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The Application of the Q-Sort Technique in Measuring Service Supply Chain Management Processes

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ABSTRACT

The industrial industry continues to get a lot of attention for supply chain and operations management. As a result, there has been minimal study on the creation of sound measuring frameworks in the service supply chain so far. The goal of this research is to provide a useful scale for evaluating service supply chain management operations. A set of scales matching a desired dimension is discovered using the Q-Sort algorithm. However, four aspects, including Demand Management, Capacity and Resource Management, Order Process Management, and Service Performance Management, have a small number of qualifying scales, suggesting that the scales should be examined and a second round of Q-Sort conducted. As a consequence, the findings suggest that using the Q-Sort method to eliminate the validity and reliability issues is a good idea, especially in the early phases of scale growth for defining the constructs of supply chain management processes in the service context.

Key words: Q-sort; scale growth; service supply chain.

Introduction

In today's highly competitive world, service sectors have the challenge of increasing operational efficiency and lowering costs while maintaining high levels of customer service. Furthermore, as a result of the technological revolution, rising consumer expectations, rapidly changing customer desires, and a volatile market environment, obstacles emerge.As a consequence, in order to achieve sustainable development, service firms must lower costs, transform into creative players, and distinguish themselves in the market. To address these issues, service providers are starting to employ supply chain management (SCM) methods that aim to strike a balance between client demands and supply chain capabilities. Reliability, responsiveness, consistency, adaptability, cost reduction, and process efficiency are all benefits of supply chain management.

The focus of supply chain and operations management is still heavily oriented toward the industrial sector, both academically and practically. Although it is thought that service organizations could benefit from using certain manufacturing best practices, the differences between service and manufacturing businesses may necessitate the development of new technologies.

for specific structures or scales that represent the service supply chain's behaviorsAs a result, there has been minimal study on the creation of sound measurement frameworks or scales in the service supply chain to date. As a result, researchers must operationalize and verify empirically sound scales to monitor the operations of the service supply chain. The goal of this research is to provide a useful scale for evaluating service supply chain management operations. As a result, effective approaches for developing robust empirical scales to quantify supply chain integration are required. To put it another way, academics must operationalize and verify scales to assess supply chain management techniques in the service business. In this case, the Q-sort approach could be useful.

The main approach for this research is to have 12 practitioners working in the service industry participate as responders. Based on their similarities and differences, the scales were divided into numerous groups, each of which corresponded to a certain dimension (process). formalized paraphrase.

This research uses the Q-sort approach to the scale development process in order to solve the reliability and validity issues caused by subjectivity in supply chain management services. To put it another way, this research looks at the Q-sort approach to see whether these constructions can be defined and discriminated against at the early stages of scale development. Indeed, the major contribution of this study is focused on the practical elements of using Q-sort as a tool to pre-validate and assess supply chain management in the Thai service environment rather than on theoretical principles. This paper is divided into three parts. The first part presents an overview of service supply chain management's theoretical foundations. Following that, the Q-sort approach is explained. The third portion examines the important findings and how to interpret them, and the last piece draws some conclusions about the Q-sort technique's viability for scale development in the service supply chain management system.

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THEORETICAL BACKGROUND OF SERVICE SUPPLY CHAIN MANAGEMENT

Forecasting, planning, executing, and regulating the supply chain process with the goal of efficiently satisfying client needs is what service supply chain management is all about. It entails coordinating, integrating, and regulating product, information, and financial flows both inside and across organizations. Firms used to apply SCM with the goal of improving operational efficiency and lowering costs. However, in today's business world, companies are seeking ways to get a competitive edge in order to provide superior customer service. In actuality, the firm's needs are met via integrated supply chain management. In the industrial business, the supply chain's goal is to reduce cycle time, inventory, and logistical costs. Most of this aim is meaningless in the service business since the service supplied is intangible or non-transferable [4]. Because most service sectors supply services directly to customers without the use of distributors or logistical partners, they are eager to improve supplier responsiveness and customer service delivery. The typical supply chain focuses on the movement of goods from suppliers to end users, while service chains focus on the flow of resources, which necessitates process management.

TABLE 1: DEFINITION OF SERVICE SUPPLY CHAIN PROCESSES

Construct	Definition
Demand Management	Managing and balancing customer demand by keeping up-to-date demand information.
Capacity and resource Management	Management capacity and resources of service, these resources are organized effectively and efficiently operate at optimum capacity
Customer Relationship Management	Maintaining and developing long-term customer relationships by developing customer information continuously and trying to understand what customers want.
Supplier Relationship Management	A process where customers and suppliers develop and maintain a close and long-term relationship as partners. SRM composes of five key components, including coordination, cooperation, commitment, information-sharing and feedback.
Order Process Management	Organizing response for orders processed from customers. The scope of order process management includes getting orders until delivering service to customers.
Service Performance Management	Management services systems, all of which should be taken into account when managing, measuring, modifying and rewarding service performance to improve organizational performance in order to achieve corporate strategic aims and promote its mission and values.
Information and technology Management	Adoption of technologies to support and collaborate within supply chain to improve service supply chain operations for achieving competitive advantage in their businesses.

SCM ideas have been effectively adopted in a variety of service industries, including retail, financial services, transportation, courier services, and logistics providers. Wal-Mart is a famous example of the retail business. By working throughout the whole operation using SCM, it has been able to give better service to its customers. P & G likewise adopted the SCM strategy, which has given the corporation a competitive edge in the market. In general, SCM has a lot of advantages for the service business. As a result, the company will be able to increase client

happiness and loyalty. Using SCM in a service business gives it a competitive edge in the marketplace and boosts profits. It also allows the company to save costs, improve its distribution system, and estimate client demand.

From the earliest supplier to the final consumer, service supply chain management is described as the management of information, procedures, capacity, service performance, and finances. Furthermore, a service supply chain is a network of suppliers, service providers, customers, and other service partners that convert resources into services given to and received by consumers. According to experts, the service supply chain has seven theoretical processes: (1) demand management; (2) capacity and resource management; (3) customer relationship management; (4) supplier relationship management; (5) order process management; (6) service performance management; and (7) information and technology management. The definitions for each step are shown in Table 1.

Q-SORT TECHNIQUE

The Q-sort method was created by psychologists to investigate human characteristics. Its capacity to discover a person's core values also makes it perfect for determining the fundamental aspects that influence purchase behavior. This approach is quite adaptable. Although it is often used to determine priorities and putative rank orders, the approach is particularly well suited to situations in which the existence of ideas has not been proven.

For pre-assessing initial concept validity and reliability, the Q-sort approach has been frequently employed. The Q-sort technique's main principle is to have experts serve as judges and sort the objects into various groups, each of which corresponds to a dimension depending on judge agreement. The major assessment indicator in the Q-sort approach is a measurement of inter-judge agreement levels. If none or just a few of the assertions meet the criteria, it's possible that the definitions are incorrect or that the construct doesn't exist. In order to determine the final result in the Q-sort approach, it is also necessary to provide two defining rules. To begin with, a definition is only valid if at least two elements accurately describe it. Second, for an item to be genuine, it must have been assigned the same definition by 70% of the sample. To put it another way, a factor exists if 70% of the people in the sample agree that the two items adequately describe it. In order to determine the internal consistency (reliability) of a scale, at least four to six items per scale should be gathered.

An Example of Q-Sort Technique Use

This approach posits that in the service business, there is a theoretical multidimensional idea (Factor) of supply chain management. I created seven aspects (factors) of service supply chain management to demonstrate the utility of this Q-sort approach, including:

- Demand Management,
- Capacity and resource Management
- Customer Relationship Management
- Supplier Relationship Management
- Order Process Management
- Service Performance Management

DTABLE 2: THE RESULT AND FREQUENCY OF SUPPLIER RELATIONSHIPS MANAGEMENT DIMENSION

Supplier Relationship Management	**Q-sort study(N=12)**
The ability to develop long-term relationships with suppliers.	80% (0.8)*
The ability to maintain close relationship with a limited pool of suppliers	90% (0.9)*
The ability to evaluate supplier performance	80% (0.8)*
The ability to focus on key supplier to improve the service chain quality	80% (0.8)*
The ability to develop a partnership program with suppliers for the benefit of the whole service supply chain	80% (0.8)*
The ability to share common resources with suppliers	30% (0.3)

TABLE 3: THE OVERALL RESULT FROM Q-SORT TECHNIQUE

Final statistics	Number of items
Items placed on dimensions (Total)	45
Qualifying items (Agreement ≥ 0.70	26
Rejected items (Agreement < 0.70)	19

Conclusions

The case study revealed that, as recommended by [11], selecting an acceptable construct in the service context is a critical problem in identifying the items to assess service supply chain activities. However, before utilizing a questionnaire to gather data, this case study tries to test the elements or ideas of service supply chain management via other techniques. It's worth noting that the scale creation procedure is critical from the start to guarantee that the researchers acquire the greatest amount of information possible from the responder [12]. As a result, the Q-sort approach contributes to the use of a theoretical framework paired with expert opinion in scale development. In this case, service supply chain management assessment studies encourage a trend toward removing ambiguous or mixed-worded items from Demand Management, Capacity and Resource Management, Order Process Management, and Service Performance Management, particularly in the context of service supply chains. As a consequence, researchers must exercise caution when attempting to quantify the idea of service supply chain processes.

APPENDIX A: THE RESULTS AND FREQUENCY OF ALL FACTORS (* INDICATED QUALIFYING ITEM)

Demand Management	Q-Sort Study (N=12)
The ability to simulate different of demand needs.	100% (1.0)*
Demand resources needs reliability.	70% (0.7)*
The ability to improve the accurate demand forecasting and delivery by reconciling up- to-date information.	40% (0.4)
The ability to focus on forecasting, planning, and target-setting functions.	30% (0.3)
The ability to match service capacity with demand through operations.	20% (0.2)

Capacity and resource Management	Q-Sort Study (N=12
The ability to manage intangible resources (e.g. skills, experiences, and knowledge) to operate at optimum service capacity.	80% (0.8)*
The ability to manage tangible resources (e.g. facilities, labor, and capital) to operate at optimum service capacity.	70% (0.7)*
The ability to define service capacity in the firm.	50% (0.5)
Have the tracking system in order to find the problems of unused service capacity.	50% (0.5)
Service capacity utilization is low enough to provide near instant service or least waiting time.	40% (0.4)
The ability to match service capacity with uncertain demand.	30% (0.3)
The ability to adjust service capacity during high and low demand	30% (0.3)
The ability to deal with excess and/or idle service capacity	30% (0.3)

Customer Relationship Management	**Q-Sort Study (N=12**
The ability to develop long-term relationships with customers.	90% (0.9)*
Focus on customer satisfactions as the center of corporate activities.	90% (0.9)*
The ability to communicate optimistic information to customers.	90% (0.9)*
The ability to establish effective relationships with customers to the benefit of the brand loyalty.	90% (0.9)*
The ability to classify and prioritize key customers.	80% (0.8)*
The ability to manage relationship with customer to create the impression before and after service	80% (0.8)*
The ability to focus on customer needs and customer service to improve the service chain.	80% (0.8)*)

Order Process Management	**Q-Sort Study (N=12**
Management team emphasize on service performance management.	70% (0.7)*
Employees in organizations recognize the benefits of service performance management.	60% (0.6)
Have a commitment to ensure accurate and reliable service performance.	50% (0.5)
Employees have knowledge and skills in working with integrity and confidence.	40% (0.4)
Employees are able to develop their personality and refine their service performance.	40% (0.4)
Employees are willingness to serve customers immediately.	30% (0.3)
Have customer satisfaction index (CSI) such as speed of service, number of complaints, number of recommendations.	30% (0.3)

Information & Technology Management	**Q-Sort Study (N=12**
Using new technology for increase channel to customers to contact the organization.	100% (1.0)*
The ability to create effective networks management to share information among internal functions, suppliers and customers.	90% (0.9)*
Firm has an information technology system to share information with customers.	80% (0.8)*
Firm has an information technology system to share information with suppliers.	80% (0.8)*
Firm use up-to-date information to make a decision via information and technology management.	80% (0.8)*)
The ability to track accurate information and/or data within the supply chain by using information technology.	70% (0.7)*

The goal of this research was to show the utility and techniques of the Q-sort methodology as a first step in scale development. Using the scientific approach known as the Q-sort methodology, we sought to build a collection of items with a degree of pre-validation. The Q-sort approach aims to match submitted items to relevant constructions and contexts. A scaled questionnaire might be used to examine the reliability and validity of the dimensions and constructs utilizing the idea of a service supply chain. The case study revealed that finding a qualifying item is a key problem in defining the dimensions of service supply chain management using this Q-sort application. It should be highlighted, however, that this strategy should be employed as a first step in the scale development process rather than as a comprehensive procedure. This procedure should only be used to enhance the internal consistency and dependability of large-scale development processes.

Finally, the goal of this research was to look at not only the techniques, but also the advantages of using the Q-sort methodology as a first step in scale development. Furthermore, instead of using an expert opinion or a piloted questionnaire to test the validity of the final questionnaire, researchers might utilize this method.

Acknowledgements

Future research might explore numerous avenues as a result of this work. First, how do the findings of this study compare to past research in the field? Second, how can we prevent concerns or assertions in the service supply chain that are excessively subjective due to the theoretical framework? Third, where do we go from here in terms of developing and evaluating measurement scales for service supply chain management?

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