**Tourism Management and Technology Economy (2021) 4: 1-6**
**Clausius Scientific Press, Canada**

**DOI: 10.23977/tmte.2021.040101**
**ISSN 2616-2199**

# *Review on Quality Chain Synergy*

**Xiaoli Qu[1,*], Qiang Liu[1], Yu Guo[2] and Ming Liu[1]**

[1]*School of Economics and Management, Liaoning University of Technology, Jinzhou, Liaoning, China, 121001*
[2]*School of Economics and Management, Harbin Engineering University, Harbin, Heilongjiang, China, 150001*
**corresponding author : Xiaoli Qu*

***Keywords:*** Quality chain, Synergy, Review.

***Abstract:*** with the rapid development and progress of the times, in the context of economic globalization, People's quality requirements are also increasing. The collaborative management of the quality chain is necessary for enterprises to meet customers' needs and enhance their strength and market position. In this study, the related content of quality chain is studied using the method of literary analysis. Firstly, the origin and concept of quality chain collaborative management are checked, then, on the basis of integrating and analyzing the research results of domestic and foreign scholars, the characteristics of quality chain collaborative management are studied, and then the division of construct dimension of quality chain collaborative is integrated. Finally, the Operation Mechanism of quality chain collaborative is expounded. This study provides the train of thought for the related research and the promotion of the collaborative management level of quality chain.

## 1. Introduction

Quality is the lifeblood of an enterprise. Under the background of economic globalization and rapid development of Internet technology, the market competition is no longer the competition among enterprises but the competition among organizations. Enterprises only pay attention to the quality management within the organization itself, no longer adapt to the current development trend, not cooperate with the enterprises on the quality chain, implement the common development strategy, it is impossible to satisfy the demand of customer service quality only by oneself. From the "Barrel effect" analogy: Suppose we want to improve the quality management level of the whole quality chain group. In that case, the key is to strengthen the weakest enterprise's management level so that its quality management level and the rest of the quality chain in coordination. Therefore, the establishment of the collaborative management system of quality chain among enterprises, the elimination of all kinds of differences among node enterprises in the quality chain, and the study of cooperative management of quality chain with industry cluster as the core are urgent problems to be solved in the industry and academia.

## 2. The Connotation and Characteristics of Quality Chain Synergy

### 2.1. Origin and Definition of Quality Chain Synergy

The concept of “Synergy” originated from physics and is a summary of the process of studying the transition from disorder state to order state. On this basis, the concept of synergy has been introduced into the fields of economics and management. It is considered as the realization of value co-creation among enterprises, resource replacement, and sharing. Quality chain synergy is developed on the basis of supply chain quality management [1-3]. Overseas scholar Carol J. Robinson et al. defined it as that all enterprises in the product supply chain involved in product production improve their quality management level through unremitting cooperation and process integration to meet customers and enterprises' needs the whole product production supply chain [4]. Yahia studies the conceptual dimension of supply chain synergy and concludes that supply chain node enterprises' joint efforts are the basis of realizing the supply chain synergy effect [5]. On this basis, some scholars also continue to study supply chain quality management from different perspectives and update and supplement its content. They believe that the core of supply chain quality management is to meet customers and members of supply chain nodes' needs and achieve target collaboration through different adjustments and cooperation [4,6-13]. Relevant researches on supply chain quality management have inspired scholars a lot. They integrate it with communication technology, and scholars extend it; Thus, collaborative quality chain management emerges as The Times demand [14-16]. In 2002, domestic scholar Tang Xiaoqing analyzed and pointed out the limitations and disadvantages of the traditional closed quality management model, at the same time, defined the concept, and considered that “Collaborative quality chain management” is the product of the times, it uncovers the black box of quality management, clarifies the path to improve the quality management level, and builds the cooperative relationship between the industrial groups as the framework, which lays a solid foundation for the future research [14]. Hui Huaihai and other scholars also pointed out the shortcomings of the traditional quality chain management model, and the collaborative management of the quality chain is imperative [17-19].

### 2.2. The Characteristics of Quality Chain Synergy

Starting from the systematicness of the quality chain, quality chain co-management aims to meet the needs of customers, and from the whole quality chain as the research object, to construct a new type of quality co-relationship (as shown in Figure 1), which participates in the process of working together to achieve optimistic harmony, break the ability barrier between node enterprises, promote collaborative quality development and level improvement between enterprises. Therefore, the collective management of the quality chain has the following characteristics.

#### 2.2.1. Efficient Flow of Quality Information Transmission

The quality information runs through the whole quality chain, and the node enterprise which is closest to the end customer transforms the received customer demand into the information which is easy to flow and welcome to the upstream enterprise which is adjacent to the end customer, each node enterprise needs to participate in it. The effective management of quality flow is of great significance to improve the quality chain's whole management level.

#### 2.2.2. Synergy

Quality chain synergy management is based on the integrity and systematicness of the quality chain. Each node enterprise has its role to play and responsibility to assume. If any node fails, all enterprises

in the same quality chain will be affected. Therefore, core enterprises initiate quality chain management and then promote the construction of the collaborative system among enterprises in the quality chain (as shown in Figure 1) to eliminate the estrangement between enterprises and realize the synergy of the whole quality chain to create a win-win situation of 1+1>2.

### 2.2.3. Wide Area Integration

The quality chain's synergy management deconstructs the black box of quality management and breaks the closed boundary of quality management. It is not only limited to the internal integration management of the organization but also its persistent pursuit of promoting the cooperation of node enterprises with different growth backgrounds and various professional fields to achieve value co-creation by building an open management framework of wide-area integration.

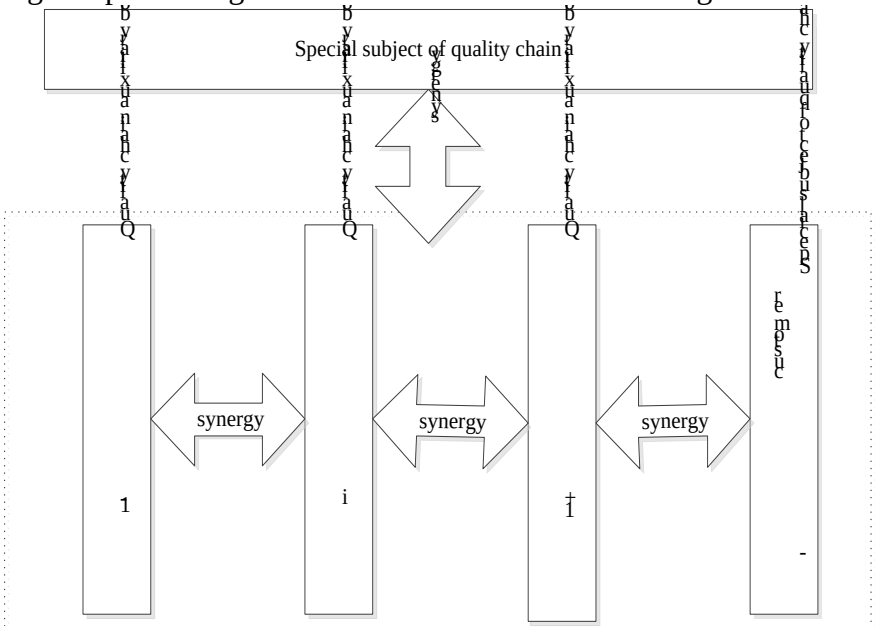


Figure 1: Structure of the quality chain.

## 3. Quality Chain Collaborative Construction Dimension

Jin Guoqiang and others have studied and analyzed the quality chain as a whole and divided it into three levels: the first level is the internal quality chain level, the second level is the quality process level, and the third level is the quality chain level of the organization group [20]. Internal quality chain integration is the vertical integration of business (including basic layer, executive layer, and management layer). The quality chain layer of the organization group is the horizontal integration of quality chain node enterprises. Quality flow refers to the process of quality flow in the direction of flow between enterprises, that is, tandem enterprises. On this basis, scholar Gan Yan made a further development on the quality chain from the axial, horizontal, and vertical deconstruction and dimension division (as shown in Figure 2). [21]

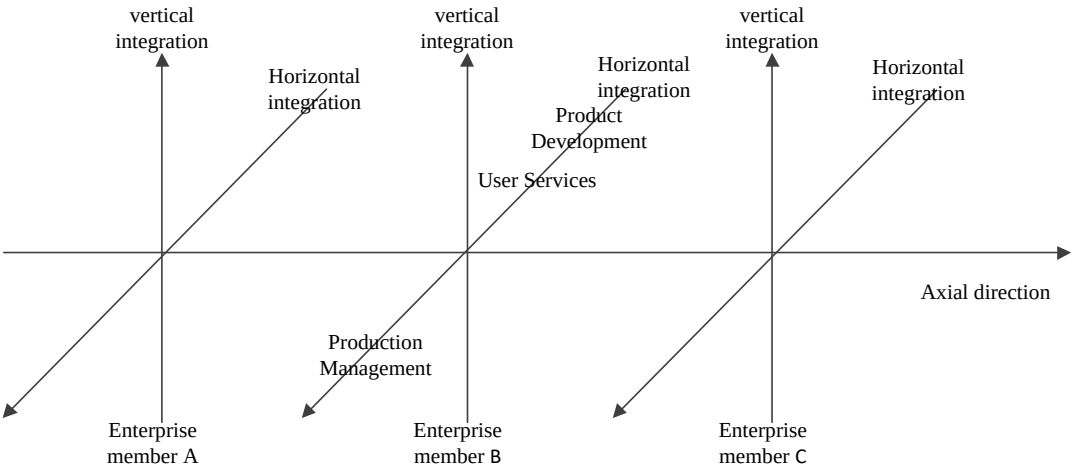


Figure 2: Structural model diagram.

Yin XH, a scholar, has integrated and expanded the research models of previous scholars, and based on the fact that leading enterprises play a significant role in promoting quality chain management and that each node enterprise has its level characteristics, the quality chain construct dimension is divided into three layers, which are the main layer, the process layer and the content co-layer (as shown in Figure 3) [22].

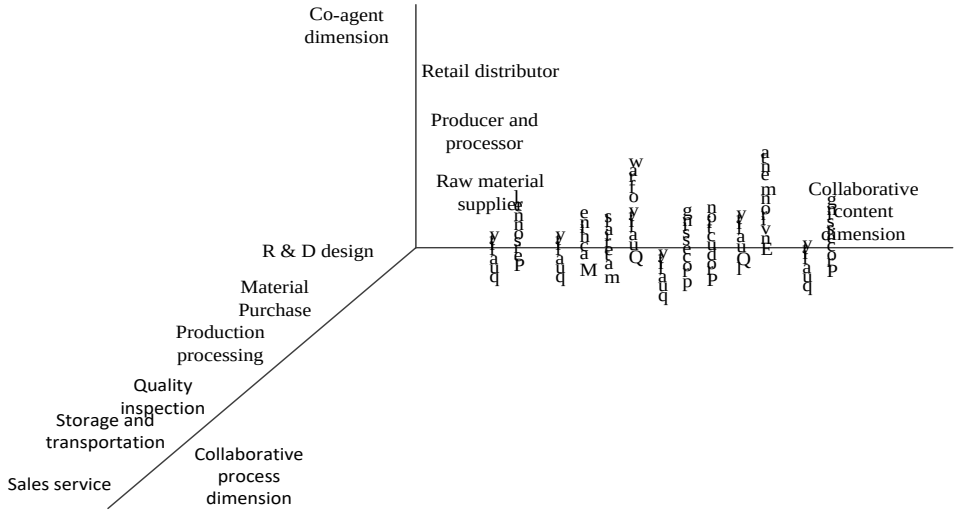


Figure 3: Dimension figure.

## 4. Quality Chain Synergetic Correlation Theory

The coupling mechanism is the theoretical basis of quality chain coordination. Coupling begins in physics and refers to the fusion and matching process between two or more systems or forms of motion. The degree of coupling is used to characterize the degree to which the designs or elements interact [23,24]. Based on the related characteristics of quality chain collaborative management, the coupling mechanism of quality chain refers to the complementary phenomenon of quality activities between two enterprises [23-25]. “Coupling” is the crucial point that quality chain collaborative management differs from traditional quality management. As shown in Figure 4, we can see that the coupling principle is mainly embodied in the coupling between the node enterprises, the coupling

between the internal and external of the organization, the coupling between the elements, and the coupling between the node enterprises and the quality flow.

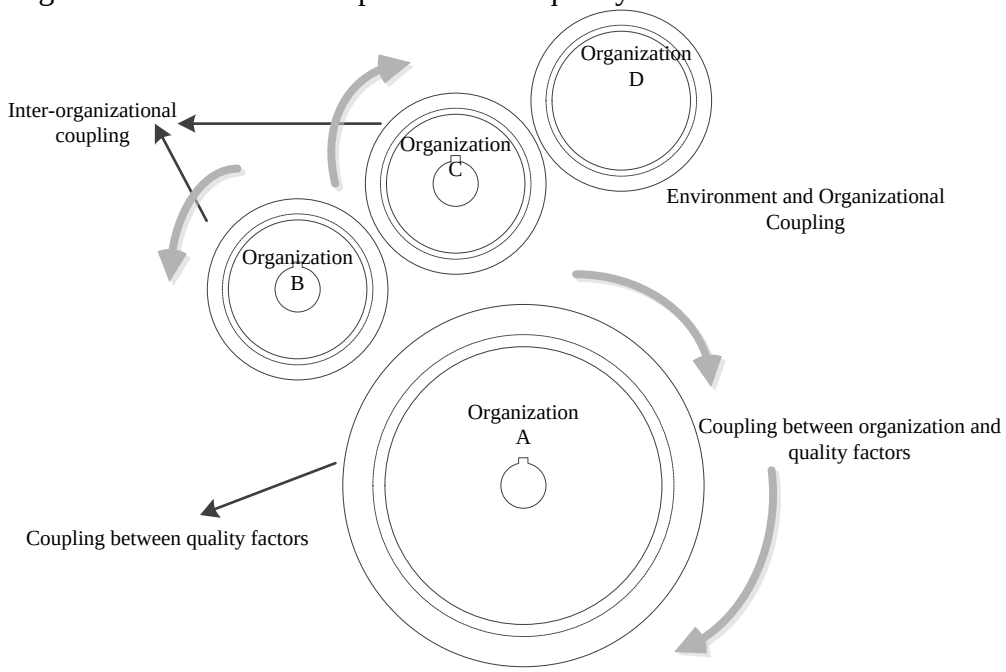


Figure 4: Coupling effect.

## 5. Conclusion

In this study, the development traceability and conceptual characteristics of quality chain collaborative management are described, and the construction dimension of quality synergy is analyzed and reviewed, which lays a foundation for further research in the future.


## Acknowledgements

This research is funded by 2019 science research fund of department of education of Liaoning Province (JQW201915402).


## References


[1] *S. Thomas Foster Jr. Towards an understanding of supply chain quality management. Journal of Operations Management, 2008, 26(4):461-467.*

[2] *Pu GL, Su Q, Liu Q. A New Subject Direction——Summary of Supply Chain Quality Management Research. Science of Science and Management of S. & T.2011, 32(10):70-79.*

[3] *Ana CF, Paulo S, Maria S. Supply chain management and quality management integration. International Journal of Quality&Reliability Management, 2017, 34(1):53-67.*

[4] *Carol J. Robinson, Manoj K. Malhotra. Defining the concept of supply chain quality management and its relevance to academic and industrial practice. International Journal of Production Economics, 2004, 96(3):315-337.*

[5] *Yahia Z M. The collaborative supply chain. Assembly Automation, 2009, 29(2):127-136.*

[6] *Yang YS. Research on quality chain identification method and optimization model of complex large-scale construction projects. Beijing: North China Electric Power University, 2015.*

[7] *Qian Y. Research on Supply Chain Collaborative Quality Management Based on SCOR. Nanjing: Hohai University, 2007.*

[8] *Huang Mingqun. Research on Supplier Quality Management Based on Collaborative Quality Chain. Shanghai: Huazhong University of Science and Technology, 2006.*

*[9] Mahour MP Supply chain quality management. International Journal of Quality & Reliability Management, 2013, 30(5):511-529.*
*[10] Hale K, Janet L. Hartley. A replication and extension of quality management into the supply chain. Operations Management, 2008(26):468-489.*
*[11] Tom DW, Larry C, Giunipero, Horace L, Melton. Clusters and supply chain management: the Amish experience. International Journal of Physical Distribution &Logistics Management, 2006(4):51-55.*
*[12] Carol J, Robinson, Manoj K, Malhotra. Defining the concept of supply chain quality management and its relevance to academic and industrial practice. Production Economics, 2005, 2(1):7-19.*
*[13] Chinho L, Wing S. Chow, Christian N. M, Kuei CH, Pei PY. A structural equation model of supply chain quality management and organizational performance. Production Economics, 2005(96): 355-365.*
*[14] Tang XQ, Duan Guijiang. Collaborative quality chain management for global manufacturing. China Quality, 2002, (9): 20, 32-34.*
*[15] He Zhen, Lu Lu. Analysis of Quality Management Elements and Competitiveness of Manufacturing Enterprises. Journal of Tianjin University (Social Science Edition), 2008, (1): 24-29.*
*[16] Li BY, Li Haoran. Research on collaborative quality management in a supply chain environment. China New Technology and New Products, 2015, No. 298(12): 177-178.*
*[17] Zhao GH. Construction of a collaborative management system for the supply chain of industrial clusters. Science and Technology Progress and Countermeasures, 2009, 27 (18): 41-45.*
*[18] Hui HJ, Liang GQ, Ma JC. Preliminary research on collaborative quality chain management process model. Modern Manufacturing Engineering, 2008, (6): 82-85.*
*[19] Hao SB, Yu B, Wu WW. Study on coupling degree evaluation of enterprise network capability and technical capability. Scientific research, 2009, 27(2): 250-254.*
*[20] Jin GQ, Liu Hengjiang. A review of the theory of quality chain management. Standard Science, 2006, (3): 21-24.*
*[21] Gan Y. Research on cold chain logistics process control of meat products in Beijing based on quality chain. Beijing: Beijing Jiaotong University, 2012.*
*[22] Yin XH. Research on the food quality chain synergy level based on the principle of order parameter. Nanjing: Nanjing University of Finance and Economics, 2015.*
*[23] Wang XH, Che Z, Yu B, Wu MM. Network embeddedness, multi-channel knowledge aggregation and creativity-the moderating effect of knowledge flow coupling. Nankai Management Review, 2019, 03:28-39.*
*[24] Liu HJ. Coupling mechanism analysis of mass chain. World Standardization and quality management, 2007, (06): 34-37.*
*[25] Wu YN, Yang Y, Feng TT. Study on macro-quality chain construction and collaborative optimization of large-scale and complex projects. Soft Science, 2013, 27(07).*