

Quality Management of Internal Supply Chain in Halal Food Manufacturer

Hartini Ahmad¹, Rohafiz Sabar², Zulkifli Mohamed Udin³,
Mohd Faizal Abd Latif⁴, Nizamuddin Zainuddin⁵

¹*School of Business Management, Universiti Utara Malaysia, 06010 Sintok, Kedah*

^{2,3,4,5}*School of Technology Management and Logistics, Universiti Utara Malaysia, 06010 Sintok, Kedah*

¹*hartini@uum.edu.my; ²rohafiz@uum.edu.my; ³zulkifli@uum.edu.my*

⁴*fezal93@yahoo.com; ⁵nizamuddin@uum.edu.my*

Abstract—This paper investigates the relationship between the internal supply chain quality management and company performance. The quality management of the internal supply chain is the evergreen research theme in the Halal business process. The research methods utilized the case study approach and collect in-depth information on a single case study. The paper answers the relationship between internal supply chain quality management and the performance of a company. The themes emerged are in terms of the quality control and quality assurance, and technological advent of the internal supply chain. The relationships of the themes identified the business process management and operational excellence as crucial for meeting customers' demand and expectations. The recommendations for increasing the company performance, besides the quality, are speed, efficiency, flexibility, and capacity.

Keywords—Halal, Quality Management, Case Study, Food Manufacturer, Supply Chain, Performance, Business Process

1. Introduction

Total Quality Management (TQM) is a comprehensive system to achieve continuous improvement in the company is important however it is not easy to be implemented by the company. Quality management monitors all activities and tasks required to maintain the desired level of excellence, including in the internal supply chain of a company. These include quality policy, quality planning, quality assurance, quality control, and quality improvement.

Small and Medium-Sized Enterprises (SMEs) in the manufacturing sector make a significant contribution to economic growth, yet most of the research into quality management in the manufacturing sector has focused on large organizations. This paper identifies how the internal supply chain quality management and performance in the SMEs, focused on one case study. In comparisons with the large manufacturing companies, mostly the SMEs are often reluctant to adopt the internal supply chain quality management practices.

Customer-driven in quality management means customers' needs as a priority, expanding the

relationship beyond traditional services and incorporating customer needs into their business plans and corporate strategies [1], [2]. TQM intends to improve the quality and promote the improvement of the process, such as in the supply chain. Internal supply chain quality management is an act of monitoring all in-house activities and tasks required to maintain the desired level of excellence and to remain as Halal producer. The business process of the supply chain includes the input-process-output that align with the quality policy, planning, assurance, control, and improvements, as a cyclic approach [1], [3]. Therefore, internal supply chain quality management plays an important role in helping SMEs to survive in the long run.

2. Background of Case Study

Business in Islam is a ritual that should be done in good faith and accordance with Islamic Shari'ah will get the pleasure of Allah the Al-Mighty. [1], [4] further stressed on Halal principles in the company. Adhering to these principles, the spouses have been involved in this family business. They have been in Sate business for nearly 30 years before expanding to the current business. The business was operated in Penang, at the time, where the company was a supplier of several Five Star hotels such as Rasa Sayang Hotel, Golden Sands Hotel, and Hotel Merlin. In the mid-1980s, the company had expanded to meet the demand, especially from foreign tourists. The product ranges including *Sambal Kacang Segera Serbaguna* and *Kuah Sate Segera*. Sudiraz Enterprise (SDRE) was established in 1992 that produce *Kuah Sate Segera* widely.

SME Corporation of Malaysia defined SMEs for both manufacturing, and services and other sectors. Generally, for the manufacturing, SME is an enterprise with full-time employees not exceeding 200 or annual sales turnover no exceeding RM50 Million. SDRE has 8 workers and the annual sales turnover is approximately RM5 million.

The company's motto is *Holy, Fresh and Clean*. The company's vision is to become a leading manufacturer

and supplier of quality kosher and Halal food products, original and famous for its taste and penetrating global market. Besides, the company's mission is to ensure that SDRE's products are popular among consumers. The company value proposition is that the products could provide consumers with alternative options to purchase quality halal and non-native food products. Furthermore, the company aims are to ensure that Bumiputera will get more job opportunities and to maintain their welfare. Among the products offered by SDRE are the spices for flavoring fish curry, beef curry, coconut milk, peanut sauce, chili sauce, and soy sauce. Apart from those products, the company produces hand-made and natural pillows to meet market demand. SDRE claims that profit is not their main goal, but the company focuses more on quality and customer satisfaction.

3. Background of the Problem

The internal supply chain becoming important to fulfill the huge demand for instance during the festivals and wedding feasts. The issues are relying more on the internal supply chain quality management in terms of meeting the capacity of the productions. Although the company does not have a large factory, it manages to sell the products directly to the individual customers and commercial customers, and successfully penetrate the international markets such as in Singapore, Brunei, Jordan, and Mecca. The products also sell in the hypermarkets such as Giant and Tesco. However, documentation on managing the internal supply chain quality is still below expectations due to the lack of a proper system. This may cause the supplier and the customer to withdraw or dismantle suddenly without making any payment. Moreover, orders received from customers were not managed well due to no logistics or transportations provided to them. Its products are also brought to the original equipment manufacturer (OEM). The products are resold using the new design and brand by the new owner. Hence, the case study raised the main broad question which is "How the company manages the internal supply chain?"

4. Literature Review

The food-processing sector accounts for about 10% of Malaysia's manufacturing output. Processed food contributed about RM21.1 billion in 2017 [5], [6]. [7] stated the food sector is complex, global and dynamic in a way it operates. Hence, the modern agrifood economies, the quality management is crucial, including the small and medium [8] and need innovation for ensuring the competitiveness of the food industry of SMEs [7].

The quality management is aimed at prolonged quality improvements in an organization and is also included in all divisions including in business [1], [9]. [9] views through empirical studies it shows Quality Analysts that can have a positive impact on the various functions of the business and it should require a profound impact. With good quality, such as in Halal food manufacturer, internal supply chain, consumers to the company will be more satisfied and trust the company. Quality management could explain the quality improvement in the supply chain that is widely accepted by the quality community. The entire idea of quality is a function of customer's perceptions and satisfaction, hence in this context the internal customers of the supply chain of the company.

Joseph Juran introduced "The Juran Trilogy", explains the view that organizational quality problems, which are largely the result of insufficient and ineffective planning for quality. Hence, a company must establish specific goals to be reached and plans for reaching the goals. Juran identified three basic processes to improve quality namely planning, control, and improvement. Ref. [1] stated quality is about the purpose is to provide the operating forces involved in producing products which meet to customer's need. For examples, quality is being examined by their invoices, purchase-sales contract, service calls and new design for goods.

Furthermore, control is a process related to the activity that ensures processes are stable and provides a relatively consistent outcome. Control involves the collection of data on the process to ensure the process is consistent [1]. The project-by-project approach advocated by Juran is a planning-based approach to quality management [1], [2]. The project approach for the project organized by Juran is a planning approach based on an improvement in quality.

Besides, Edward Deming introduced "Deming's 14 points" which is about quality management based on the statistical sampling techniques. The quality in the management may develop a positive environment and it can decrease the defects indirectly it will decrease the cost. Therefore, the theory could be adopted by improving the system of production and services. Ref. [1] also stated the importance to maintain quality and productivity that includes product design, process design, training, tools, machines, process flow and variables that can influence production and service systems to ensure the continuous improvements. Another quality that can be enhanced is provided

training on the job. People must have the necessary training and knowledge to perform their work [1].

5. Research Methods

Data used in this study are primary and secondary data [10], [11]. The interviews were conducted with the participants of the study. Interviews provide clear information and answers to all the questions that are available for the research work done [12], [13]. Secondary data is about the information that getting from existing sources, which was found from the company’s records. The interview question is broad, which asked: "how SDRE managing the internal supply chain?" This followed by the important questions raised from our general questions such as:

1. How the company undertakes out the production line?
2. How the company manages its order and raw materials?
3. In what way does the internal supply chain quality management give advantages to the company?

By doing these semi-structured interviews on the one-to-one and personal basis, it gave a lot of advantages [11], [12]. It could have clarified the doubts about the issues for the case study. These personal interviews make easier for the research to identify non-verbal signals from participants. This signal can also provide information indirectly other than verbal. Through personal interviews with the CEO and employees, it makes it easier for the research to get the information clear. Furthermore, the observation was carried out in the factory to see how the production runs. The observations give rich information on the workers, machines and methods, and raw material.

Besides the owner of SDRE (the founder/ CEO), the interviews were carried out with 6 employees including the co-founder. The profiles of the participants for the interviews are shown in Table 1:

Table 1. Participants' profiles

Position	Frequency	Gender	Age (year)	Tenureship (year)
Founder	1	Male	71	30
Co-founder person	1	Female	67	30
Sales	1	Male	20	5

Marketing	1	Female	46	15
Finance	1	Female	32	8
Operations	1	Male	29	6
Total	6	-	-	-

The study involved different aspects of the functions, including sales, marketing, finance, and operations, considered as triangulated sources [10]. The mixed of participants from various functions provided data triangulation and strengthened the contexts of study. The data were transcribed and then imported into the NVivo for the data analyses. The concepts are grouped into different nodes and codes. The nodes have the “parents, children and siblings”, illustrated in tree diagrams. The software enables the researchers to develop the emerging concepts in the context of the study. The researchers interpreted the results and verified with the participants of the study.

6. Results and Discussions

The research shows emerging concepts and themes of the internal supply chain quality management of SDRE Enterprise. The concepts are developed in a simple diagrammatic which is extracted from the model in the software used for the case study. **Figure 1** shows the connection of the themes emerges from the study:

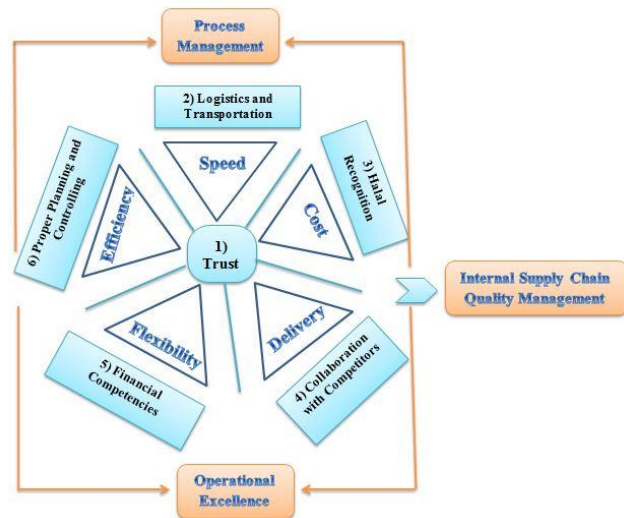


Figure 1. Internal supply chain quality managerial relationship

Figure 1 shows the model from the mind mapping of the concepts. The results provide new insight and information on the internal supply chain quality

management, and the "Trust" became the core concept in these relationships.

Two (2) divisions of the themes are: 1) Process management deals with the process, systems and collaborative of the emerging themes. The process management consists of a series of interrelated activities, crossing functional boundaries with input and outputs is termed as a business process. According to [14], a business process is the logical organization of people, energy, equipment, materials, and procedures into work activities designed to produce a specified result; 2) Operational excellence deals with talent and operation, and it reflects the performance of internal operations of a company in terms of quality, flexibility, delivery, and productivity improvements, and a reduction in cost and waste. More specific, operational excellence operationalized by quality, flexibility, speed, cost, social and environment [15], [16].

6.1 Trust

They are cases where there is no valid legal agreement or contract between both parties, the SDRE, and the customers or suppliers. When booking in large quantities is made by buyers from every place, reservations are made through the telephone and do not have a valid agreement document between the two parties. As a result, it may invite a problem to the company where the buyer will avoid paying the required amount at the designated time. This could be a disadvantage to SDRE's negligence because of the invalid document for the sale and purchase transactions. SDRE manage the capacity of productions to meet the customers' request. For example, during the festive month, SDRE would increase productions especially *Kuah Kacang*. SDRE needs to manage the improper documentation to bind the supplier-manufacturer-buyer (consumer).

6.2 Logistics and Transportation

Logistics and transportations would be the obstacles in the internal supply chain quality management. This is because without proper management of the transportations would raise other issues in terms of the safety of the products, contamination issues, on-time delivery, etc. [17]. Transports to a company's suppliers are required to ensure that the products ordered from customers safely arrived. However, SDRE could not manage the logistics and transportation when received large orders from customers. For example, retail wholesalers' vehicles are not complying with the safety

of the transportation of products to the destination. Transactions can also be revoked if the buyers canceled the orders. SDRE should have transportation facilities that will facilitate their operations. For example, the process of obtaining raw materials as well as the process of sending orders to its customers. With enough transportation facilities, SDRE can build a good relationship with their customers.

6.3 Halal Recognition

SDRE has the halal certificate from the Department of Islamic Development Malaysia (JAKIM) and other related certifications from the authorities. The internal supply chain quality management and manufacturing processes have complied with the Shariah requirements and the Halal quality management systems. As such, for example, in a state of preservations while the storage space for raw materials and finished products are well organized, neat and clean, which is comply with the standards. Although the production is relatively narrow but able to ensure that the work is done smoothly and in a state of safety to ensure the halal and *toyyib* (good, pure and wholesome) of the product. This would add the value to the output of the company [2], [3].

6.4 Collaboration with Competitors

Collaborations and competitions with the customers such as the Original Equipment Manufacturers (OEMs), could be a collaborative-competition. OEM would encourage SDRE to increase the current production rates. This is because OEM will have its customers who would expand the distributions of the products elsewhere. Indirectly, SDRE could not expand the brand widely if the company could not increase the production capacity as well as make it's brand renowned widely. OEMs would have a good reputation from the customers' feedback and would establish their brands. SDRE focusing on their bestseller, a signature product i.e. "*Kuah Kacang*" and continuing the productions of "*Kari Lemak*" and "*Kari Kurma*", and other spices related products. Other than that, there is a lack of SDRE design for products' label and packaging. SDRE has made some changes in the packaging of *Kuah Kacang* products to meet the standards set by its customers and several related agencies. However, the responsiveness on the related requirements from different customers is still low. This is due to the lack of skill in packaging method, obsolete technology, low investment in research and development, and few numbers of technical people.

Nevertheless, SDRE is in the process of getting sophisticated packaging machines due to increasing

products demand. Consequently, this new technology would reduce the processing and production time, increase the productivity and quality of the products. Furthermore, SDRE is highly depending on the Cooperative Beep Corp. i.e. the Program Improvement Enterprise Fund which aims to promote and develop the SMEs to improve the businesses such as to acquire new technology, machinery, and networking. This is in line with [18] highlights that SMEs should improve the market knowledge, technology, innovation, and business competition.

6.5 Financial Competencies

There is a lack of accurate calculations of their loss, profit and net income, particularly on the hidden costs. SDRE process deficient must be below than 20% to avoid waste, rework, poor quality and other issues. SDRE has to make sure they meet the customers' requirement, no overcapacity to fulfill the demands. The company produces more *Kuah Kacang*, Meat Curry, Chicken Curry, and Fish Curry as compared to "*Kari Lemak*" and "*Kari Kurma*". The capacity of production is based on the prediction of the demand and time-series data, so that they could manage the inflows and outflows of the money, to avoid losses and to increase the profits. Hence, SDRE needs to increase the productivity or volume of productions, with the addition of new machines, to get the economies of scales and economies of scope. The productivity includes design, training, tools, process flow machines that will affect productions and services, which is aligned with [1], [19].

6.6 Proper Planning and Controlling

SDRE has a proper planning to make productions based on the customer's order. Before that, the production is based on the time-series data, which the company has a plan for the next three months before the festive seasons. In terms of the purchase of raw materials, SDRE takes control by ensuring that every material supplied is from reliable sources, and mandatorily from the Halal-certified chain. The internal supply chain quality management including the process of obtaining quality raw materials from suppliers and meeting the requirements of the product manufacturing processes [20]. Control is very important in managing the internal supply chain quality. For example, the raw material to produce *Kuah Kacang*, SDRE Enterprise will buy beans from suppliers with halal certificates and recognized by JAKIM. SDRE managers frequently visit and select inputs such as raw materials, machines used in the production, and therefore each material used are

from different suppliers. They aim to ensure that each product produced, and raw materials used, including the machinery comply with the established standards. Other than that, the company also provide training at the workplace, for the employees to perform better of their works [21]. Hence, training is given to every employee who is working with SDRE, which is essential for internal supply chain quality improvement.

7. Conclusions and Recommendations

In conclusion, the case study reveals the important themes emerged from interviews of SDRE team with regards to the internal supply chain quality management. The themes are trust, logistics and transportation, halal recognition, collaboration with competitors, financial competencies, and proper planning and controlling of the business. It is recommended that SDRE could implement the big data in evolutionary manners, from time to time to manage the issues related to the documentations, trust, logistics, packaging, halal and all the key business processes. The company also could be more resilience and visible through the web and social media, and keep the products being updated. The internet of things becoming the most effective and cost-effective marketing tools at present. Furthermore, SDRE could improve logistics and transportation, as [17] stated transport is the most important thing in a business where it connects the suppliers and customers. The company also need to manage the deficit and surplus in the productions and may implement the just-in-time systems. Finally, SDRE could not rely on financial aid from the agencies or authorities to be able to compete with big companies. The implementation of a proper internal supply chain quality management helps the company to increase the trust, reduce the operating costs, increase the financial competencies, performance, participation from various levels, reputation and continuous collaborations. Hence, the bottom line is people in the company need to change to gain sustainable competitive advantage and to manage the current needs of the customers [22], [23].

Acknowledgements

The authors would like to thank the Trans-Disciplinary Research Grant Scheme (TRGS), Ministry of Education Malaysia (MOE) for the research grant incentive award. We thank you the Research and Innovation Management Centre (RIMC) for facilitating the processes of our research activities, the case study company and the participants who gave us the invaluable inputs, and to research assistants from University Utara Malaysia.

Notes

Sudiraz Enterprise (SDRE) is a fictitious name used to protect the confidentiality of the respondents.

References

- [1] Foster, S. T, *Managing quality integrating the supply chain* (6th ed.). Pearson Education, 2016.
- [2] Amir, S.A, Wasposito, T.S, “*The creating of halal value chains: a theoretical approach*”, *Journal of Economics and Finance*, Vol. 10, No. 1, pp.14-22, 2019.
- [3] Karia, N, Asaari, M.H, “*Halal value creation: its role in adding value and enabling logistics service*”, *Production Planning & Control: The Management of Operations*, Vol. 27, No. 9, pp. 677-685, 2016.
- [4] Abbas J, Ali, M. G, “*Jihad in monotheistic religions: implications for business and management*”, *International Journal of Sociology and Social Policy*, Vo. 23, No. 12, pp.19-20, 2003.
- [5] MIDA, Food Industry in Malaysia. http://www.mida.gov.my/home/administrator/system_files/modules/photo/uploads/20180903103354_Food Industry 2018_V4.pdf, Retrieved April 6, 2019.
- [6] MIDA, Food Processing. MIDA. <http://www.mida.gov.my/home/food-processing/posts/>, Retrieved April 6, 2019.
- [7] Deiters, J, Heuss, E, “*Factors influencing the performance of German food SME formal networks*”, *International Journal on Food System Dynamics*, Vol. 5, No. 2, pp. 98–109, 2014.
- [8] Abdirahman, Z, Sauvée, L, “*The implementation of a quality management standard in a food SME: a network learning perspective*”, *International Journal on Food System Dynamics*, No. 3, Vol. 3, pp. 214–227, 2012.
- [9] Piskar, F, Dolinsek, S, “*Implementation of the ISO 9001: from QMS to business model*”, *Industrial Management and Data Systems*, Vol. 106, pp.1333-1343, 2006.
- [10] Nunnally, J. C, *Psychometric Theory* (2nd Ed.), McGraw Hill, 1978.
- [11] Hair, J. F, Black, B, Babin, B, Anderson, R. E, *Multivariate Data Analysis: A Global Perspective* (7th ed.), Pearson, 2010.
- [12] Yin, R, *Case study research: design and methods* (2nd ed.), Sage Publications, 2013.
- [13] Davenport, T.H, *Process innovation: reengineering work through information technology*, Harvard Business School Press, 1993.
- [14] Davenport, T.H, Short, J, “*The new industrial engineering: information technology and business process redesign*”, *Sloan Management Review*, Vol. 31, No. 4, pp. 1-31, 1990.
- [15] Fok-Yew, O, Ahmad, H, “*The effect of change management on operational excellence moderated by commitment to change: evidence from Malaysia*”, *International Journal of Innovation and Applied Studies*, Vol 9, No. 2, pp. 615-631, 2014.
- [16] Fok-Yew, O, Ahmad, H, “*The effect of change management on operational excellence in electrical and electronics industry: evidence from Malaysia*”, *British Journal of Economics, Management & Trade*, Vol 4, No. 8, pp. 1285-1305, 2014.
- [17] Ahmad, H., Alekam, J., Shaharruddin, S., Marchalina, L, & Fok-Yew, O, “*The relationship between the change management and the operational excellence in electrical and electronics manufacturing companies*”, *International Journal of Supply Chain Management*, Vol. 7, No. 5, pp. 511-519, 2018.
- [18] Hashim, F, “*Challenges for the internationalization of SMEs and the role of government: the case of Malaysia*”, *Journal of International Business and Economy*, Vol. 13, No. 1, pp. 97-122, 2012.
- [19] Kamaruddin, N.K, Udin, Z.M, “*Supply chain technology adoption in Malaysian automotive suppliers*”, *Journal of Manufacturing Technology Management*, Vol. 20 Iss. 3, pp. 385 – 403, 2009.
- [20] Kalyani, M., Sahoo, M. P. “*Human resource strategy: a tool of managing change for organizational excellence*”, *International Journal of Business and Management*, Vol. 6, No. 8, pp. 280-286, 2011.
- [21] Marinagia, C., Trivellasb, P., Sakas, D. “*The impact of information technology on the development of supply chain competitive advantage*”, *Procedia - Social and Behavioral Sciences*, Vol. 147, pp. 586 – 591, 2014.
- [22] Gelaidan, H.M. Ahmad, H., “*Using partial least squares approach to predict the impact of transformational leadership on employee commitment to organizational change*”, *International Business Management*, Vol 7, No. 4, pp. 306-316, 2013.
- [23] Marchalina, L. Ahmad, H. “*The effect of internal communication on employees’ commitment to change in Malaysian large companies*”, *Business Management and Strategy*, Vol 8, No 1, pp. 1-17, 2017.