

# Boosting Quality Performance Through Customer Knowledge Management and Service Innovation Capability in the Automotive Industry

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**Abstract:** The intention of service innovation capability in the automotive industry is seen as a sustainable competitive advantage that drives the firm's quality performance. It is a holding ability to absorb, adapt and transform a given technology into the operational, managerial and assignable routines that may lead to revenue. The interaction of various elements like strategy, resources, and processes as innovation capability enables the success of the entire quality performance in the automotive industry. The improvement of quality performance is a vital source of competition among the automotive service centres. The quality performance in automotive service centres usually refers to the service quality in marketing term. To differentiate companies' strategy, managers have to look into the new idea from external sources especially customers. External sources such as customer knowledge are significant and noteworthy because the customer is now more active and innovative in the service encounter. The communication among the customers and organisations around the world can be very efficient through the power of technology. Although this issue is essential, however, the number of studies related to the importance of customer knowledge management among managers in the automotive service centres are still lacking in the country. To solve this problem, the primary goal of this study is to investigate the relationship of customer knowledge management and service innovation capability; and to identify the factors that can affect the level of quality performance of the automotive service centres in Malaysia. The previous studies have confirmed that customer knowledge management has a significant effect on service innovation capability, while service innovation capability also has a positive relationship with the increasing level of quality performance. It proposed that service innovation research be regularly conducted in the organisation and organising events with customers to be actively involved in product and service design. This initiative should be given to new managers and poorly performing service centres. This paper is expected to assist academician, practitioners and local car manufacturer service centres in understanding knowledge sharing concept and enhancing quality performance among automotive service centres in Malaysia.

**Keywords:** customer knowledge management, service innovation capability, quality performance, automotive industry

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## 1. Introduction

Nowadays, fierce competition in the automotive industry affects vehicle production operations in most countries of the world. The competitive competition is due to the challenge of liberalisation. Just like in other countries in the world, these liberalisation effects have also affected the automotive industry in Malaysia. The Malaysian Automotive Institute (MAI) concludes that the country's automotive industry landscape has changed and became more competitive after the Asean Free Trade Agreement (AFTA) policy agreement in 1992. The agreement has affected the manufacturers of vehicles that are mostly dependent on sales volume to continue to compete.

Automotive companies need a new business strategy to remain competitive. Previous studies revealed that the automotive industry needs to look at the measurement of innovation performance within the organisation (Habidin, Hashim, Zainol, & Wan Mustafa, 2015). Habidin et al. (2015) reveal that innovation performance measurements involve in three perspectives which are environmental innovation, employee innovation, and technology innovation. Environmental innovation refers to the process of innovation using green elements that affect the company's environment. Environmental innovation can reduce waste of energy, raw materials, damage and accidents in the company (Habidin, Fuzi, Zamri, Hibadullah, & Desa, 2014). Meanwhile, employee innovation refers to the company's ability to provide high-level skills to employees to maximise the company's assets and assignments given (Habidin et al., 2015). Technology innovation refers to the company's ability to innovate using high technology machines (Habidin et al., 2015). Large companies with strong financial standing are expected to improve the company's performance by maximising product and service innovation processes

using technology. Therefore, these three innovation performance measurements need to be in place to give a positive impact on the Malaysian automotive industry.

Today, firms start to realise to utilise external knowledge as a creative source of the idea for innovation development. Customer knowledge is a crucial asset to the innovation process and can contribute to the company's performance (Rowley, 2002). Taherparvar, Esmaeilpour, & Dostar (2014) revealed that knowledge from customers had a positive impact on the company's operational and financial innovation performance. It was through the concept of a partnership through customer knowledge management. Customers have now become more innovative with the sophistication of the technology. Customers can communicate to firms to share knowledge through interaction on the internet forum or social media (Hamidi & Gharneh, 2017). The superiority of this technology encourages companies to engage with the customers in business strategy by using their ideas, knowledge and customer experience in producing innovative products and services. Therefore, customer knowledge is vital to the company and is an external source that can make the company stay competitive for a long time in the business market.

Customer engagement in the automotive industry is necessary. The focus on customers is essential because customers are the target of vehicle manufacturers to get high sales volume. Therefore, firms need to follow the customer's demand for a high sales target. Hence, there is a need for cooperation between firm and customer. The cooperation can be in term of sharing ideas, knowledge and experience of customers who have used the product or services in the past (Zahari, Rahman, Othman, & Wahab, 2013). Customer knowledge is vital for vehicle manufacturers to improve the quality of the company's products and services. Fidel, Schlesinger, & Cervera (2015) stated in their study that customer knowledge management had a significant impact on the company's marketing. With customer engagement, it will give value for customers itself to buy and use the models that have created. Hence, the company estimates that this quality improvement will provide great potential to firm to increase sales and improve the country's economy.

Customer knowledge management is one of the alternatives that organisations can use in addressing developmental issues in this industry to achieve a competitive level of competition (Taherparvar et al., 2014). Various challenges and problems will arise in making this customer knowledge management an efficient and effective option. Among of them is the need to streamline the customer knowledge in the right form of service innovation capability, thereby affecting the quality of products and services quality performance (Mehdibeigi, Dehghani, & Yaghoubi, 2016). As a result, the improvement of quality products and services performance will contribute to the success of the automotive firms to continue to compete.

Therefore, a study is needed to explore factors that contribute to the enhancement of organisational performance that include customer knowledge management, service innovation capability and quality performance. Thus, this study was developed to explore the current scenarios regarding customer knowledge management and service innovation capability that could contribute to the improvement of the quality of performance in the automotive industry. By starting to measure the quality level of performance and followed by the exploration of the relationship between customer knowledge management as an independent variable to the quality performance in the automotive industry. Also, this paper attempts to measure the effect of service innovation capability as a mediator variable on the relationship between customer knowledge management on quality performance.

## **1.1 Problem statement**

The study of quality performance in the automotive industry focuses more on the company's innovative capabilities such as product innovation, service innovation and process innovation. In the measurement of company's quality performance, research that investigates the external knowledge of companies that explore the involvement of customer knowledge management is still under-researched (Hong, Zhang, & Shi, 2017). Consequently, it has gained the interest and awareness among automotive industry researchers and practitioners on the importance of effective customer knowledge management that managers can utilise. Thus, the researchers aim that a detailed study on customer knowledge management could be a new source of knowledge for quality performance measurements in automotive companies.

## **1.2 Objective**

The primary objective of this study is to investigate the relationship between customer knowledge management and quality performance mediated by service innovation capability in the automotive industry in Malaysia. More specific objectives have been developed based on literature review and research problems such as to understand and explore the concept of customer knowledge management and quality performance. This study is also to examine the role of service innovation capability as a mediator variable to strengthen the relationship towards customer knowledge management on quality performance in the automotive industry (Taherparvar et al., 2014). Also, this study will provide an initial momentum for future studies on issues affecting quality performance in all industries. It will provide the basis of research implications for academics as well as industry players for further research in the customer knowledge management concept.

## **2. Literature review**

### **2.1 Customer knowledge management**

The concept of customer knowledge management is increasingly gaining the attention of the company to serve as a source of new ideas and information. By acquiring, sharing, transferring and using knowledge information and customer-related ideas, customer knowledge management is indispensable for managing knowledge from a customer's perspective while providing an essential source for novel ideas (Gohary & Hamzulu, 2016; Mejía Trejo, Sánchez Gutiérrez, & Maldonado Guzman, 2016; Taherparvar et al., 2014). It will be used to develop new products and services and new solutions to customer problems and demands. However, the effectiveness of customer knowledge management in improving quality performance has not been empirically proven. A study by Taherparvar et al. (2014) recommends that companies should engage in internal processes to manage customer knowledge. The involvement and management of ideas, knowledge and information from customers enable companies to acquire new knowledge sources that are essential to the success of the company.

Through customer knowledge management, this concept supports the exchange of knowledge within the company and between customers and companies (Valacherry & Pakkeerappa, 2017). It is aimed at firms to learn from, to learn about and to learn with customers. The concept means customer knowledge management is a learning process platform for companies and customers, sharing experiences and knowledge, and learning from one another (Taghizadeh, Rahman, & Hossain, 2017). Also, customer knowledge management can be a medium for companies to know customer problems, solve problems and take advantage through mutual exchange of knowledge (Falasca, Zhang, Conchar, & Li, 2017). Therefore, customer knowledge management can increase the ability of firms to absorb the knowledge. The ability will allow the company to acquire and absorb external knowledge (Kargaran, Jami Pour, & Moeini, 2017). Customer knowledge management will manage the external knowledge and develop it internally. The development of external knowledge will be commercialised and become a vital source of company innovation. Customer knowledge management consists of three primary flows: knowledge from customers, knowledge about customers and knowledge for the customer.

- Knowledge from customer: The knowledge from customer refers to customers' information such as goods, opponents and markets, which is learnt from customers to understand the external situation. This generous of knowledge has a tacit nature and expands innovation capability, which leads to new product benefits. For example, the firm can use social media to gain knowledge from the customer such as from discussion forums that can help firms gain knowledge from customers (Garcia-Murillo and Annabi, 2002).
- Knowledge about customer: Knowledge about customer refers to the detail of customer information. It has an explicit nature and includes looking into purchasers' backgrounds, business histories, customer inspirations and requirements which help firms better understand customer's requests (Smith and McKeen, 2005).
- Knowledge for customer: Knowledge for customer refers to firm's knowledge that transfer to the customer back. It includes all that a firm delivers to customers to help them, satisfy their information needs. For example, document repositories and workflow applications are among the customer knowledge management which accesses information for customers and helps them to make better choices. Firms can use these tools to provide knowledge for customers (Lopez-Nicolas and Molina-Castillo, 2008).

## **2.2 Service innovation capability**

Innovation refers to a creation of new knowledge and ideas to empower business results and improve firms' processes and produce new products or services (Witell, Snyder, Gustafsson, Fombelle, & Kristensson, 2016). Customer knowledge as a source of information is now important and becomes as one of the main sources of information and ideas. Hence, many firms are increasingly shifting to open innovation and customer-driven innovation models in which valuable information, knowledge, and designs (Anning-Dorson, 2017; Fu, Wang, & Zhao, 2017). Nowadays, firms put a stronger focus on connecting and develop (C&D) than research and development (R&D) (Taherparvar et al., 2014). The C&D model assumes that innovative ideas suggested by customers are more creative and more effective than inside personnel's ideas (Lillis, Szejczewski, & Goffin, 2015; Melton & Hartline, 2015; Nada & Ali, 2015).

It is essential for the firm to develop innovation capability within the organisation. Innovation is a way to overcome complex and changing situations (Witell et al., 2016). In fact, customers have an outside view of firms and have more realistic ideas, which are often more creative and more efficient than inside ideas (Melton & Hartline, 2015)(Rajapathirana & Hui, 2017). Attention to customers' ideas and needs creates faster ideas and launch much better innovative products and services (Okoe, Boateng, Narteh, & Owusu, 2017). Therefore, firms must develop unique systems for co-creation and reintegration to be able to meet the needs of customers and satisfy them and also provide appropriate environments for engaging customers in innovation processes to better access customer knowledge and ideas for innovation (Hoyer, Chandy, Dorotic, Krafft, & Singh, 2010).

## **2.3 Quality performance**

The discussion of quality performance from the perspective of the automotive industry often associated with product quality and service. Hong et al. (2017) defining quality performance is related to supplier cooperation, customer cooperation, supply chain quality training and supply chain product/ service design. Patyal & Koilakuntla (2017) emphasised that quality performance is related to process variability, delivery, cost of scrap and rework, cycle time, equipment downtime, and customer satisfaction. Therefore, the automotive company should be concerned with the quality and service performance provided for better quality of services. An excellent quality performance should be taken care of by the automotive company if an organisation wants to improve the performance of the company.

## **3. Conceptual framework**

The proposed conceptual framework model for this research illustrated in Figure 1 as below. The proposed conceptual model shows the relationship between customer knowledge management dimensions, service innovation capability and the implications to organisations on quality performance. The customer knowledge management dimensions are conceptualised to consist of knowledge from the customer, knowledge about customer, and knowledge for the customer. The quality performance considered from the perspectives of supplier cooperation, customer cooperation, supply chain quality training and supply chain product/ service design (Hong et al., 2017). Therefore, it can be explained that there are three primary variables in this study which are customer knowledge management as a predictor variable, quality performance as dependent variable and service innovation capability as a mediator variable.

This study focuses on the application or outside organisation resources such as idea, knowledge and information from the customer to organisation (Hamidi & Gharneh, 2017). Therefore, the model developed is primarily to study the relationship between customer and organisation. To study the phenomena, researchers have used the relational view theory to test the relationship. A study about relational view theory which is established by Dyer and Singh (1998) to suggest that a company can have a strong-organisational relationship with stakeholder if they established a long-term collaborative relationship. The result of the long-term collaboration will lead to customer satisfaction, loyalty, increase customer value and generate competitive advantage.

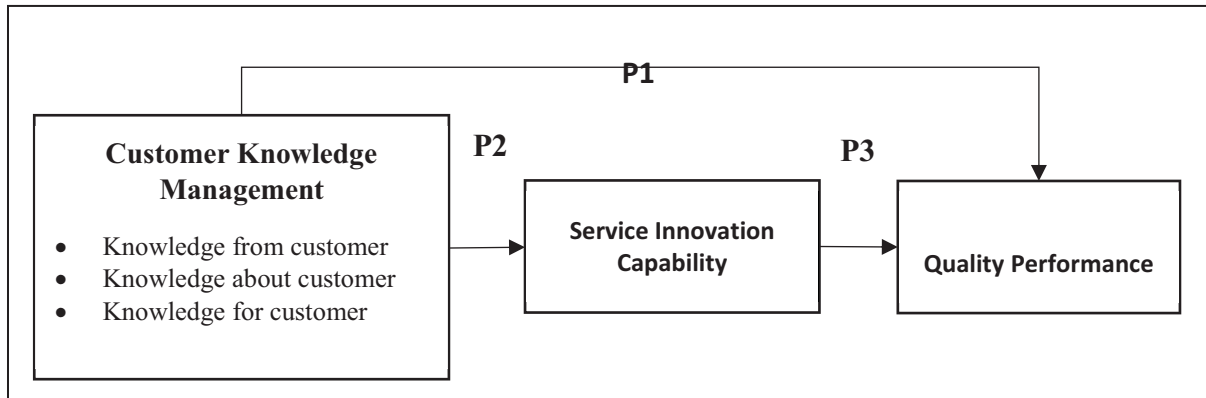


Figure 1: Proposed conceptual model

#### 4. Research propositions

By proposing a conceptual framework model, which shown in Figure 1, this paper aims to investigate the relationships among customer knowledge management, service innovation capability and quality performance.

##### 4.1 Customer knowledge management and quality performance

Knowledge management is essential for an organisation to stay competitive. It is alternative resources that can be a source of differentiation between competitors (Tan, 2015). Therefore, the organisation should realise the importance of customer knowledge management as a new source to compete with others. Customers have more options to satisfy their needs and expectations due to increasing number of competition nowadays. Then, the concept of customer knowledge management is essential for firms to understand and satisfy customer demand. It is a vital source of tacit knowledge to deal with the changing needs of customers. Falasca et al. (2017) found that customer knowledge management has the positive effect towards service innovation and quality performance. Another study conducted by Taghizadeh et al. (2016) also explored the essential part of customer participation in operational quality performance. Therefore, based on the above discussions, we propose our first propositions:

*P1: Customer knowledge management has a positive effect on quality performance*

##### 4.2 Customer knowledge management and service innovation capability

The involvement of customer in the organisation to boosting innovation development process is essential (Kargaran et al., 2017). Customers can play an active and significant role in innovation, as their ideas are much closer to market needs (Hoyer et al., 2010). The ideas and knowledge of customers can produce new products and services or improve existing products and services, which may have been unnoticed by a firm. Therefore, if customers' knowledge efficiently managed, it can improve the innovation process and also affect the future of organisational innovation. In the literature, customer knowledge management has frequently identified as the main antecedent of innovation capability. According to Taherparvar et al. (2014), customers' participation and absorption of their knowledge are vital for innovation capability. By using customer knowledge management to engage customers in the innovation process and utilising their ideas is essential for firms in improving innovation (Mejía Trejo et al., 2016). Although the relationships between customer knowledge management and innovation capability have empirically stated, none have considered the direct effect of customer knowledge management on service innovation capability. Therefore, to fill the gap of this study, this paper proposes the second propositions:

*P2: Customer knowledge management has a positive effect on service innovation capability.*

##### 4.3 Service innovation capability and quality performance

Quality management practices are essential to firms to enable business performance (Hong et al., 2017; Patyal & Koilakuntla, 2017). Another study conducted by Parvadavardini, Vivek, & Devadasan (2016) found that quality management practices lead to quality performance and financial performance. Also, research done by Salimian, Rashidirad, & Soltani (2017) found that the involvement of external knowledge such as supplier development on innovation design leads to quality performance. It means that innovation is also involved in the process of

improving the performance of quality products and services. Firms have to realise that innovation capability can be considered as a significant factor and an intangible asset to create value and sustainable competitive advantage, which finally leads to superior quality performance. However, the literature review found that there is still lack of empirical study to examine the direct relationship between service innovation capability and quality performance. On this basis, we propose our third proposition:

*P3: Service innovation capability has a positive effect on quality performance.*

## **5. Expected findings**

As presented in the introductory section, the objective of this study is to examine the impacts and relationships between customer knowledge management and quality performance in the automotive industry. Customer knowledge management practices are measured based on three dimensions namely knowledge from the customer, knowledge for the customer, and knowledge about the customer (Taherparvar et al., 2014). Based on literature review analysis, a conceptual framework model has been developed and several propositions have been proposed. The authors expected that the management and collaboration of the company with the customer have resulted in an increased quality performance based on the studies conducted by Taherparvar et al. (2014). The studies show that customer knowledge management practices enable the company's performance regarding operational performance and financial performance. Also, the service innovation capability is also found able to create new value and contribute to improving the quality performance of the company (Fu et al., 2017). It means that innovation capability has great potential as a mediator variable that will be a significant factor in contributing to a positive effect on business performance.

### **5.1 Implication for theory**

This study aims to develop customer knowledge management concept towards quality performance. The relationships tested with the development of a conceptual model with the presence of customer knowledge in the business chain to share ideas, experiences and knowledge. This paper found that both internal and external knowledge is essential as a source of innovation and to sustain competitive advantage (Taherparvar et al., 2014). Thus, the addition of service innovation capability is a new model for the study related to customer knowledge management and quality performance. Customer will act as a source of innovation through the knowledge sharing, ideas and information (Zahari et al., 2013). Therefore, customer knowledge contribution in the theory development with innovation capabilities will make the company more innovative, thereby enhancing the significant effect on business performance.

### **5.2 Implication for managers**

Automotive industry managers need to find new organisational strategies to remain competitive in business to deal with the significant challenges today. Managers should pay attention to the concept of customer knowledge management as it can provide innovative ideas, new information source and new knowledge. However, discussions on customer knowledge management practices, service innovation capability, and quality performance still lack in the literature. The analysis in literature review was conducted and found that automotive managers need to consider and manage internal and external knowledge simultaneously to improve the quality performance of the company (Habidin et al., 2015). The study also suggests that managers have to aware of customer needs, accepting new customer ideas and sharing knowledge to improve the firm's performance. Lastly, managers have to be aware that both internal and external knowledge need to be aligned so that managers and customers are alert that customer knowledge management concept can also provide new ideas to the company regarding experience, information and knowledge sharing.

### **5.3 Significance of study**

The main contribution of the study is the development of a conceptual framework model that involves customer knowledge management, service innovation capability, and quality performance. In this model, it is found that customer knowledge management is an important practice to enable service innovation capability and quality performance. This model also shows service innovation capability is a crucial factor in coordinating customer knowledge management practices in the automotive industry to achieve quality improvement (Fu et al., 2017). Therefore, company managers should take the opportunity to use this approach to achieve good company performance and to promote long-term collaboration to achieve a sustainable competitive advantage. In line with the theory of relational view, this study focuses on long-term collaborative relationships with strong inter-

organisational interactions (Dyer & Singh, 1998). According to this theory, companies that have collaboration with customers will be able to enhance and promote new competitive resources through sharing of innovative ideas and knowledge. These resources will enable companies to achieve superior performance and be able to differentiate between competitors. Thus, customer knowledge management serves as a source of new knowledge and innovation that will have a positive impact on the organisation's business performance.

## **6. Recommendations**

Due to lack of managerial awareness in the automotive industry towards customer knowledge management, it is proposed that they expose to this collaborative strategy. To make the awareness campaign as a reality, responsible automotive agencies such as the Ministry of International Trade and Industry (MITI) and the Malaysian Automotive Institute (MAI) can play a vital role by conducting innovation awareness courses or workshops. One of the obstacles faced by the two agencies is to get the right time because of the busy schedule of automotive companies. However, it is anticipated to overcome if the courses or innovation awareness workshop is told earlier so the manager can plan the schedule or send their representative to the company. Also, automotive companies should increase the budget for research and development in the field of customer knowledge management to understand and explore the benefits in an automotive industry context.

### **6.1 Future research directions**

This study has limitations regarding literature review were not all reference sources are used and only covered the last five years study. Therefore, the author proposes to use other databases for further research. The authors also suggest that future researchers are adding knowledge sharing variable as a moderator of to examine the relationship between customer knowledge management and quality performance. The knowledge sharing variable can be a booster to improve the quality performance of the company from sharing knowledge activities such as from customers and employee's experiences.

## **7. Conclusion**

In conclusion, automotive companies who desire to remain competitive must improve their quality performance to a higher level and thus provide the best possible service. Automotive companies with efficient quality performance are companies that have good relationships with customers and can innovate in service. Companies need to have a reasonable level of performance to provide excellent service at a service centre. The ability and encouragement of companies to innovate in service will result in the best quality performance that will satisfy customers. Therefore, automotive companies with the capability of innovation in service will be able to provide quality services and be able to differentiate with other competitors in the industry.

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