International Journal of Asian Social Science
ISSN(e): 2224-4441
ISSN(p): 2226-5139
DOI: 10.18488/journal.1.2018.811.974.984
Vol. 8, No. 11, 974-984

URL: www.aessweb.com

AN INTEGRATIVE THEORETICAL FRAMEWORK FOR UNDERSTANDING THE ROLE OF STRUCTURAL CAPABILITY IN QUALITY MANAGEMENT PRACTICES ON QUALITY PERFORMANCE

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Article History
Received: 8 June 2018
Revised: 13 August 2018
Accepted: 19 September 2018
Published: 15 October 2018

Keywords
Quality management practices
Structural capability
Resource-based view theory
Dynamic capability theory
Quality performance
Medical device manufacturing industry.

ABSTRACT

With the growing pressure to achieve optimum level of quality, quality management practices (QMPs) has gained greater attention in developing countries. However, the contradictory evidence shown in the existing QM literatures had raised doubts as to whether QMPs alone is sufficient to achieve promising quality performance. In this regard, this paper aims to address the importance of structural capability in the pursuit of successful QM implementation seeing as the absent of structural capability may impose challenges to efficaciously embrace the QM program in enhancing quality performance. This paper seeks to develop an integrative theoretical framework that draws on the integration of resource-based view and dynamic capability theory to highlight the significant role of structural capability as a mediator in bridging the relationship between QMPs and quality performance that will serve as the basis for further empirical research.

Contribution/ Originality: This study contributes in the existing literature by emphasizing the significant role of structural capability as a mediator in bridging the relationship between QMPs and quality performance seeing as no previous study has uncover this mediating relationship so far.

1. INTRODUCTION

Quality has become a top priority to all manufacturing industries especially with the escalating demands of consumers in getting better products at lower price points (Islam and Karim, 2011). The survival of companies in the ever-expanding and highly competitive marketplace is riding on having the right internal competencies to allow the manufacturers in launching their products at greater speed and efficiency without jeopardizing the product quality. Henceforth in the quest of satisfying the triangle of quality, cost and time, there is considerable number of QM publications focused in both manufacturing and services industry (Abdullah and Tari, 2012; Zhang *et al.*, 2012; Sadikoglu and Olcay, 2014; Song and Su, 2015; Weckenmann *et al.*, 2015; Georgiev and Ohtaki, 2016). Recent years have witnessed the growing popularity of quality management practices (QMPs) in developing countries attributable to its critical role in sustaining and improving firm's quality performance (Abdullah and Tari, 2012; Kim *et al.*, 2012; Tang, 2013; Niu and Fan, 2015). However, previous QM literatures shown that there is conflicting findings in the relationship between QMPs and quality performance (Asif *et al.*, 2009; Mellat-Parast *et al.*, 2011;

Psomas *et al*., 2011; Talib *et al*., 2013; Patyal and Koilakuntla, 2015;2017). For instance, some scholars that investigated the link between QMPs and performance concluded that only infrastructure QMPs were positively associated with quality improvement whereas core QMPs do not (Psomas *et al*., 2014). In contrary, other studies revealed that core QMPs had positive impact on performance measures (Zu, 2009; ALNasser *et al*., 2013; Zeng *et al*., 2015) while infrastructure QMPs were insignificantly related to performance (Talib *et al*., 2013). Besides, some of the previous works shown that soft and hard QMPs were either directly or indirectly related to performance (Abdullah and Tari, 2012; Patyal and Koilakuntla, 2017). The contradictory findings shown in the existing QM literatures had raised doubts as to whether QMPs alone is sufficient to achieve promising quality performance. Thus, this study seeks to re-examine the ambiguity in the relationship between QMPs and quality performance with inclusion of third variable (mediator) to better understand the effect of QMPs on quality performance (Fai and Jaggernath-Furlonge, 2012; Sadikoglu and Olcay, 2014; Mahmood *et al*., 2015).

In a fast-growing environment and inevitable infiltration of technology into organizations in all industries, organizations should focus on employee's capabilities in deploying resources (Breznik and Hisrich, 2014). The capability of people-based asset is of tremendous importance in the pursuit of successful QM implementation (Sharma and Gadenne, 2008; Mellat-Parast *et al*., 2011; Mehra and Coleman, 2016). Employee' skills and knowledge is inevitably crucial seeing as low education levels may impose challenges in QM implementation (Niu and Fan, 2015). Evidently, QMPs demand investment in human capabilities as proper education and training of employees will facilitate the execution of QM program thus strongly and positively impact the success of QM implementation (Mellat-Parast *et al*., 2011; Mehra and Coleman, 2016). The primary argument of this paper is that the implementation of QM alone does not secure the overall effectiveness of QMPs in enhancing the quality performance rather than the delivery performance emanates from how the QMPs are being deployed which in turn dependent on the capabilities of the organizational actors. Several studies had attempted to unveil the significance of incorporating capabilities by suggesting that resources do not contribute in sustaining competitive advantages instead of capabilities (Amit and Schoemaker, 1993; Breznik and Hisrich, 2014; Wójcik, 2015). Additionally, a recent work of Lin and Wu (2014) had illustrated on the significant role of dynamic capability as a mediator between resources and performance which acts as a transformer in converting resources into desired end results subsequently improved overall organizational performance. Building on the above arguments, this paper argued that the 'incapability' of an employee in deploying resources may explain the reasons of inconsistent findings shown in previous QM literatures. This is attributable to the complexity of QM program requires employees to be well versed in operational process statistics as well as capable of applying appropriate statistical methods throughout the product development lifecycle (Niu and Fan, 2015; Weckenmann *et al*., 2015; Nicholds and Mo, 2016). Moreover, previous literatures had also highlighted on the importance of structural capability in achieving sustainability goals (Sarpin *et al*., 2016) and in sustaining competitive advantages of an organization (Kamboj *et al*., 2015) yet, very little is known about the joint influence of QMPs and structural capability towards quality performance. Hence, the primary objective for this paper will be to explore this underdeveloped area of research by proposing a conceptual framework that explicitly focusing on how QMPs and structural capability interact to influence the quality performance of an organization.

Both resources and capabilities are important drivers for overall performance; however, the term capability has been occasionally used interchangeably with terms such as resources and competencies (Wu *et al*., 2010). The concept of resources and capabilities has been treated as conceptual synonyms, despite several scholars had noted earlier having differentiated between the two (Teece *et al*., 1997; Makadok, 2001; Kamboj *et al*., 2015; Wójcik, 2015). Literally, resources are best illustrated in terms of a noun as in the stocks of factors owned by a firm or inputs into the production process whereas capabilities are best clarified in terms of a verb, representing a distinctive way of deploying and allocating resources (Wu *et al*., 2010; Wójcik, 2015). Differentiating resources and capability construct within a study may increase the clarity pertaining to the phenomenon of interest (Hitt *et al*., 2016).

Nevertheless, the relationship between resources and capabilities remains vague and above all the theoretical model that defines links between resources and capabilities remains lacking (Wójcik, 2015). To address this concern, this paper attempted to propose an integrative theoretical framework that draws on the integration of resource-based view theory and dynamic capability theory to better understand the direct effect of QMPs and indirect effect of structural capability in explaining quality performance. The remaining of this paper is organized as follows. Section two and three provided an overview on the underpinning theories that were embraced in this theoretical-driven empirical study namely resource-based view and dynamic capability theory. Next, section four presented the review of literature on quality management practices and structural capability. Lastly, the hypothesis development for the proposed model where the supporting arguments on the interrelationships between QMPs, structural capability and quality performance are presented.

2. RESOURCE-BASED VIEW THEORY

Resource-based view (RBV) theory has become one of the most influential and highly cited theory in the field of operation management (Hitt *et al*., 2016). In accordance with RBV theory, performance is shaped significantly by the resources a firm possesses (Mahoney, 2001). RBV theory proposed that for a firm to sustain competitive advantage, the collection and integration of valuable, rare, inimitable, and non-substitutable (VRIN) resources holds the potential for performance advantage at both product and process level (Barney, 1991; Habbershon and Williams, 1999). From the RBV theoretical lens, QM is seen as a source of competitive advantage and distinctive organizational resource embedded in the firm's processes (Yunis *et al*., 2013; Elshaer and Augustyn, 2016). The inimitability and non-substitutability of QMPs may explain the distinction of performance outcomes achieved by TQM firms (Powell, 1995; Kelly *et al*., 2015). RBV theory provides a theoretical model to explore the influence of firm-level antecedents towards performance outcomes, allowing the inclusion of potentially idiosyncratic firm-level characteristics in the analysis (Habbershon and Williams, 1999). Nevertheless, Otola *et al*. (2013) argued that solely reliant on VRIN resources does not guarantee the success of a firm in sustaining competitive advantage instead its contingent on the mode in which the resources are utilized efficiently (Otola *et al*., 2013). RBV theory provides little guidance to firms with regard to the type of capabilities necessary to secure or sustain a firm's competitive advantage within dynamic environments (Pisano, 2015). Moreover, RBV theory is often described as a static theory since it does not address on how to optimize competitive advantage in a highly dynamic market (Otola *et al*., 2013; Mohamud and Sarpong, 2016). Above all, it does not attempt to develop a link between resources and capability in explaining performance variability. In this regard, Enríquez-De-La-O (2015) suggested that dynamic capability theory may act as a complementary to the static approach of RBV theory in order to sustained competitive advantage.

3. DYNAMIC CAPABILITY THEORY

Teece *et al*. (1997) delineated dynamic capability (DC) to address the significant role of capabilities to build, integrate and reconfigure resources to cope with the highly volatile environment. Dynamic capability allows the understanding of how some firms appear to be better in securing competitive advantage (Wang and Hsu, 2010). In addition, dynamic capability provides a framework to explain firm-level differences in capabilities thus enabling practitioners in making better capability decisions to secure competitive advantage (Pisano, 2015). Nevertheless, DC theory has instigated numerous criticisms for being empirically difficult to measure (Mohamud and Sarpong, 2016) lacks of precise definition, empirical grounding and measurement (Pavlou and El Sawy, 2011) as well as its failure to incorporate dynamic capabilities into a firm's internal processes (Drnevich and Kriauciunas, 2011). Notably, both RBV and DC theory have been criticized for being fuzzy with little empirical support hence there are needs for further clarifications in terms of both its theoretical and empirical aspects (Breznik and Hisrich, 2014). Numerous studies had rooted for the integration of both RBV and DC theory (Helfat and Peteraf, 2003; Enríquez-

De-La-O, 2015; Wójcik, 2015) as it compensates and complements both theoretical flaws as well as provides a theoretical model that will allow the understanding of the direct effect of resources and indirect effect of dynamic capability in explaining performance variability (Lin and Wu, 2014).

All capabilities are capable of accommodating changes while some capabilities may deal with the process of adaptation, learning, and changes thus the analysis of capability applies to dynamic and operational capabilities. (Helfat and Peteraf, 2003). Teece *et al.* (1997) illustrated dynamic capability as the subset of capabilities that allow a firm to respond to fluctuating market. Operational capabilities are the visible outcome of dynamic capability and are capable of affecting performance measures seeing as these capabilities govern the operational functioning of a firm (Easterby-Smith and Prieto, 2008). For this study, structural capability is investigated in the relevant of dynamic capability given that organizational capability is one of core issues in dynamic capabilities and structural (people-based) capability is the subset of organizational capabilities (Bredin, 2008) which is indistinguishable due to embodied routines (Teece *et al.*, 1997; Lee, 2015). Helfat and Peteraf (2003) implied that a capability, whether operational or dynamic is the ability to perform a particular task or activity. Over and above, this study argued that structural capability is dynamic and evolutionary in nature seeing that people enrich themselves with knowledge and experience over time through complex interaction with people and process of learning from handling daily operations. Grounded on the integration of resource-based view and dynamic capability theory, this study compensates the lack of both theories in theoretical and empirical senses, providing a clearer managerial direction in explaining the effect of QM-capability on quality performance. This paper addressed the underdeveloped area of research by explicitly focusing on examining the joint influence of QMPs and structural capability on quality performance of an organization.

4. QUALITY MANAGEMENT PRACTICES

Management by quality stimulates quality improvement activities, making resources readily available and systematically works with statistical tools and quality-related techniques to support the basis of QM implementation (Lagrosen *et al.*, 2012). Quality management practices can be described as a set of complementary management practices to support all components of business in fulfilling customer's quality requirements (Fernandes *et al.*, 2017). Quality management (QM) has become an all-pervasive management philosophy (Sousa and Voss, 2002) and it is acknowledged as one of the most prominent research themes in operations management (Nair, 2006). The value of QM is contingent on a set of QM practices thus QMPs should be measured in a multidimensional scale (Nair, 2006; Kim *et al.*, 2012; Zeng *et al.*, 2013; Molina-Azorín *et al.*, 2015). In consistent with RBV perspective, the strategic potential of QM in improving quality performance involves the integration of a set of complementary management practices and not a subset of them seeing that there is a strong interdependence of relationship between the dimension of QMPs (Elshaer and Augustyn, 2016). Notwithstanding the abundance of QM literatures, the overall consensus for the list of QMPs dimension remains lacking and inconsistently executed (Kim *et al.*, 2012; Barouch and Kleinhans, 2015; Mosadeghrad, 2015). Hence for the purpose of this study, six dimensions of QMPs that had been widely accepted and frequently cited in previous QM/TQM literature as leadership, process management, employee management and training, customer relationship management, supplier quality management and product design and control were selected to build the framework of QM (Sila and Ebrahimpour, 2003; Zu, 2009; Kim *et al.*, 2012). Furthermore, these dimensions are consistent with the enablers of Malcolm Baldrige National Quality Award (MBNQA) criteria and EFQM Excellence Model hence would constitute a valid representation of QM (Escrig-Tena *et al.*, 2011; Elshaer and Augustyn, 2016; Gómez *et al.*, 2017).

Quality is the responsibility of all employees nonetheless full commitment to quality is an example that needs to be driven from the top. Leadership and top management commitment is widely held by many scholars as a prerequisite for effective QM implementation (Wu, 2015). Leadership can be defined as leaders with clarity of quality goals and vision, actively partake in process improvement and lead the firm by creating a sense of coherence

among employees in pursuing a common quality goal to achieve optimal quality performance. Next, process management controls and monitors manufacturing process through the use of statistical process control tools and techniques to reduce process variation so that it operates under optimized condition (Murat Kristal *et al*., 2010; Zeng *et al*., 2013). The provision of employee training programs, job enlargement, teamwork and other similar initiatives are of tremendous importance in the pursuit of successful QM implementation (Mehra and Coleman, 2016). Training is the key for effective QM implementation to ensure the employees are aware of all requirements and the know-how to incorporate the quality system procedures into optimizing production processes (Luczak, 2012). On top, customer relationship management involves attending to customer feedback in designing products, monitoring customer satisfaction, responding to customer complaints, and evaluating the success rate (Shan *et al*., 2013). Supplier quality management deals with evaluating suppliers' quality capabilities and developing long-term relationships with supplier as the complexity of purchased parts increased dramatically thus interdependencies with suppliers and their reliability became crucial (Weckenmann *et al*., 2015). Lastly, product design is an important dimension of QMPs seeing as product design has to do with designing quality characteristics into a product with the intention of meeting the different wants and needs of customers (Kaynak, 2003; Shan *et al*., 2013).

5. STRUCTURAL CAPABILITY

Capability is the ability to perform repetitive productive task and to deploy resources which are typically coupled with organizational processes to transform inputs to outputs (Amit and Schoemaker, 1993; Grant, 1996; Corbett and Claridge, 2002). Individual (structural) capability is intangible and is built upon individual unique historical paths that are shaped with accumulated experiences, skills and knowledge embedded in routines and procedures (Winter, 2000; Bredin, 2008). Literally, structural capability is a person ability to use resources to achieve their functions (Lessmann and Rauschmayer, 2013). A further definition given by Power (2014) who described human resource capability as the people ability to learn and improve process performance by developing adaptive capabilities over time. In this paper, structural capability refers to the ability of individuals to apply the knowledge and skills in performing a coordinated set of tasks, procedures, or techniques utilizing the organizational resources in a repeatable and consistent basis to achieve optimum quality performance.

6. HYPOTHESIS DEVELOPMENT

QMPs is a set of practices that engaged in the identification and administration process of quality improvement activities including prevention and appraisal with the intention of attaining quality objectives of an organization (Leong *et al*., 2012). Majority of the enterprise acknowledged the significant role of QM in improving product quality (Tang, 2013). Besides, an in depth investigation on QMPs in China via grounded theory approach by Niu and Fan (2015) has revealed that the utmost internal driver of TQM adoption by firms is to attain internal quality improvement, quality control and assurance. Moreover, Nair (2006) performed a meta-analysis on previous QM empirical studies over the period of 1995–2004 had found that QMPs are positively related to aggregate performance. Empirically, large body of literatures indicated that QMPs have a significant and strong impact on quality performance (Sousa and Voss, 2002; Mellat-Parast *et al*., 2011; Abdullah and Tari, 2012; Kim *et al*., 2012; Barros *et al*., 2014; Molina-Azorín *et al*., 2015; Basu and Bhola, 2016; Bolatan *et al*., 2016). Henceforth, this study hypothesized that;

H1: Quality management practices have a significant positive effect on quality performance.

Employees improved and developed new skills and techniques through the process of exploration, reasoning, learning and experiential routine-based (Bingham and Eisenhardt, 2005) as well as via coaching and mentoring, job-rotation, job-shadowing, self- learning, or team-based cross-functional projects (Korytkowski, 2017). TQM practices are effective in fostering and developing a range of capabilities (Prajogo and Hong, 2008). The implementation of QM program provides the basic atmosphere to endorse learning within an organization and

allows employees to partake in decision making process thus positively influence structural capability (Mahmood *et al*., 2015). Emphasizing on realizing desired quality performance via QM implementation enable the employees to enrich themselves with skills and capabilities (Yusr *et al*., 2014). Participating in QM activities provides the opportunities for employees to acquire new knowledge, perceive the benefits of quality disciplines and gain the sense of accomplishment from solving quality problems (Zhang, 2000). Echoing the above arguments, Yusr *et al*. (2014) denoted that TQM provides a suitable learning environment that encourages teamwork, flow of information and sharing of knowledge within an organization hence allowing employees to learn, enhance individual capability and have a quick response towards surrounding circumstances. In brief, this paper argued that QM implementation creates a supportive learning environment as well as provides learning opportunities in allowing the workers to make work-related decisions thus enhancing their problem solving skills. Therefore, this study hypothesized that;

H_2: Quality management practices have a significant positive effect on structural capability.

The effectiveness of QM is highly dependent on management representatives and project team members with extensive knowledge on quality tools and techniques as well as the ability to carry out their tasks in enhancing the quality performance (Nicholds and Mo, 2016; Rogala, 2016). An experienced, well-trained and skilled workforce translates directly into higher productivity, lower costs and better quality performance (Korytkowski, 2017). Contrariwise, employees with insufficient knowledge and skills in identifying potential product quality problems as well as taking appropriate and effective corrective and/or preventive action negatively affects product quality performance (Hrgarek and Bowers, 2009). Concisely, skilled and competent employees that are well versed in operational process statistics are capable of applying appropriate statistical methods throughout the product development lifecycle that are necessary to improve the quality performance. Thus, this study hypothesized that;

H_3: Structural capability has a significant positive effect on quality performance.

The review of QM literatures suggested that there is hardly any empirical work done on examined the mediating effect of structural capability between QMPs and quality performance. Thus, the supporting arguments for this study with respect to the notion of structural capability in bridging the causal relationship between QMPs and quality performance are heavily relied on anecdotal evidence from previous QM literatures. A recent work by Salimova and Voronova (2016) had suggested that labor efficiency positively influences product quality as well as improves the efficiency of QM in the company. The implementation of QM creates an informative environment for employee involvement and empowerment that allows instructive group communication in problem solving, quality control and process improvement thus leads to higher quality performance (Zeng *et al*., 2013). The participation of employees in QM training programs will enhance employees' skills thus influence quality performance in a positive manner due to quality performance is contingent on structural capability (Jayaram *et al*., 2012). Previous literatures had also suggested that TQM core practices induced organizational learning and stimulated the development of employees' skills and competency subsequently sustained the quality and productivity improvement (Iyer *et al*., 2013). All in all, QM and quality improvement initiatives are complex processes that require the support of structural capability to enhance the effectiveness of QM implementation. Hence, the mediating role of structural capability in QMPs and quality performance should never be ignored considering that the success of QM implementation is contingent on structural capability in adopting appropriate quality techniques and tools to improve quality performance. Building on the above arguments, this study hypothesized that;

H_4: Structural capability mediates the relationship between QMPs and quality performance.

7. CONCLUSION

The present study contributes to the growing body of QM literature in numerous aspects. First, unlike previous studies this paper i) differentiates between resources and capability constructs ii) brings to light the relationship between resources-capabilities and performance and lastly iii) grounding on the integration of RBV and DC theory to explore the direct effect of QMPs and indirect effect of structural capability on quality performance.

Nevertheless, further empirical testing on the proposed model will be needed to verify the mediating role of structural capability in bridging the causal relationship between QMPs and quality performance. Conclusively, this study argued that a company may have the resources but without employees "capability" to deploy the resources the success rate of QM may be limited. Perhaps two companies may have the same resources however both companies may differ in its operational performance which can be largely explained by the distinction of structural capability that both firms possesses.

Funding: This study received no specific financial support.
Competing Interests: The authors declare that they have no competing interests.
Contributors/Acknowledgement: All authors contributed equally to the conception and design of the study.

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