

# Linking Operations Strategies with Customer Based Competence and Firm Performance in the Context of Knowledge Based Intensive Sector: A Theoretical Review

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## Abstract

The operations function of an organization plays a strategic role in the success of organizations as it addresses key decisions that determine the utilization of economic resources in the value creation process to deliver goods and services. While the function has been sufficiently studied and documented in the manufacturing sector, little has been done reflecting the services sector. This paper presents a review of the extant theoretical and empirical literature on two constructs linked to operations strategy in the context of a knowledge intensive sector in the phenomenon leading to firm performance. The relevant theories are reviewed, constructs and their operational indicators identified and compared against extant empirical work and emergent knowledge gaps identified. The paper finally proposes a multidisciplinary based theoretical model suitable for advancing knowledge in this area together with the accompanying implications for future research.

**Keywords:** Customer based competences; Firms Operations strategy; Knowledge based intensive sector

## 1. Introduction

The operations function in organizations has been theoretically considered as a key success factor alongside two other functions of marketing and finance (Duarte, Brito, Di Serio, & Martins, 2011). Chase, Jacobs, Aquilano and Agarwal (2006) note that whereas the marketing function is vested with the responsibility of managing demand due to recognition of the fact that customers are the most important resource that organizations should build loyalty with, the finance aspect addresses the aspect of the prudent management of the expenditures and generation of revenues most of which come from the customers (Klossner, 2014). Success in the continuous generation of the revenues depends on the design of the operations system that should create, deliver and sustain value to the market profitably. It is therefore important for organizations to develop an operations strategy that will ensure continuous value creation process and enable goal achievement in the organization. According to Haider (2009), an operations strategy entails the development of a long-term plan for using the major resources of the firm for a high degree of compatibility between these resources and the firm's long-term corporate strategy. Thus, the operations strategy encompasses the total pattern of decisions, which shape long-term capabilities of any type of operation and their contribution to overall strategy, through the reconciliation of market requirements with operation resources (Slack, 2015). The way in which an organization secures, deploys and utilizes its resources determines the extent to which it can successfully pursue specific performance objectives. Purce (2014) indicates that there are five operations performance objectives all of which are of strategic interest to management: cost, quality, speed, dependability and flexibility. Hence, the operations strategy addresses very vital questions about how major resources should be acquired and configured to achieve the desired corporate performance objectives.

From a practical point of view, the role of operations strategy is to provide a plan for the operations function so that it can make the best use of firm resources (Duarte, Brito, Di Serio, & Martins, 2011). A well designed and executed operation strategy will ensure reduction in customer churn by identifying market needs on a segment to segment basis, optimizing customer loyalty drivers, incorporating customer requirements into operating processes, creating a customer-focused value proposition, measuring and managing the total customer experience and increasing share of wallet (Mohamad, Mehrdad, Salman, & Ali, 2013). The strategy does so by specifying

the policies and plans for using the organization's resources to support its long-term competitive strategy. It is this policy that will guide decision making along the traditional decision areas in the operations function touching on facility location; type of facilities available; worker skills and talents required; use of technology; special processes needed; special equipment; and quality control methods. The role of the operations strategy in this context therefore is to provide a basis for effective decision making on the use of all firm resources (Keyes, 2016).

The extant knowledge on operations management appears to have well addressed the manufacturing side of business organizations to the extent that much of what is documented reflects the manufacturing sector (Hislop, 2013). With the rapid development and economic role of the service sector, this knowledge needs to be extended to cover sectors of the economy dealing with intangible services. In the same breadth, since the service sector may be characterised as knowledge intensive, scholars need to pay attention to the features of the sector that have strategic implications on the operations of the sector (Senaji & Nyaboga, 2011). The services sector includes organizations that supply to the market an intangible good that results from use of both tangible and intangible inputs combined with professional skills. There is thus a relatively higher level of utilization of professional skills than in the manufacturing to the extent that the sector may be categorised as knowledge intensive (Dibrell, Craig, & Neubaum, 2014). In knowledge intensive settings, a high percentage of the workforce is knowledge based with the firms in this sector being characterized by autonomy, knowledge base, consist of gold collar workers and the firms may also organize along partnership lines with recognized codes of practice (Bouncken & Kraus, 2013). Knowledge workers also expect to have considerable autonomy in their work and they decide how to initiate, plan, organize and coordinate their major work tasks. Unlike other kinds of workers, knowledge workers possess or 'own' the organization's primary means of production (*i.e* knowledge) and therefore they expect and demand autonomy which management need not deny them. Within a knowledge-work setting, management's role is to provide the necessary enabling context that will facilitate undertaking of knowledge work.

Knowledge intensive based (KIB) firms are defined by Hislop (2013) as those organizations that offer to the market the use of knowledge or knowledge-based products and their core activity involves provision of intellectual skills from a very large proportion of the labour force deployed in the design, development and often also in the sale of products and service work. Further, there are two major types of knowledge- intensive firms: Research and Development (R&D) companies and professional service firms. The professional service firms deal largely with intangibles and those employed there often deal directly with clients while R&D companies typically produce tangible products with the contact between employees and customers being less direct (Del Giudice, Carayannis, & Maggioni, 2014). By their very nature, the KBIS are deeply involved in knowledge exchange (Bouncken & Kraus, 2013) and their core activity is to transfer information, design, experience or professional knowledge to client firms and assist in applying it. The type of knowledge that is being provided can range from science and technology (engineering services, computer services) to law, accountancy and management consultancy. Davenport and Prusak (1998) concluded that in knowledge-based economy, knowledge becomes the content of acquisition, production and selling processes. In addition, knowledge assets and intellectual capital components possessed by knowledge workers are more important in this sector than any other materials or assets. Thus, if managers are able to tap this knowledge from workers, it becomes a knowledge asset, which is a precursor to superior performance. Andrews and Criscuolo (2013) further acknowledged that knowledge assets by themselves neither create value nor generate growth; they need to be combined with other factors of production in the context of an appropriate value chain establishment so as to understand their relative contribution to the performance of entities in the knowledge intensive sector. This performance is best assessed from the market side, which is a key point of consideration in the operations system.

Extant literature acknowledges the role of the market through the customer lense. Customers are the main source of revenue generation in any organization and realizing the prime importance of a customer base to organisations is a major concern. Thus the area of customer base is emerging as one of the important components of knowledge management and is mainly based on the relationship between the organization and its market (Melby, 2015). In the knowledge based intensive sector, knowledge is not only a key factor of production for the firms but it is also the commodity offered for sale in the market. This is manifested through intangible services including specialized expert knowledge, research and development ability, and problem solving as the real products, which requires in-depth interaction between suppliers and users in a way that enables both parties to be involved in cumulative learning processes (Nghah & Ibrahim, 2009).

In view of the above, a number of issues involving customer base creation in knowledge-based organizations have drawn the attention of various researchers (Shaari, Abdul, Khalique, & Isa, 2011; Tai-Ning, Hsiao-Chen,

Shou-Yen & Chiao-Lun, 2011) who have expressed concern over the need to identify the determinants of a customer base and their implications in knowledge based industries. Thus, Customer base competence is one of the most important components of knowledge management and it is mainly based on the relationship between the organization and its customers. Andrews and Criscuolo (2013) pointed out that customer base is based on the knowledge embedded in the marketing channels and customer relationships that an organization develops through the course of conducting business in which case it may be considered a form of core competence for a firm. This seems to be the direction given attention to by studies that have concluded that customer satisfaction is one of the major determinants of customer base (Lin, Wang & Chen, 2006).

Conceptualized in this manner, delivering customer value draws attention to a broader range of literature that explains satisfaction from the marketing and quality management perspectives and thus drawing from a multiplicity of theoretical perspectives and models (Rodwell & Teo, 2013). Such a perspective becomes useful in addressing the aspect of operations strategy whose goal is to maximize the value added to the goods and services that are provided by the firm and adding customer value during the transformation process in a way that leads to achievement of sustainable competitive advantage and superior performance relative to other firms (Qiao, Zhang & Cheng, 2016). Given the complex nature of most markets and highly demanding customers, the subject of operations strategy in the context of knowledge based intensive sector requires attention so as to explain the linkages among the attendant variables emanating from operations, marketing and strategy.

### *1.1 Statement of the Problem*

Operations strategy has received intense treatment in research for more than three decades with issues regarding operations strategy content and process being continually discussed in current operations literature (Melby, 2015). Early efforts in understanding operations strategy processes have been on articulating the operations strategy construct through conceptual reasoning. Building on these early works, numerous studies have further explored the links between operations strategy and other broader aspects such as organisational context, environmental conditions and business performance. These later studies have used both conceptual reasoning and empirical data to establish the relationships between major constructs of the operations strategy process, content, context and operations performance. However, due to the inherent limitations of the methods used, including the adoption of predominantly deductive or positivist approaches to research, and the level of analytical abstraction employed, most of these empirical studies have only been able to examine these relationships at an aggregate (macro) level (Bharadwaj, Chauhan & Raman, 2015).

Several scholars have dwelt on the broad issue of operations strategy (Shehu & Mahmood, 2014; Serfontein, 2010; Aranda, 2012; Dibrell, Craig & Neubaum, 2014; Dibrell, Craig & Neubaum, 2014) concentrating on operations strategy formation process, market orientation and business performance and strategic leadership. However, despite the importance of operations strategy, most of the previous studies have examined operations strategy processes at such high levels of analytical abstraction and have adopted normative perspectives that render little support towards operationalizing the key constructs. Besides, there is limited information or research linking operational strategy, customer based competence and firm performance in the knowledge based intensive sector. Instead, they have focused on relationship between operations strategy, strategic planning process, planning flexibility, innovativeness and size of the firm (Aranda, 2012; Huggins & Weir, 2012; Dibrell, Craig & Neubaum, 2014; Bharadwaj, Chauhan, & Raman, 2015; Maicas & Sese, 2015).

Over and above the cited attempts towards conceptualization and empirical work on the construct of operations strategy, many of the studies have focused on the alignment of operation strategy, corporate strategy and organization effectiveness, an approach that has been criticized for failing to show the relationship between the specific operations strategies and firm performance. The extant Literature has also established that unlike in other management disciplines such as human resource management and marketing management, where specific strategies have been identified, the specific types of operations strategies have not been identified by scholars in this stream of knowledge. There is therefore need to model the specific operations strategies and more specifically in the context of knowledge-based organizations. The purpose of this paper is therefore to review the extant theoretical and empirical literatures with a view to identifying the linkage between the specific operations strategies and firm performance in the knowledge based intensive sector.

The study is guided by the following objectives; first, to review the theoretical and empirical literature on the constructs of operations strategy, customer based competence and firm performance in the Knowledge based intensive sector. Secondly, the study identifies the emerging theoretical and empirical gaps that form the basis for future research and finally proposes a theoretical model for responding to the identified gaps. The paper contributes theoretically to the body of knowledge by providing a link between operation strategies, customer

based competences and firm performance in the knowledge based intensive sector. This link plays a key role in advancing the theoretical understanding of the construct of operations strategy and the phenomenon it brings about in the functioning of organizations. Such understanding is considered valuable for application in the management of organizations in the services sector and particularly those that are knowledge based. Towards this, the paper proposes a theoretical model that is considered relevant for use in guiding future research in this sector.

## 2. Review of Literature

In order to respond to the study objectives, the paper presents a summary of the conceptual literature on the constructs of operations strategy, KBIS, customer based competence and firm performance. This is then followed by the relevant theoretical review that discusses the main theories upon which the constructs are anchored.

### 2.1. Operations Strategy

The construct of operations strategy is a key component of the strategic management process that features in the context of levels of strategy and types of strategy across the levels. Strategic management may be viewed as the continuous process that plans for both predictable as well as unfeasible contingencies. As noted by Cameron (2014), strategic management provides overall direction to the enterprise and involves specifying the organization's objectives, developing policies and plans designed to achieve these objectives, and then allocating resources to implement the plans. Strategic management identifies and describes strategies that managers can adopt at the corporate, business and functional levels so as to achieve superior performance and a competitive advantage for their organization. Operations strategy addresses broad questions about how the major resources should be configured to achieve the desired corporate objectives (Slack, 2015). Corporate level strategies focus on developing essential cross-business strategies aimed at addressing the multibusiness needs of organizations. In addition, these strategies assist the management in executing corporate-level strategies that benefit the corporation's bottom line goal and facilitate success across the business portfolio. Moreover, it evaluates and controls the business activities and the industries in which the organization operates (Hill, Jones & Schilling, 2014).

Business-level strategies are plans and methods used by companies to conduct the various functions in their business operations. These strategies detail actions taken to provide value to customers and gain a competitive advantage by exploiting core competencies in specific product or service markets. Such strategies as pointed out by Drnevich and Croson (2013) also assist the company to deliver value to customers and at the same time position the firm to have a competitive advantage over competitors. Business level strategies include, cost leadership, differentiation strategy, focused low cost, focused differentiation and integrated low cost differentiation strategy. Business organizations develop functional strategies based on the intended objectives, which may include marketing, human resource R&D and operations strategy. In essence, every business section will have its own strategy working towards enhancing overall business performance. The need for an operations strategy that reflects and supports the corporate strategy is not only crucial for the success of the corporate strategy but also because many decisions are structural in nature (Pralhad & Ramaswamy, 2013). Slack and Lewis (2011) conceptualize operations strategy as the deciding pattern that forms long-term capability and kind of operation that contribute to the whole strategy through marketing requirements integration with operations resources. The operations strategies are developed from the competitive priorities of an organization, which include low cost, high quality, fast delivery, flexibility and dependability of the products (Purce, 2014). Operations strategy in the context of KBIS addresses very broad questions about how major resources should be acquired and configured to achieve the desired corporate objectives and the sequence of intellectual tasks by which knowledge workers build their employer's unique competitive advantage aimed at optimization of knowledge chains and overall business processes as outlined by knowledge based value chain strategy (KBVCS). In addition, facility strategy identifies the type, quantity and location of spaces required to fully support the organizations business initiatives in line with the organization's vision and finally, value proposition defines the kind of value a company will create for its customers (Mohamad, Mehrdad, Salman & Ali, 2013). The key element in developing a successful operations strategy is for a firm to provide its customers with additional benefits at an increase in cost that is perceived to be less than those benefits or by means of lower prices or by providing greater benefits and service, that justifies higher prices.

Moreover, integration of operation strategy with key stakeholders such as customers and suppliers and with other functions such as marketing and R&D has been argued to be positively related to profit and sales growth, which are functions of customer base (Tece, 2010). Firms that fail to fully exploit the strategic power of operations will be hampered in their competitive abilities and vulnerable to attack from those competitors who do exploit their operations strategy. To do this effectively, operations must be involved throughout the entire process of developing

and implementing corporate strategy. An acknowledged factor in this process is the role of the context in which the specific strategy is being designed and implemented. Thus there is need to consider the nature of the KBIS.

### *2.2 Knowledge Based Intensive Sector*

The Knowledge Based Intensive Sector (KBIS) consists of firms that support other organisations for which external sources of knowledge are required (Haider, 2009). For these firms, knowledge is not only a key production factor, but it is also the good they sell. For the most part, these firms provide non-material intangible services and that specialized expert knowledge, research and development ability, and problem solving are the real products of KIBS. The provision of these knowledge-intensive services requires in-depth interaction between suppliers and users and both parties are involved in cumulative learning processes (Nghah & Ibrahim, 2009). The other important common aspect of all KIBS branches is that the activity of consulting, understood as a process of problem solving in which KIBS adapt their expertise and expert knowledge to the needs of the client, makes up, to different degrees, the content of the interaction process between KIBS and their customers (Landoni, Micelotta & Verganti, 2008)

To ensure successful utilization of knowledge in the sector, Davenport and Prusak (1998) identified eight knowledge success factors that need to be put in place. They include technology infrastructure, organizational infrastructure, and balance of flexibility, evolution and ease-of-accessibility to knowledge. In addition, they include shared knowledge, knowledge-friendly culture, motivated workers who develop, share and use knowledge, means of knowledge transfer using various information technology infrastructure and senior management support and commitment. A friendly organizational culture, senior management leadership and commitment, employee involvement, employee training, trustworthy teamwork, employee empowerment, information systems infrastructure, performance measurement, benchmarking and knowledge structure are some key components of successful organizations in this sector (Moffett & Namboodiri, 2003). According to Mohammad (2015), the three knowledge management components (knowledge acquisition, information technology, and knowledge organization) have a significant impact on organizational performance. Similarly, Khan (2014) showed that human capital, customer capital, structural capital, social capital, technological capital and spiritual capital are crucial components of intellectual capital and that intellectual capital has significant impact on the performance of the organization.

This discussion has a number of implications for theory and practice in that the process of utilizing knowledge creates an avenue for researchers and managers to understand the key inputs that arise from the KBIS to incorporate into the strategy for operations in this sector. This is through aspects such as the role of organization culture, HRM, design of jobs all of which stand to condition an organization's environment in which the operations system can optimally contribute to the achievement of the firm strategic goals.

### *2.3 Customer Based Competences and Firm Performance*

Firm performance is the driving force of every organization. Basing arguments on Results theory, Boon (2011) indicates that the essence for the existence of organizations is to remain profitable and solvent. He describes performance as the aggregate measure of the outcome or output of an organization activities and contribution towards its stakeholders and goes ahead to provide the indicators of the attributes of performance measurements. In the view of Koontz (2012), the success of any organization depends on its performance levels and the ability to have, maintain, and improve in its performance levels. It is also observed that an organization's performance is of great significance since it determines the survival or demise, prosperity or non-prosperity, expansion or decline and the rate of investments. In measuring organizational performance, proponents of neo-classical theory such as Saleem and Khurshid (2014), identify employee motivation in the organization as a measure of organizational performance.

Other scholars such as Musah (2008) indicate that organizational performance should be measured through various indicators depending on the organizational structure. In agreement, Savaneviciene and Stankeviciute (2010) indicated that whereas profit oriented organizations tend to measure performance through financial turnover and profitability, non-profit oriented organizations cannot use such measures and thus focus on social benefits to measure performance. In an attempt to determine performance of the firm, empirical literature points that several indicators have been identified as measures of performance to include productivity, quality, innovation, profitability, creativity, commitment, loyalty, decision making, participation, effectiveness, efficiency and effort. In addition to these indicators, Koontz (2012) and Rodwell and Teo (2013) pointed out that alongside customer loyalty, customer base is also a measure of firm performance.

The discussion on firm performance clearly articulates the indicators of firm performance. It however fails to consider the fact that the operations function is perhaps the single most important contributor to this construct and

that it is attained in a sequence that involves some logical flow. The identified indicators thus need to be clearly demarcated in line with the logical sequence through which the ultimate performance is achieved involving some antecedent and intermediate steps. Within the intermediate stages, there are opportunities for organizations to identify the set of competences that will sustain the desired performance levels. Such competences are needed for the purpose of sustaining superior performance and therefore guarantee sustainable competitive advantage for firms. In view of the unique characteristics of services and KBIS, the competences need to be aligned with the demands of the market. The conceptual literature however seems limited in the manner it explains the nature of competences in terms of linking with the market.

#### *2.4 Issues Arising from Conceptual Discussion*

The reviewed conceptual literature is rich in content as it broadly explores the nature of the constructs of the operations strategy; knowledge based intensive sector and firm performance. It is emerging from the reviewed literature that the constructs are operationalized via indicators that have phenomenological consequences when considered in the perspective of building a relationship. It is such a phenomenon that seems to anchor the constructs in business practices whose outcomes link with strategic concerns in organizations (Pandey & Dutta, 2013). For example, indicators of quality are evident as well as quality dimensions of performance, conformance to specification, serviceability features, aesthetics, reliability and durability as well as quality planning processes such as innovation and product development as found in the work of Juran (1985). In addition, Production management aspects for instance value chain issues; outcomes of both quality management and production management such as competitiveness, cost reduction, profitability, customer focus; organizational cultural attributes through routines, processes, norms and practices have been identified. The knowledge success factors identified by Davenport and Prusak (1998) such as technology infrastructure, organizational infrastructure, balance of flexibility, evolution and ease-of-accessibility to knowledge, shared knowledge, knowledge-friendly culture, motivated workers and senior management support as well as commitment highlight the multidisciplinary nature of KBIS cutting across human resource management, information technology, strategic management and operations management (Koontz, 2012). Therefore, it is important to consider multiple models in modelling the phenomenon involving constructs that link operations strategy with firm performance. This is informed by the fact that multiple disciplines have a loading on the ability to build customer base and hence improving firm performance.

Several empirical attempts have used some of the constructs to play different roles in research. For example, Truong, Sampaio, Maria do Sameiro, Cristina and ThiBinh, (2014) tried to link Quality Management Practices with operational performance; Paiva, Gavronski, and Castro D'Avila (2012) considered the aspect of manufacturing integration with other elements of the value chain. Further, Aranda (2012) assessed the concept of operations strategy in the context flexibility in performance while Mohammad (2015) assessed the impact of knowledge management on organizational performance. Scarso and Ettore (2010) assessed the concept of Knowledge-Based Strategies in the context of Knowledge Intensive Business Services; Tamara, Amer, Sanaa and Abed (2009) considered value chain model in Knowledge Management.

Over and above these, a close scrutiny of the researches indicate that the researchers have used a broader range of constructs that go beyond those captured in the conceptual literature and to a great extent the mother disciplines (Slack, 2015). For example, the researchers have introduced the constructs of capability, competitive advantage, intellectual capital, top management, human resource management and market orientation (Khan (2014). Across these researches, the researchers also imply that the comprehensive conceptualization and theory building of the relationship involving the constructs requires a broad based set of theories drawn from multiple disciplines (Maicas & Sese, 2015). Combining these thoughts with other developments that characterize research in strategic management, the authors are of the view that the phenomenon involving operations strategy and firm performance in the context of knowledge based intensive sector will require the input of several theories which are relied upon to construct the theoretical framework.

#### *2.5 Review of Relevant Theories*

The conceptual discussion has paid attention to the nature of the key constructs in the conceptualization emanating from operations strategy to create a phenomenon leading to firm performance. This discussion has also raised issues that call for an examination of the relevant theories that can explain this phenomenon. A close scrutiny of the broad literature indicates that some of the theories that have been used in the sub branches of management could prove useful in offering the needed explanation of the behaviour of the phenomenon. The paper thus considered the postulates and contributions of the: Resource-Based View (RBV) of the firm, Competency theory, The Value Chain Model, Hayes and Wheelwright Four Stage Model and The Institutional

Theory.

### 2.5.1 Resource Based Theory

The Resource-Based View (RBV) of the firm that has gained wide attention in strategic management is founded on the belief that firms within an industry control heterogeneous strategic resources. Initiated in 1980s by Wernerfelt (1984), Rumelt (1984) and Barney (1986), the resource-based view has become one of the dominant contemporary approaches to the analysis of sustained competitive advantage and its implication on firm performance. According to RBV certain assets with certain characteristics will lead to sustainable advantage and therefore high strategic returns in terms of market share or profits. However, a resource based view strategy cannot provide competitive advantage without being operationalized (Barney, 2014). The operationalization of RBV theory is fundamental because it directs managers in their resource-based strategy implementation.

The resource-based view distinguishes two variables that determine whether a resource is strategic or not: the imitability of a resource and imperfect mobility, contribute to the uniqueness of a resource and with this uniqueness to a potential sustained competitive advantage (Barney, 2014). When a resource can be imitated by a current or potential competitor, the firm loses the opportunity to gain a sustained competitive advantage. In other words, the company loses uniqueness (Locket, *et. al*, 2013). According to Barney (2011), a firm has a sustained competitive advantage when they have a relative advantage over another firm and when any competitor is not implementing this advantage and competitors are unable to duplicate the benefits of this strategy. Operative resource-based models provide guidelines for resource identification and selection and address the dynamic aspect of bundling resources (Ghapanchi, Wohlin & Aurum, 2014). Reflecting on KBIS, the postulates of the theory point to the fact that firms in the KBIS may gain competitive advantage and enhance their performance through strategic use of the resources at their disposal, and more specifically the human capital since their output is intellectual based. The theory is linked to operations strategy since operations strategy addresses very vital questions about how major resources should be acquired and configured to achieve the desired performance objectives.

### 2.5.2 Competence Theory

Closely linked to the Resource Based View is the competence theory which builds on the indispensability of management in its view of firms as open systems that are guided by a strategic logic derived from managerial cognitions and governed by management processes that coordinate asset stocks and flows. The theory is attributed to Harter's (1978, 1981) who observed that the competence perspective emphasizes on the importance of organizational resources and capabilities, particularly organizational knowledge (Qiao, Zhang & Cheng, 2016) to maximize performance. The resource-based approach to firm strategy portrays a firm as a collection of tangible and intangible assets, resources or competencies which are tied to the firm and are difficult for others to imitate. Teece (2010) describes a firm's competencies, as a set of differentiated technological skills or complementary assets and organizational routines that provide the basis for a firm's competitive capacities in one or more business. Externally these competencies may be perceived as skill in a particular product area.

To be considered a source of competitive advantage an organizational competence must meet three conditions: it must be heterogeneously distributed within an industry; it must be difficult to purchase in the market and; it must be difficult or impossible to imitate. Hackman and Oldham (2010) divide a firm's organizational competence into allocated competencies, transactional competence and administrative competence. Additionally, they define technical competence as the ability to design and develop products and process and as the ability to operate facilities effectively (Nowak, 2012). In the search to explain the competitive successes of firms, management scholars attempted to connect the types of competences with knowledge by paying attention to knowledge resources and knowledge creation processes as primary sources of competitive advantage.

In view of the reviewed literature, knowledge may therefore account for the larger part of a firm's value added as it has been characterized as the most strategically significant resource of the firm (Grant 2015). In dynamic environments, knowledge creation processes are especially crucial, because new knowledge resources enable a firm to respond to the changing demands imposed by the environment over time (Nowak, 2012). In addition, the types of competence reflect forms of knowledge that may be embedded in system, people and process.

### 2.5.3 Value Chain Model

A value chain is a way of conceptualizing the activities that are needed in order to provide a product or service to a customer. It depicts the way a product gains value (and costs) as it moves along the path of design, production, marketing, delivery, and service to the customer. The value chain model shows the particular configuration of activities that are needed to create value in a product or service (Qiao, Zhang & Cheng, 2016). The configuration

of these activities and the resulting product or service will be unique to a specific unit or firm. Competitive advantage can result from the way discrete activities are performed along the value chain. The value chain is a network of independent activities. These activities produce goods/services creating value for the organization.

Porter (1980) introduced a generic value chain model that is set in the context of a traditional manufacturing firm. It includes the primary activities of inbound logistics, operations, outbound logistics, marketing and sales and service. Cooke (2013) describes this chain of activities as the natural value chain. It includes what the firm has to accomplish (with its resources) to achieve its competitive strategy. Employing Porter's value chain analysis approach, Chyi and Yang (2010) developed a Knowledge Value Chain Model (KVC). The KVC model consists of three parts: input knowledge, knowledge activities, and output values. The knowledge value chain (KVC) comprises two major sets of activities, knowledge acquisition and knowledge application. This reflects the division of labour in knowledge work that has evolved in large, complex organizations (Grant, 2015). Here, knowledge workers are primarily tasked with knowledge acquisition and development, and decision-makers apply the resulting knowledge to make better business decisions, plan and execute actions, and thereby achieve business results.

#### 2.5.4 Hayes and Wheelwright Four Stage Model

Hayes and Wheelwright (1985) introduced a four-stage model for operations strategies of organizations where the operations capabilities of organizations was displayed from an internal view and the strategic evaluation of rivals was put on display from an external view. They demonstrated that an organization's operations could provide a source of competitive advantage, if the operations function is managed strategically (Grant, 2015). They argued that all organizations should aspire to reach the highest level possible, ultimately reaching stage 4. The first stage of their model is the internal indifference stage pertaining to organizations that wish to merely solve their problems and are internally neutral. At this stage, the organization has a reactive approach, and operations strategy is not known as a source of competitive advantage (Nowak, 2012).

The second stage is external indifference comprising organizations that wish to keep abreast with the rivals performing as good as their competitors. These organizations are externally neutral and make use of the "benchmarking" strategy. Since organizations attempt to adopt best practices of the industry at this stage, they cannot outperform them and will equal them at best. This stage is a start to the creation of competitive advantage. However, in this stage, operation is not related to business strategy (Nonaka & Toyama, 2015). The third stage is internally supportive pertaining to organizations that wish to be the best in their own industry. At this stage, operations strategy is in line with business strategy and supports it. The fourth and the best stage is externally supportive pertaining to organizations that create needs in the industry and pioneer in innovation and the creation of requirements and motivation in the market (Khoja, Adams & Kauffman, 2016). At this stage, organizations may perform superior compared to the best practices of the industry. A stage 4 organization uses its operations excellence as the basis for its business strategy. The operations of a stage 4 organization are at the fore front of developments in best practice in that they set industry standards in ways that delight customers (Oldham & Fried, 2016).

#### 2.5.5 Institutional Theory

Institutional theory considers the processes by which structures, including schemas; rules, norms, and routines, become established as authoritative guidelines for social behaviour (Hogan & Coote, 2014). It attends to the deeper and more resilient aspects of social structure as well as inquiring into how these elements are created, diffused, adopted, and adapted over space and time; and how they fall into decline and disuse. According to institutional theory, organizations are influenced by pressures, which are either beyond firm's control (external forces) or sometimes arising from within the organization itself (internal) (Fuenfschilling, & Truffer, 2014). These pressures lead the organization to be guided by legitimated elements, from standard operating procedures to professional certification and state requirement, which often have the effect of directing attention away from task performance.

It is worth noting that the concepts of institution and institutionalization have been viewed in diverse ways, which differ significantly (Vayanos & Woolley, 2013). The relationship between institutions and interest groups show that institutional features of organizational environments shape both the goals and means of actors. However, two main actors shape institutional environments in modern societies, the state and professional bodies and to the way in which their interests and mode of action shape institutional patterns and mechanisms. Knowledge based intensive sector mainly comprise professional firms whose major input is knowledge. The management of the knowledge capabilities is therefore essential (Ngah & Ibrahim, 2009). These firms are legally registered and recognized by the state and subscribe to professional bodies that dictate the environment in which



they operate. Adhering to the legal requirements as well as to the code of conduct as stipulated by the umbrella body gives credibility to the firm, which will in turn help improve customer base. The operations strategies employed by the firm must therefore be in line with the provisions of law as well as guidelines issued by the regulator (Hogan & Coote, 2014).

The reviewed theories have been found to be rich in content since indicators of the constructs of operations strategy, knowledge based intensive sector and customer base are identifiable. For example, firm assets and resources, knowledge and capabilities have been identified in RBV and Competency theory which can affect profits and competitiveness; Resource reconfiguration, knowledge based capabilities and perceived customer value are identified in the value chain model and knowledge value chain model and these can affect the revenue base and competitive advantage. In addition, operational resources and capabilities, organizational learning are discussed in Hayes and Wheelwright four stage model which can have an effect on customer value and competitive advantage.

Several empirical attempts have used some of these theories to guide conceptualization in strategy research although they have covered broader aspects that go beyond the constructs so far covered in this study. For example, Mohamad and Mehdi (2014) used Hayes and Wheelwright Four Stage Model to explain the concept of efficient frontier in analysing operation strategies of manufacturing firms, Paiva, Gavronski, and Castro D'Avila (2012) used the Porters Value Chain and Resource Based View in establishing the relationship between manufacturing integration and performance, Mohammad (2015) used the Knowledge Value Chain to assess the impact of knowledge management on organization performance; Muhammad (2014) used Competency Theory and Knowledge Value Chain to identify the components of intellectual capital.

The empirical discussions and reviewed theoretical literature in relation to firm performance, point to the fact that operations strategy is a major factor guiding firm performance. The available literature has concentrated on broader aspects of operations strategy in bringing out the relationships that exist among the various constructs. However, literature has failed to recognise the fact that firm performance is attained in a sequence of events that follow some logical flow starting from acquisition and configuration of resources, developing capabilities, building competences and ultimately leading to superior performance. This study argues that there is need for a single theory that exhaustively addresses firm performance as a construct situated in a phenomenon preceded by antecedent developments. In doing so researchers will be able to identify the relevant indicators and demarcate them in line with the logical sequence through which the ultimate performance is achieved to show the relationship between the specific operations strategies and firm performance.

### **3. The Call for a Theoretical Model**

The reviewed conceptual, theoretical and empirical literatures in this study have brought out several constructs that will play different roles in a phenomenon involving operations strategy and firm performance in the context of KBIS. Specifically the review has brought out the following constructs: firms operations strategy, customer based competences, knowledge based firm culture, institutional conditions and firm performance. In view of the basic question that the paper sought to answer, scholarship needs to model the phenomenon that emerges from the interaction of these constructs. The concern that arises therefore is that of constructing a theoretical model to demonstrate the phenomenon linking operations strategy with firm performance in the context of Knowledge Based Intensive Sector.

From both ontological and epistemological standpoints, a theoretical framework is necessary if the current state of knowledge both in strategic and operations management is to advance into new frontiers. According to Nachmias and Nachmias (2004), a theoretical framework supports a theory in a research study, introduces and describes the theory that explains why the research problem under study exists and may also be referred to as a description used to understand the way in which a particular system or process works. It permits the researcher to evaluate assumptions more critically, forces the researcher to address questions of why and how, connects the researcher to existing knowledge and permits the researcher to intellectually transit from simply describing a phenomenon that have been observed to generalizing about various aspects of that phenomenon and also helps to identify the limits to those generalizations. In addition, according to Bell (2014) it helps the researcher to explain the meaning, nature, and challenges associated with a phenomenon, often experienced but unexplained in the world in which we live, so that we may use that knowledge and understanding to act in more informed and effective ways. While two sets of debates as to the exact point of the role of theory in empirical research exist, there has not been an argument to nullify the contribution of theory in conceptualization and hypothesizing. Thus, the current study proceeds to suggest a theoretical model for guiding empirical work in strategic management.

### 3.1 The Proposed Theoretical Framework

Based on the set of arguments preceding this section, the study proposes the following theoretical model/framework. The proposed theoretical framework shows the linkage among KBIS operations strategy, customer based competences and firm performance. It also brings in the role played by institutional demands/conditions and firm knowledge based culture in operational decisions by firms. The proposed theoretical framework proposes a number of relationships that are considered critical in understanding the phenomenon for purposes of theorizing empirical work and practice in strategic management. The paper next discusses these relationships.

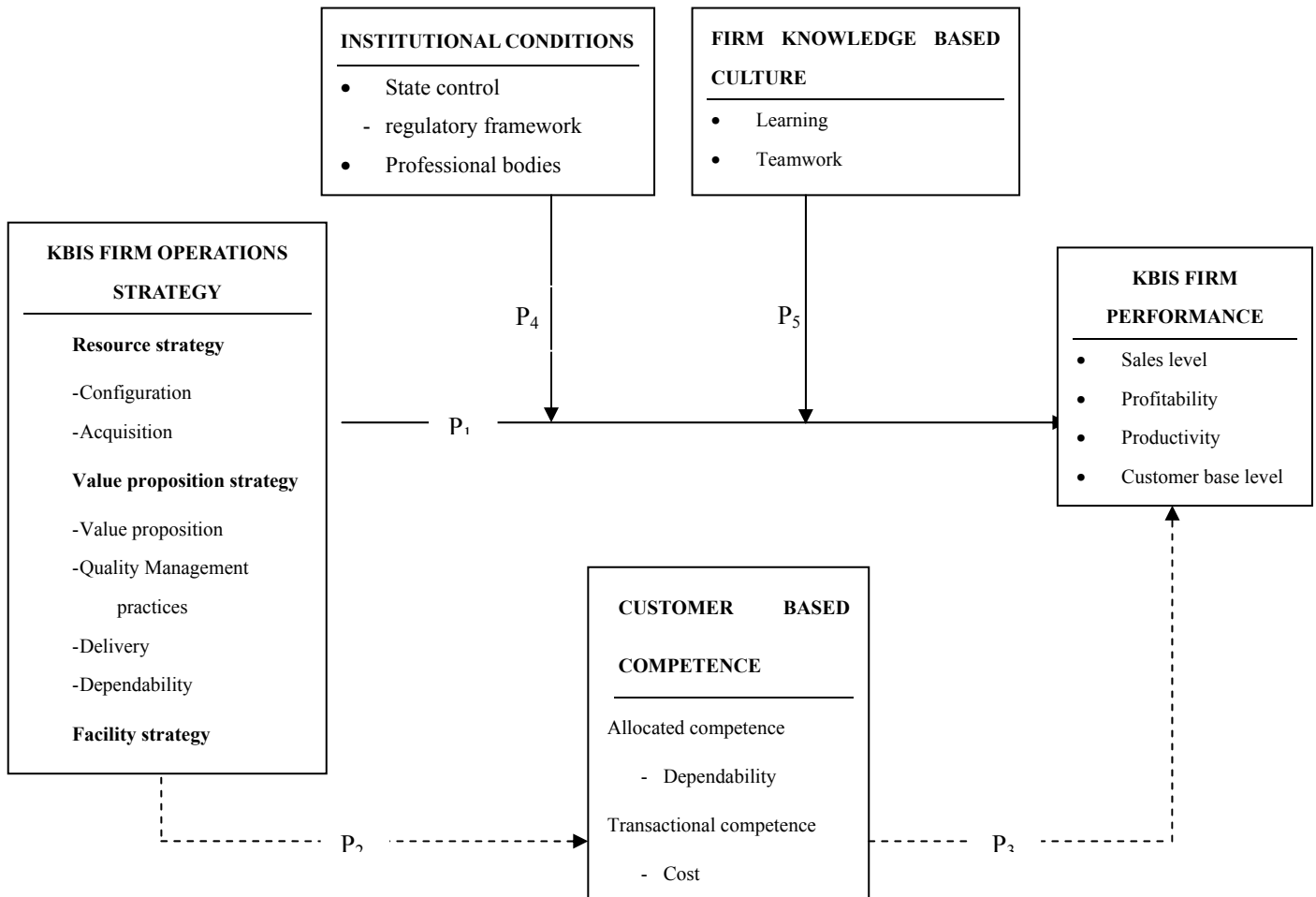


Figure 1. A Theoretical Model linking Operations Strategy, Customer Based Competence and Firm Performance in the context of a Knowledge Based Intensive Sector

### 3.2 Firm Operations strategy and Performance

Operations strategy, aims at maximizing the value added to the goods and services that are provided by the firm. Bouncken and Kraus (2013) argue that the key element in developing a successful operations strategy is for a firm to provide its customers with additional benefits at a cost that is perceived to be less than the benefits and specifically, value is added through the competitive priority or priorities that are selected to support a given strategy. The operations strategy has been operationalized through the following indicators: Resource strategy, Value proposition strategy, Facility strategy and Knowledge based value chain strategy. The KBIS performance on the other hand has been operationalized through Sales level, Profitability, Productivity and Customer base level.

As the literature suggests, firms that fail to fully exploit the strategic power of operations will be hampered in their competitive abilities and remain vulnerable to attack from those competitors who do exploit their operations strategy. To do this effectively, the operations function must be involved throughout the whole of the corporate strategy (Slack, 2015). While corporate management perceives corporate improvement as coming through broad decisions concerning new markets, takeovers, and so on, it overlooks the idea that building blocks of corporate success can be found in the creative and effective use of operations strategy to support the marketing requirement within a well-conceived corporate strategy (Landoni, Micelotta & Verganti, 2008). It is worth noting that in a service oriented firm, the operations strategy that addresses the concerns of its market and operationalized through the indicators suggested from the literature, it is hoped that such firms will experience causal links between the adopted operations strategy and the emergent firm performance. Arguments from both the theoretical and empirical literature attempt to demonstrate a causal link between operations strategy and firm performance. Thus, the study proposes that:

*Proposition 1: The market oriented operations strategy adopted will be directly associated with the performance of KBIS.*

### 3.3 The Role of Customer Based Competences

As earlier argued under the construct of performance, the construct comes out as an ultimate state whose realisation is preceded by several antecedent and intermediate stages. While the operations strategy serves the role of the antecedent factor, the customer based competence serves that of intermediate state of achievement on the path to realizing the desired level of performance. The construct of customer based competence is operationalized through allocated competence, transactional competence, administration competence and technical competence (Hackman & Oldham, 2010). Strategically oriented firms will demonstrate customer focus such that deployment of their resources will enable them generate customer based competences. Thus, it is logical to argue that the KBIS firms' operations strategy will generate relevant customer based competences the firm needs to sustain its performance. Thus the paper proposes that:

*Proposition 2: A well deployed KBIS operations strategy will lead to development of relevant market oriented customer based competences.*

Over and above the generation of competences, the competence and RBV theories (Teece, 2010) demonstrate that the competences arising from the resources are the bedrock of superior firm performance. In the same line of reasoning, for KBIS the generated market oriented customer based competences will provide a solid base that guarantees sustained firm performance. Thus, the paper proposes that:

*Proposition 3: The strength of the relationship between the adopted operations strategy and the KBIS desired superior performance is dependent upon the state of generated customer based competences.*

### 3.4 The Role of Institutional Conditions /Demands

Based on the theoretical review, it is evident that institutional conditions such as state control in form of regulatory framework and professional bodies requirements as indicated by professional ethics and standards have some influence on the operations of knowledge based firms. In the absence of institutional conditions, performance can be summarized as a function of internal processes and strategies. Institutional demands however, change incrementally and more discontinuously forcing the firm to modify its routines in response to changes in conditions.

As postulated in the theoretical review, in stable environments, there are external changes, but these changes are largely predictable and incremental, and the rate of change is low, relative to that experienced in other environments (Lo, 2013). Where firms are facing fast-paced change, unpredictable events and unanticipated discontinuities in dynamic environments, resource advantages are likely to be rapidly eroded. Since institutional elements (structures, actions and roles) are authorized to legitimate other elements, institutionalized aspects are simultaneously highly stable and responsible for creating new institutional elements conditions. Additionally, as clearly outlined by McFadden, Lee, Gowen and Sharp (2014) it is worth noting that KBIS firms rely on qualified professionals, who are experts in specific technical disciplines or functional domains, and supply information, knowledge or other knowledge-based services to the clients. Professional associations represent the interests of their members but may also have delegated authority to govern their profession and work within a regulatory framework established by government. In some professions, it is compulsory to be a member of the professional body. In addition, some professions expressly require the professionals to have a license to practice, or to be on a professional register in order to do their job. This way the professional body is able to regulate the KBIS firms. Thus, the paper proposes that:

*Proposition 4: Although KB operations strategy influence the ability of the firm to achieve desired KBIS firm performance, such a relationship is contingent upon the institutional conditions prevailing in the context of each KBIS firm.*

### 3.5 The Role of Knowledge Based Culture

The concept of knowledge has been presented as a social construction in which case it attracts the role of culture. Organizational culture defines a normative order that serves as a source of consistent behaviour within the organization as observed by Dasgupta and Gupta (2013). Knowledge based culture, as noted from both theoretical and empirical review may have a direct influence on the relationship that exists between operation strategy and firm performance. This is because one of the key consequences of culture is that it increases behavioural consistency across individuals in a firm and frame people's interpretations of organizational events and basic assumptions about organizational processes. Thus, knowledge based culture is an important variable to be considered when firm performance is in consideration. Over the past few decades a remarkable consensus has been reached that knowledge is socially constructed in a way that reflects people's contingent needs and interests. Thus, knowledge development according social constructivism is socially situated and is constructed through interaction with other people. In accordance with this construct people work together to construct artifacts which are transferred to others through culture. Knowledge based culture has been operationalized through; learning processes, teamwork, innovation and market focus. Therefore, this review found sufficient evidence for the hypothesised relationship between knowledgebase culture and firm performance.

*Proposition 5: Although KB operations strategy influence the ability of the firm to achieve desired firm performance such a relationship is contingent upon the culture prevailing in the context of each KBIS firm.*

## 4. Conclusion and Direction for Future Research

This paper has comprehensively looked at the construct of operations strategy in relation to firm performance in the context of knowledge based Intensive organizations. The reviewed theoretical and empirical literatures have shed light on the operational indicators of the two constructs as well as the theoretical link when the two are considered in a strategic organizational phenomenon. The paper has brought out the intermediate states the phenomenon goes through as the operations strategy seeks to explain firm performance as well as the firm cultural and external institutional factors that condition this relationship. The proposed relationship has been described using support from the extant literature in advancing a theoretical model that predicts the linkages among the constructs drawn from the reviewed literature. The arguments have pointed at the need for a multidisciplinary literature in explaining the linkages among the constructs involved in the phenomenon involving operations strategy and performance of KBIS. The conclusions of the paper however face two limitations. First, the theoretical underpinning of the constructs use in the study is limited by the fact that the study relied on just a few theories drawn from a broad range of theories that are applicable in explaining firm strategic behaviour in organizational studies. Secondly, the conclusions constitute theoretical propositions that are yet to be empirically tested and validated using data from a field survey. In view of these limitations, future research needs to consider the propositions advanced by this theoretical work with a view to undertaking an empirical investigation to validate the claims made using original data from organizations in the knowledge intensive sector.

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