Service Industry Management*. 11(4). pp. 348-364
- [5] Sampson, S.E. (2001). The unified service theory approach to service operations management. In *Proceeding of the 12th Annual Conference of the production and operations management society (POM-2001)*
- [6] Sampson, S.E. & Spring, M. (2012). Customer roles in service supply chains and opportunities for innovation. *Supply Chain Management*. 48(4): 30-50
- [7] Ellram, L.M., Tate, W.L. and Billington, C. (2004) Understanding and managing the services supply chain, *Journal of Supply Chain Management: A Global Review of Purchasing and Supply*, 40(4): 17-32
- [8] Ellram, L.M., Tate, W.L. and Billington, C. (2007). Service Supply Management: the next frontier for improved organizational performance. *California Management Review*. 49(4): 44-66
- [9] Somabutr, S., Pandian, S., & Roh, S. (2020). The configuration of service supply chain. In *Proceedings of the international conference on Computers and Management in Business*: 301-305.
- [10] Birkie, S. E. (2016). Operational resilience and lean: In search of synergies and trade-offs. *Manufacturing Technology Management*
- [11] Wieland, A. & Marcus Wallenburg, C. (2013). The influence of relational competencies on supply chain resilience: a relational view. *Int. J. Physical Distribution & Logistics Management*. 43(4): 300-320
- [12] Brandon-Jones, E., Squire, B., Autry, C. W., & Petersen, K. J. (2014). A contingent resource-based perspective of supply chain resilience and robustness. *Supply Chain Management*. 50(3): 55-73
- [13] Carvalho, H., Barroso, A. P., Machado, V.H., Azevedo, S., & Cruz-Machado, V. (2012). Supply chain redesign for resilience using simulation. *Computers & Industrial Engineering*. 62(1): 329-341
- [14] Falasca, M., Zobel, C. W., & Cook, D. (2008). A decision support framework to assess supply chain resilience. In *Proceedings of the 5th international ISCRAM conference*: 596-605
- [15] Ponis, S.T., & Koronis, E. (2012). Supply chain resilience: definition of concept and its formative elements. *Applied Business Research*. 28(5). 921
- [16] Pires Ribeiro, J. P. & Barbosa-Pvov, A. (2018). Supply chain resilience: Definitions and quantitative modelling approaches – A literature review. *Computers & industrial engineering*. 115: 109-122
- [17] Hohenstein, N. –O., Feisel, E., Hartmann, E., & Giunipero, L. (2015). Research on the phenomenon of supply chain resilience: A systematic review and paths for further investigation. *Int. J. Physical Distribution & Logistics Management*. 45(1/2): 90-117
- [18] Boon-itt, S., Wong, C.Y., Wong, C.W.Y. (2017). Service supply chain management process capabilities: Measurement development. *Int. J. Production Economics*. 193: 1-11
- [19] Kamalahmadi, M. & Parast, M.M. (2016). A review of the literature on the principles of enterprise and supply chain resilience: Major findings and directions for future research. *Int. J. Production Economics*, 171: 116-133
- [20] Zhao, G., Liu, S. Lopez, C. Chen, H., Lu, H., Mangla, S. K. & Elgueta, S. (2020). Risk analysis of the agri-food supply chain: A multi-method approach. *Production Research*. 58(16): 4851-4876
- [21] Creswell, J. (2002) *Research Design: Quantitative and Qualitative Approaches*. 2nd Ed. Thousand Oaks, CA: Sage
- [22] Saunders, M. N.K., Lewis, P. & Thornhill, A. (2015) *Research methods for business students*. Essex, Pearson.
- [23] Francis, J.J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V. A., Eccles, M. P. & Grimshaw, J.M. (2010). What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychology & Health*. 25(10): 1229-1245
- [24] King, N. & Horrock, C. (2010) *Interviews in Qualitative Research*. London: Sage Publication.
- [25] Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3: 77-101.
- [26] Braun, V., & Clarke, V. (2013). *Successful qualitative research: A practical guide for beginners*. London: Sage.
- [27] Nowell, L. S., Norris, J.M., White, D. E. & Moules, N. J. (2017). Thematic Analysis: Striving to meet the trustworthiness criteria. *Int. J. Qualitative methods*. 16: 1-13
- [28] Javadi, M. and Zarea. (2016). Understanding thematic analysis and its pitfall. *Client care*. 1(1):34-40