University of Bahrain
College of Business Administration
Department of Management and Marketing

An Investigation into Knowledge Management Adoption and Sustainable Competitive Advantages in Business Organizations in the Kingdom of Bahrain

A Thesis Submitted in Partial Fulfillment of The Requirements For an MBA Degree

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Findings: KM adoption in Bahrain business organizations was found to be moderate. Employees were found to be slightly positive about the steps, initiatives and processes that their organizations promote or launch to create, store, transfer and apply knowledge. Nevertheless, Both Spearman correlation analysis and Partial Least Square Structural Equation Modeling (PLS-SEM) revealed the positive association between KM adoption and sustaining competitive advantages in business organizations in Bahrain. Furthermore, the study results showed that by launching KM initiatives, employees' attitude towards knowledge resources is improved. Last but not least, the study reflected the positive association between employees' attitude towards knowledge resources and sustaining organizations competitive advantages.

Research Implications: This study recommends the effective launching and adoption of KM to sustain companies competitive advantages. Also, the study recommends organizations and academics to explore the factors that improve employees' attitudes towards knowledge resources at their workplace to realize the potential gains on firms sustainability of competitive advanages.

Keywords: Knowledge management (KM) - Competitive advantage - Employees attitudes - Business organizations – Bahrain - Partial least equation structural equation modeling (PLS-SEM) - Purposive sampling - Spearman correlation

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CHAPTER 1 INTRODUCTION

Chapter 1 Introduction

Bearing in mind organizational knowledge as a definite source within the competitive context of business environment, it has gained emphasis in recent years. In fact, knowledge is well-thought-out as a reliable source that can aid in the creation of sustainable competitive advantages in business organizations. Knowledge resources can be perceived as unique and valuable resources associating to firm's competitiveness. (Barney, 1991; Wu and Chen 2014).

Businesses have been shifting their reliance on labor to knowledge where know-how and skills stand as the main source of long-term sustainable competitive advantage. Nowadays, companies are under intense competition for survival and financial success. In a knowledge-based time, organizational knowledge has been looked upon as a critical resource that provides competitive advantages. Effective knowledge management becomes a competitive requisite (Elmorshidy, 2018). Holding the knowledge in a certain organization provides a strong foundation for managers to make precise and timely decisions, which develops internal processes efficiencies and make the organization more elastic towards the threats and opportunities (Adeinat and Abdulfatah, 2019).

The past two decades have witnessed a rising attentiveness in knowledge management theory and practice in industrialized and developing economies (Siddique, 2012). Knowledge management has involved substantial thoughtfulness, as knowledge resources have been displacing natural resources, capital and labor as the essential economic resources in emerging economies (Wu and Chen, 2014).

Knowledge management (KM) entails the efficient and effective implementation of knowledge capitalization processes, namely, knowledge acquisition, knowledge creation, knowledge capture, knowledge storage and retrieval, knowledge sharing and knowledge utilization (Alavi and Leidner, 2001) and (Alahbabi et al, 2018). KM is associated with the capability to capture, process and handle data so that the outcomes can be used to enrich firms operations and support long-term strategic planning (Chang et al, 2019). Knowledge management is progressively perceived as a source of competitive advantage and a growing number of business organizations are recognizing the importance of specific KM approaches and processes to acquire,

share, and leverage knowledge (Siddique, 2012). Well management of knowledge infrastructure and processes improves firms and organizations innovation performance (Ting et al, 2021). KM process and its all functions (acquisition, dissemination and application) affect positively corporates sustainable performance among environmental, economical and social levels (Shahzad et al, 2020).

The utilization and application of knowledge are broadly recognized as a vital asset in the management area, especially in the age of globalization and digitalization. As a result, knowledge management as a discipline has attracted significant interest recently among academics and practitioners. Today, private and public organizations explore ways to implement and launch knowledge management processes for their sustainability (Al yami and Ajmal, 2019).

Organizations launch formal systems and initiatives to effectively manage their existing knowledge capital and to create new knowledge. Such initiatives help organizations to face evolving businesses challenges with new capabilities (Siddique, 2012).

However, the value and benefits rationalization of KM investments remains a controversial concern of top management before launching KM initiatives (Wu and Chen, 2014; Al Alawi, 2005).

Bahrain and Gulf Cooperation Council (GCC) countries' economies are heavily dependent on oil, which is a diminishing resource of economic development. Subsequently, GCC countries are encouraged to diversify their economies via utilizing knowledge assets effectively in all economic sectors including gas and oil. Compared with developed countries, there is narrow understanding of knowledge management in GCC, especially in Bahrain. In other words, in Bahrain specifically, lack of empirical studies that explore the level of knowledge management adoption in business organizations and investigate its association with sustaining competitive advantages.

Thus, the study aims to fill this gap by:

1) Investigating the level of knowledge management initiatives adoption in Bahrain business organizations.
2) Examining the relationship between the level of KM initiatives adoption and the sustainability of quality, efficiency and innovation-based competitive advantages in business organizations.

Nonetheless, the existence of KM initiatives and practices at the workplace might not be sufficient to achieve their optimal effectiveness and desired outcomes (Donate and Guadamillas, 2011). Human-oriented organizational factors such as culture, leadership and human resources practices are necessary for capitalizing on KM initiatives. Organizational climate may have an important role in influencing employees' perceptions towards knowledge management systems and resources (Chen, Huang and Hsiao 2010).

In this paper, extra emphasis is given to workers and employees attitudes towards the available knowledge resources at their workplace. Launching KM initiatives facilitates the effective utilization of knowledge assets and resources within firms, entities and organizations. Researches did not explore thoroughly workers attitudes towards the readily available knowledge resources and stock within their organizations.

Thus, the study aims to explore Bahrain business organizations employees' attitudes towards their workplace knowledge resources and to:

3) Investigate the relationship between the level of KM initiatives adoption and employees attitudes towards the available knowledge resources at workplace.
4) Examine the association between employees' attitudes towards knowledge resources and sustaining competitive advantages.

1.1 Research Setting

There is a shortage of literature on the knowledge management adoption in Bahrain and its association with sustaining competitive advantages in business organizations. This study highlights the importance of KM adoption and proposes that knowledge management practices that include creation, storage, transfer and application of knowledge could be the toolkit to sustain business organizations quality, efficiency and innovation based competitive advantages. Moreover, the research presents the impact of having a positive employees' attitude towards the workplace knowledge resources on sustaining business competitiveness.

1.2 Research Objectives

1) To investigate knowledge management initiatives adoption in Bahrain business organizations.
2) To examine the relationship between KM initiatives adoption and the sustainability of competitive advantages in business organizations.
3) To investigate the relationship between KM initiatives adoption and employees attitudes towards the available knowledge resources at workplace.
4) To examine the association between employees' attitudes towards knowledge resources and sustaining competitive advantages.

1.3 Thesis Structure

The Thesis report begins with the relevant literature review that defines knowledge and knowledge management and links it to sustaining quality, innovation and efficiency-based competitive advantages. On top of that, the review highlights the importance of management systems-users attitudes. Next, the research design and methodology including conceptual definitions of research variables, measures, sampling, and theoretical framework are presented. After that, results are presented and hypotheses are tested. Then, research findings are discussed. Finally, research is concluded with emphasis on future research scope and current research limitations.

CHAPTER 2 LITERATURE REVIEW

Chapter 2 Literature Review

2.1 Knowledge

Knowledge continues to substitute conventional resources such as labor and capital in the present economy (Mohammad and Zin, 2019; Wu and Chen, 2014). Unlike natural resources, knowledge won't deplete when used. In contrast, it expands, refines and grows (Egbu, Hari and Renukappa 2005).

Knowledge has been understood as a mixture of data, information, experience, skills, insights and intuition that worker owns. (Jimenez and Fuentes, 2012) defined knowledge as individuals' capability to acquire, absorb and process information. Knowledge is simply information that is being converted to actions with emphasis on the results of those actions (Kim and Ju, 2008). Those actions possess the capability to generate, deduct or extrapolate new insights and experience (Mosconi and Roy, 2013). Knowledge is embedded in individuals' minds and revealed through their actions and behaviors in carrying out their tasks (Alalawi, Almarzooqi and Mohammed, 2007). However, the existence of such knowledge won't be effective and beneficial for organizations unless managed by suitable systems, (Shahzad et al, 2014).

Knowledge is perceived as a leading resource for business continuous development and endurance (Tan and Wong, 2015). Knowledge can generate income for firms if utilized effectively (Teerajetgul and Chareonngam, 2008). Nowadays, knowledge has a central role in shaping business world, (Mosconi and Roy, 2013). Although knowledge is perceived as a strategic resource, managing it remains challenging (Dasgupta and Gupta, 2009).

Nowadays, knowledge is viewed as a valuable strategic asset (Chang and Chuang, 2011; Xu and Houssain, 2010; Mosconi and Roy, 2013). Assets are either tangible or intangible. At the present time, firms value intangible assets such as intellectual capital, knowledge and experience. Knowledge provides organizations the capacity to utilize the other tangible resources, (Koohang, Palizkewicz and Goluchowski, 2015). Organizations that could apply their knowledge are more efficient than those who rely on tangible assets (Boumarafi and Jabnoun, 2016). Thus, organizational knowledge application and use becomes crucial in management (Alyami and Ajmal, 2019).

2.2 Knowledge Management

Knowledge management (KM) is a major topic of interest for business organizations. Many business organizations have given priority to KM-related investments (Ju, Li and Lee, 2006). KM emerges as a very important concept in today's business environment. Business organizations are considering the concept of establishing systematic methodologies to improve the use and re-use of employees' and organizational knowledge. KM systems are viewed as purposive systems to utilize and propagate experiential knowledge (Gray, 2001).

Knowledge resources and assets cannot be imitated easily and they are socially complex. Hence, they usually produce long-term competitive advantages. However, firms shall have the ability to effectively apply knowledge, to create new knowledge and to convert knowledge to actions. This ability forms the foundation of sustaining the competitive advantage that is derived from the knowledge-based resources and assets (Leidner and Alavi, 2001).

KM tends to facilitate the integration of knowledge into firms processes, functions and activities to improve performance. Principally, KM tends to aid organizations to manage both individuals and organizational knowledge. As a result of that, firms could strengthen their competitiveness and adaptability towards the rapidly changing environment (Hassan and Abdulraziq, 2019). KM has been pulling a significant consideration from researchers, managers and practitioners as a predecessor of firm performance (Chang and Chuang, 2011). Organizations success is subject to their proficient management of internal and external knowledge sources. Such management aids them to adapt to the changing environment (Alhakim and Hassan 2013).

KM underlines taking advantage of organizational knowledge to support firms' business strategies. KM provides the opportunity to exploit individuals' knowledge to benefit the organization. KM stresses on knowledge sharing with organizations customers, suppliers, contractors and other business-related partners to explore new opportunities. Knowledge sharing and creation shall be accelerated by organizations through creating a learning culture, infrastructure and incentives to generate and transfer knowledge. The central role of KM is not just creating knowledge repositories through information technology. It is actually about how to usefully apply the human knowledge. KM benefits and gains are not immediate and usually require longer time

periods to be realized (Hsu and Shen, 2005). KM systems facilitate the storage and distribution of codified knowledge (Gray, 2001). KM systems aim to support the creation, transfer and application of knowledge in organizations KM processes can be classified into four main categories that are knowledge creation, storage, transfer and application (Leidner and Alavi, 2001).

There are several definitions of KM in literature. (Darroch, 2005) defined KM as a process that creates knowledge, and manages the dissemination and usage of that knowledge within and between organizations. Three components of KM are derived from this definition; Knowledge creation, knowledge dissemination or transfer, and responsiveness to knowledge. Similarly, (Latif et al, 2019) viewed KM processes as the activities of knowledge acquisition, creation, sharing and utilization to improve the organizational competitiveness. Likewise, (Egbu, Hari and Renukappa, 2005) defined KM as the processes of knowledge identification, creation, codification, storage, dissemination and implementation for the organization benefit. (Ju, Li and Lee, 2006) defined firms KM capability as their ability to acquire, convert and apply knowledge. The same view was assumed by (Chang and Chuang, 2011) and (Wu, Yu and Spender, 2015) of KM as the process of which a firm creates, acquires shares and applies knowledge.

KM as a systematic way of managing a valuable resource that is knowledge through a development of an approach of identification, capturing, organizing, structuring, sharing, retrieving and evaluating the knowledge assets of the organization. KM contains processes of organizational knowledge preservation and re-use to aid organizational goals achievement. (Kim and Ju ,2008; Turulja and Bajgoric, 2017). Chiu and Chen (2016) held that KM involves the employment and development of organizations' knowledge assets to achieve goals. Similar to the previously illustrated studies, they classified KM processes into 3 main categories that are acquisition, transfer and application. KM systems create an environment for capturing and sharing existing knowledge, creating opportunities to generate new knowledge, and facilitating the use of knowledge to achieve organizations strategic goals and objectives (Dasgupta and Gupta, 2009).

Wu and Chen, 2014 defined KM processes as the utilization of knowledge assets to create valuable and usable knowledge through a series of activities that are creation,

transfer, integration and application. Interestingly, they found firms' KM processes mediate the positive impact of having knowledge assets on business process capabilities. This finding emphasizes the importance of having effective KM systems and processes to maximize the gain from firms' knowledge assets.

Koohang, Palizkewicz and Goluchowski, 2015 viewed KM as knowledge localization, acquisition, codification, transfer and usage. Knowledge localization was explained as the firm ability to identify knowledge resources internally. Knowledge codification was defined as the firm ability to retrieve and re-use existing knowledge. Obeidat et al, 2016 look at KM processes as activities of knowledge acquisition, sharing and utilization within the organization. Knowledge acquisition is defined as the process of increasing the organizational knowledge stock. Knowledge sharing is defined as diffusing and transferring knowledge within the organization. Knowledge utilization was defined as converting knowledge into practical use. KM encompasses a group of practices to create knowledge, share it in both ways: formally and informally, utilize knowledge effectively and internalize that knowledge within the firm (Alqubaisi and Ajmal, 2017).

Mohammad and Zin, 2019 summarize KM as various activities and processes of creating, acquiring, storing, disseminating and using knowledge and ideas for improving learning and performance in firms. Nair and Munusami, 2019 viewed KM practices as the capture, retention, dissemination, use and responsiveness processes of knowledge. Their study explored the level of KM practices adoption within the private higher education institutions in Malaysia. Xu et al, 2010 grouped KM activities and processes as follows in table (2.1):

Table 2.1: Knowledge Management Components, Xu et al (2010)

Knowledge creation	Knowledge preparation	Knowledge preservation	Knowledge maintenance	Knowledge diffusion	Knowledge usage
Creation	Acquisition	Storage	Evaluation	Sharing	Use
Generation	Identification	Retention	Refinement	Transfer	Re-use
Development	Collection	Codification			

Tan and Wong, 2015 viewed KM processes as acquisition, creation, storage, updating, sharing, application and protection of knowledge. Both researches gave extra emphasis on knowledge refinement, update and preservation over time.

Fernandez, 2014 reviewed KM literature to identify the most widely used dimensions of KM. He proposed knowledge creation, knowledge transfer and knowledge application as main dimensions. He broke those main dimensions into smaller sub-dimensions as shown in table (2.2).

Table 2.2: Knowledge Management Components, Fernandez et al (2014)

Knowledge creation	Knowledge storage and transfer	Knowledge application
Acquisition of information	Knowledge storage	Teamwork
Dissemination of information	Knowledge transfer	Empowerment
Shared interpretation		Commitment to knowledge

Knowledge creation is defined by Fernandez as the process of collecting and transforming data into useful information. The knowledge storage and transfer describe the way of storing the created knowledge and disseminating it within and outside the firm. Knowledge application can be understood as the process of using the existing knowledge, exploring opportunities and resources to utilize that knowledge.

In the same way, Farooq, 2018 defines KM as the ability to create learning culture, aid knowledge sharing, store knowledge and reuse that knowledge. He broke KM into four constructs learning orientation, knowledge sharing, organizational memory and knowledge reuse that are equivalent to knowledge creation, transfer, storage and application respectively. He defined learning orientation as the tendency of the organization to create and apply knowledge whereas organization memory was defined as the firm ability to store and retrieve knowledge and experience to bear its current decisions.

Lin, 2015 measured organizational KM orientation via four dimensions: organizational memory, knowledge sharing, knowledge absorption and knowledge receptivity. Organizational memory is defined as the firm ability to learn from past

mistakes and experiences. Knowledge absorption is defined as firms' sensitivity to external knowledge and information. Knowledge receptivity is defined as the firm positivity in responding to new ideas and knowledge. KM contains processes of obtaining and using knowledge within and outside the firm to achieve the organizational objectives (Ode and Ayavoo, 2019). Accordingly, Ode and Ayavoo, 2019 considered knowledge generation, diffusion, storage and application as the fundamental KM practices.

KM has structured methods of knowledge recognition, evaluation, organization, storing and application to meet the firms' goals and objectives (Abdi and Senin 2015). In Bahrain, (Mohammed Buheji, 2009) viewed KM as creating and expanding knowledge to achieve the organizational goals and objectives.

Comprehensively, Girard and Girard, 2015 reviewed more than 100 KM definitions in literature. Numerous KM definitions were analyzed in different domains and disciplines such as engineering, management, health, defense, aerospace, energy, education, etc. The collection of the reviewed definitions represents the multidisciplinary nature of KM. Their review result complies with Darroch (2003), Farooq (2018) and Fernandez (2014) definitions of KM that is the process of creating, sharing, using and managing knowledge and information of an organization.

2.3 Competitive Advantages

Nowadays, Competitiveness becomes more prevailing management concept than other conventional performance indicators such as productivity, profitability or market share (Leilgaidina and Geipele, 2011).

Business organization competitive advantage is defined as an accumulation of things which make them different from their competitors and give them a superior market position (Udriyah, Tham and Azzam, 2019). By acquiring competitive advantages, firms develop a group of competences to serve consumers in a better way compared to their competitors (Srivastava, Franklin and Martinette, 2013). Competitive advantage is a position that firms strive to hold against their rivals (Samsir, 2017). Chahal and Bakshi, 2013 perceives competitive advantages as outcomes that are caused by rare, valuable and unique systems, customer relationships, natural and human resources which aid organizations to sustain strong competitive positions. Competitive

advantages might be derived from markets entry barriers, strong market shares and positions, distinctive firm resources and capabilities (Sigalas and Economou, 2013).

Competitive advantages explain the ability of firms to offer products and services that meet or exceed customer values that are offered by other competitors or potential market entrants. Firms with sustainable competitive advantages have certain ways of employing resources and dynamic capabilities to keep firm in strong competitive position (Sachitra and Chong, 2018).

Organizations have sustainable competitive advantages when their processes, products, services cannot be easily imitated by their competitors neither technically nor financially. Competitive advantages aid business organizations to occupy leading positions in their sectors and markets. Those advantages can be indicated by services or products uniqueness, quality and differentiation. Furthermore, competitive advantage might be owned by the ability to offer products and services at competitive prices (Kuncoro and Suriani, 2017). Companies attain superior performance relative to their competitors by achieving cost leadership, being differentiated in offering products/services or implementing unique business strategies (Cao, Duan and Cadden 2019).

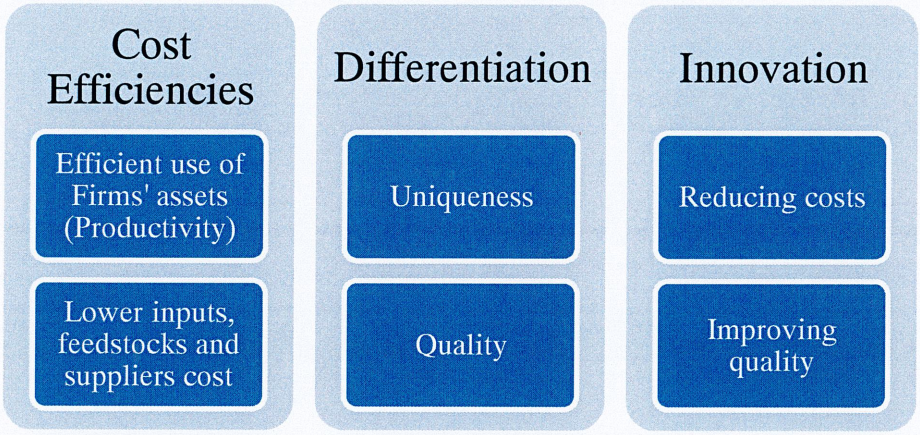
In other words, competitive advantage exists when organizations are able to provide a product or service that is perceived valuable and beneficial by consumers compared to competitors' products/services. Value is added to products and services by offering them at lower than market prices or differentiating them from existing products and services. To sustain competitive advantages, organizations shall be flexible to adapt with the rapidly changing external environment, technologies, customers' needs and perceptions (Dirisu, Iyiola and Ibidunni, 2013).

Firms hold two types of competitive advantages that are cost leadership and differentiation, Porter (1985). Porter claims that competitive advantage arises from the firm ability to create value for its customers either by offering products and services at lower prices or offering unique products and services that offset higher prices. By adopting a value creation strategy that cannot be easily imitated by business rivals, firms gain competitive advantage (Barney, 1991).

Afsharghasemi et al (2013) perceives competitive advantage as an implemented business strategy that enables internationalization for Small and medium enterprises in Malaysia. The researchers measured competitive advantage via 3 variables that are innovation, differentiation and cost leadership.

Dirisu, Iyiola and Ibidunni, 2013; Afshargasemi et al, 2013 and Udriyah et al, 2019 summarized the main three sources of competitive advantages in business organizations:

Table 2.3: Sources of competitive advantages



Similarly, Ahmad and Schroeder, 2011, determined firms' competitiveness via evaluating their unit cost of production, delivery time, product or service quality, innovation, and flexibility to change. Likewise, Saeidi et al, 2019 measured firms competitive advantages via managers' perceptions towards their companies market positions, product/services quality, differentiation and flexibility to change. Ferdousi et al, 2019, measured firms' competitive advantages via their production costs, delivery time, inventory turn-over and flexibly to change production volumes. Wang, Abeysekara and Duminda (2019) stated that high products/services quality, on time delivery, accuracy, cost leadership and flexibility are crucial to maintain strong defensive position against market rivals.

Thus, competitive advantages create economic value for firms either via lowering costs or achieving greater benefits compared to rivals (Elshaer and Augustyn, 2016).

2.3.1 Innovation

Innovation becomes crucial factor for firms and business organizations to sustain competitiveness and have long-term advantages (Darroch, 2005; Obeidat et al, 2016; Elmorshidy, 2018 and Ju, Li and Lee, 2006). Under competition, companies are forced to innovate in order to be successful and survive over time (Xu and Houssain, 2010). Firms' innovation capabilities are necessary for holding and sustaining competitive advantages. Firms shall innovate to create opportunities for survival in the current competitive commercial context (Abdi and Senin, 2015; Koohang, Palizkewicz and Goluchowski, 2015; Dasgupta and Gupta , 2009; Chang and Chuang, 2010; Elmorshidy, 2018; Obeidat 2016).

Samisir, 2017 classifies innovation into 4 types as shown in table (2.4):

Table 2.3: Innovation types

Innovation Type	Definition
Product Innovation	The introduction of new products/services in the market that are perceived valuable by consumers in terms of characteristics and functionality.
Process Innovation	The adoption of new production methods to improve the production efficiency or products/services qualities.
Marketing Innovation	The adoption of new marketing startegies via changes in promotion, pricing, markets, etc.
Organizational Innovation	The implementation of new administrative methods and business strategies.

Samsir, 2017 have demonstrated that innovation led to sustain competitive advantages in Indonesian small and medium enterprises. On top of that, innovation was found to mediate the positive relationship between leadership and competitive advantages within the same context.

This perception was adopted by Kamboj and Rahman, 2017. However, they grouped both product and process innovation under the term (technical innovation) as well as grouping both marketing and organizational innovation under the term (non-technical)

innovation. They found that both technical and non-technical innovation create competitive advantages.

Organizations adopt innovation strategically to gain competitive advantages and ultimately improve their performance. Innovation aids organizations to grip new opportunities and exploit them to greater extent compared their rivals (Jimenez and Fuentes, 2012). Innovation is considered as the main reason of organizations growth and survival (Alhakim and Hassan, 2013). Mohammad and Zin, 2019 stated that Malaysian construction firms shall be equipped with technical and administrative innovation to be competitive.

Le and Lei, 2018 found that innovation speed has a positive impact on Chinese manufacturing and service firms low-cost competitive advantages. Firms with high innovation speed capabilities are able to come up with new ideas before their rivals, renew their processes and solve their problems quickly. Those firms are more likely to reduce their operating costs and improve their productivity levels. Moreover, they found that innovation quality has a positive impact on firms' differentiation competitive advantages. Firms with high innovation quality are able to launch better products, have better production processes and better product development. Those firms are more likely to offer high quality products and services and have better brand image or reputation.

2.3.2 Operational Efficiency

Firms shall adopt operational practices that concentrate on effective use of resources and waste elimination to become more productive and competitive. Companies shall strive to be able to produce at lower costs compared to their rivals and competitors (Alqubaisi and Ajmal, 2017). As Mohammad and Zin, 2019 illustrated, small and medium construction firms can enhance their competitiveness via managing and using their resources efficiently.

2.3.3 Quality

Organizations tend to acquire competitive advantages by offering more consumer-valued services and products focusing on flexibility, convenience, reliability and quality. In order to get quality differentiation factor over their rivals, organizations have been developing and adopting quality management systems and striving to attain quality standards accreditation (Dirisu et al 2013). Organizations adopt high quality

business strategies to have sustainable competitive advantages (Augus and Hassan, 2011). Nowadays, organizations are experiencing many developments in technologies, information systems, globalization and regulations. Those changes are leading to highly intensified competitive environment where customers continue to demand better products and services (Ferdousi et al, 2018). Organizations focus on producing high-quality products to occupy a strong competitive position (Augus and Hassan, 2011). Leilgaidina and Geipele, 2011 focused on the factors that improve construction firms' projects quality to sustain competitiveness. They illustrated that a successful quality management in terms of speedy project completion, project cost optimization and maintaining high quality would satisfy customers and sustain firms competitive advantages. Elshaer and Augustyn, 2016 found that some quality management practices can be a source of competitive advantages for luxury hotels in Egypt. They found that top management leadership commitment to quality and supply quality management practices have provided financial competitive edges in terms of revenues and productivity. Also, Ferdousi et al, 2018 found that higher products/services quality in terms of shorter delivery times, lower warranty claims and lower customer complaints have a positive relationship with having competitive advantages. Furthermore, they found that firms quality performance strengthen the relationship between several organizational factors such as top management support, employees empowerment, employees involvement and reward with having competitive advantages. Moliner et al, 2016 have demonstrated the positive impact of having quality management practices in Spanish tourism and hotels sector on having both cost and differentiation-based competitive advantages.

Augus and Hassan (2011) found that implementing quality management practices have provided Malaysian manufacturing firms with competitive advantages in terms of production efficiency, achieving production targets, meeting customer needs and offering superior value to customers. Sachitra and Chong, 2017 found that high product quality, complying with quality standards, and establishing clear product quality goals have a positive impact on crop farms competitive advantages in Sri Lanka.

2.4 KM and Competitive Advantages

Various studies emphasized on KM importance for gaining sustainable competitive advantages via innovation, efficient use of resources or better financial performance worldwide. Nowadays, products life-cycles become shorter, and technologies could be imitated easily and quickly by competitors. Thus, knowledge arises as main cause of competitive advantages (HSU and Shen, 2005; Dasgupta and Gupta, 2009; Dirisu et al 2013). Knowledge based advantages are achieved via developing and applying timely and innovative business solutions that either reuse existing knowledge or use newly created knowledge (Alalawi, 2005).

Along with natural resources, leadership, customer base, brand, reputation, technologies, knowledge can be perceived as a valuable, rare, imitable, non-substitutable resource (Srivastava, Franklin, and Martinette, 2013).

Knowledge is one of the valuable intangible resources that probably create sustainable competitive advantages (Ju, Li and Lee 2006, Dasgupta and Gupta, 2009; Chang and Chuang, 2010; Elmorshidy, 2018; Obeidat, 2016). Managing knowledge and skills is an important aspect in the management of strategic competitive advantages (Nair and Munusami, 2019). Firms can sustain high performance if they have superior resources integrated with their capabilities.

KM makes organizations efficient, faster, innovative and more effective in competition, (Shahzad et al, 2014). KM systems development is important for firms' long-term success and survival (Lin, 2015). The management of knowledge assets has gained a strategic and long-term importance in business organizations in order to sustain their competitive advantages (Hassan and Abdul raziq, 2019). KM greatest gains come as creativity and innovation (HSU and Shen 2005).

KM is progressively perceived as a key source of competitive advantages in today's complex, challenging, global and dynamic business environment (Shahzad et al 2014; Turulja and Bajgoric, 2017 and Obeidat, 2016). Organizations have realized the importance of KM adoption to increase their efficiency while being challenged by intense competition and globalization, (Tan and Wong, 2015). Effective KM processes and systems become a competitive need in business organizations, (Wu et al, 2015).

KM has been known as one of the primary strategic resources for organizations performance (Mohammad and Zin, 2019). Al-Sa'dig and Chuang, 2010 studied KM processes impact on Taiwanese manufacturing firms' performance and found that KM processes when combined and aligned with firms business strategies can improve performance efficiencies and profitability margins. Turulja and Bajgoric, 2017 showed that firms' knowledge acquisition, conversion and application capabilities affect positively business performance compared to competitors in terms of sales, profitability and market share. The relationship is further strengthened by having well-established human resources practices. Their study covered the south-eastern European emerging economy.

Darroch, 2005 investigated KM potential benefits in organizations that run with more than 50 employees in New Zealand. The researcher justified the population selection as such organizations would require certain systems and practices to facilitate KM. They found that firms with KM capabilities will financially perform better, innovate and use resources efficiently. The same results were reached by Mohammed et al, 2009. They have shown that KM is critical for innovation and efficient use of resources in developing countries. Darroch, 2005 demonstrated KM components relationship with innovation. She showed that knowledge acquisition and responsiveness are more important for innovation compared to knowledge dissemination. Chen, Huang and Hsiao, 2010 have found that Knowledge creation and sharing are positively related with firm's innovativeness. Their study covered 146 Taiwanese firms. This implies the overall important and positive impact of KM practices on innovation.

Ju, Li and Lee, 2006 demonstrated that manufacturing firms in Taiwan can build up their product and process innovation capabilities via magnifying their knowledge acquisition, conversion and application capabilities. Similar to that, Tan and Wong, 2015 have found that effective KM processes have direct impact on manufacturing firms' performance in Malaysia. Powerful KM processes can lead to several gains as getting updated technical information, having a quicker problem solving capabilities and improving process and product qualities. Also, Abdi and Senin, 2015 found that KM practices impacts positively automotive manufacturing firms' innovation capabilities in Iran. Donate and Guadmillas, 2011found that knowledge creation,

sharing and application processes affects positively Spanish technological firms' innovation. However, the relationship was found mediated by human-related organizational factors such as culture, human resources practices and leadership. Likewise, Lee et al, 2013, have shown that knowledge storage, sharing and application processes affect positively Malaysian manufacturing firms technical innovation. This implies the positive impact of effective KM systems in manufacturing sector that is a knowledge intensive sector where innovation is crucial for long-term success.

Egbu, Hari and Renukappa, 2005 found that effective KM implementation in small and medium enterprises in Scotland construction sector led to sustainable competitiveness. An important benefit of effective KM implementation is the speed-to-market increment, cost reduction and improved service qualities. Such performance outcomes will provide competitive edges over rivals. Teerajetgul and Chareonngam, 2008 explored knowledge utilization during ongoing construction projects in Thailand. The have used a multiple case replication approach. They collected data from three different ongoing projects via interviews, observations and documents. They found that the application of knowledge aids decision making, and improves individuals' performance within the work site. This ultimately will lead construction firms to sustain competitiveness.

Andreeva and Kianto, 2012 showed that KM practices impact firms' competitiveness and economic performance in Finland, Russia and China emerging economies. Jimenez and Fuentes, 2012 found that if organizations are capable of combining and integrating their employees' knowledge into their internal processes and functions, they will stimulate their process and product innovation capacities and ultimately improve their performance. In other words, this knowledge combination capability aids firms to utilize their resources and reach their potential which creates competitive advantages. This study covered small and medium technology-based firms in Spain. Interestingly, this study showed that possessing knowledge is not enough to grip benefit. However, firms shall be able to combine that knowledge into their functions to realize innovation development and get better entrepreneurial outcomes. Connell and Voola, 2012 in their longitudinal study have demonstrated that knowledge sharing and integration within a cluster of firms have led to sustainable competitive advantage over time. Shahzad et al, 2014 found that KM processes affect significantly

organizational creativity and performance in terms of growth, market share, profitability and innovativeness compared to competitors. Their study covers listed organizations in Lahore stock exchange in Pakistan.

Lin, 2015 found that retrieving past firms' experience can improve continuous learning and innovation in their internal processes that ultimately enhance financial performance. Also she found that sharing both tacit and explicit knowledge among employees develops both product and operational innovation. On top of that, she found that firms' sensitivity to external information affected strongly their customers' satisfaction level which is equivalent to service quality.

Inkinen (2016) reviewed the empirical literature that focuses on linking managerial and organizational KM practices to financial performance in organizations. He classified those practices into: Human-oriented, management-oriented, technology-oriented and organization-oriented. He found that the first three types of KM practices are significant drivers of innovation.

Giampaoli, Ciambotti and Bontis, 2016 stressed on the positive impact of having well established KM infrastructure on firms' abilities to create new, cost-effective and useful solutions. They showed that firms become faster in solving problems and tackling challenges by having effective KM infrastructure. Effective KM infrastructure enhances organizations responsiveness to new market demands and improves their ability to utilize new opportunities. Koohang, Palizkewicz and Goluchowski, 2015 found that success adoption of KM processes including acquisition, codification, transfer and use affect positively firms effectiveness, efficiency, products quality, innovation and profitability. Their study covered US public, private and non-for-profit organizations.

Hussinki et al, 2017 studied Finland organizations that run with more than 100 employees. They found that organizations with high level of intellectual capital and high use of KM practices outperform the others. Kianto et al (2017) found that knowledge-based human resources management practices affects Spanish organizations intellectual capabilities and lead to better innovation and financial performance.

Farooq (2018) reviewed KM and value creation literature. He found that KM is a crucial predictor of value creation as organizations can create competitive advantages via KM processes. As mentioned in the literature review, he broke those processes into four constructs learning orientation, knowledge sharing, organizational memory and knowledge reuse that are equivalent to knowledge creation, transfer, storage and application respectively. Torres, Ferraz and Rodrigues, 2018 found that KM have positive impact on sustaining competitive advantages in small and medium size enterprises in Portugal .

Latif et al, 2018 studied KM relationship with performance in Pakistan research universities. The study results showed a positive impact of KM processes that are acquisition, sharing and utilization on universities performance through innovation . They found that effective KM implementation can result in better research productivity, higher student satisfaction and enhance universities responsiveness to its external environment changes. Mohammed and Zin, 2019 showed that KM has a significant positive effect on construction firms' competitiveness via innovation. Also, Ode and Ayavoo, 2019 showed that knowledge management practices have a significant positive impact on service firms' innovation in Nigeria services sector. They showed how can knowledge application aid knowledge generation, storage and diffusion practices in improving firm's innovation effectiveness. The study presented knowledge application as the focal point of getting the positive impact of the other knowledge management practices on organizations innovation capacities.

Hassan and Abdulraziq, 2019 found that effective knowledge management practices including knowledge acquisition, dissemination and responsiveness affects positive small and medium enterprises innovativeness in Baluchistan in Pakistan. Ting et al, 2021 have found a positive impact of KM infrastructure and processes on Malaysian service firms innovation performance.

Yu et al (2017) found that knowledge creation practices have a positive impact on industrial firms' technical innovation in China which ultimately sustains their competitive advantage. Thus, KM continues to be perceived as an essential predecessor of innovation and financial performance (Darroch 2005).

2.5 KM in Middle East and GCC

In recent times, Middle East and GCC countries are trying to diversify their economies and lessen their dependence on oil/gas production revenues. They strive to move from an oil-based economy to a knowledge-based economy (Alyami Ajmal, 2019). Majority of KM researches and studies in the region focus on KM practices association with firms' performance.

Alhakim and Hassan,2013 found that KM strategies have a positive impact on organizational performance in Iraq's mobile telecommunication sector. Innovation mediates this relationship. In Jordan, Al-Sa'di, Abdallah and Dahiyat (2016) studied the relationship between KM and organizational performance in manufacturing sector. They found that KM affects positively process innovation which ultimately leads to better organizational performance. Heba, Abdallah and Taghreed (2017) showed that KM promotes technical innovation in manufacturing firms. Also, they demonstrated that KM dissolve and integrate effectively both suppliers and customers inputs, complaints and feedbacks into the firm's operations which aid the firm technical innovation as well. Obeidat et al, 2016 found that KM processes that are knowledge acquisition, sharing and utilization have a strong positive impact on consultancy firms' innovation in Jordan.

In GCC, Al-Qubaisi and Ajmal, 2017 showed that knowledge creation, sharing, integration and application have significant relationship with operational efficiency in oil and gas sectors in UAE. When firms require cost reduction, KM contributes effectively to improve costs estimations and resources utilization. KM supported operational efficiency in gas and oil sector via facilitating the knowledge transfer of new technologies, contracting out to best and efficient suppliers, and enhance assets managements capabilities. Attia and Essam Eldin, 2018 have demonstrated how Saudi food industry organizations KM capabilities affect positively their financial performance and supply chain practices. Elmorshidy, 2018 studied the effect of having useful and easy-to-use KM systems on innovation within both public and private organizations in Kuwait. He found that the use of such systems promotes innovation and enhance problem solving capabilities within those organizations. The use of KM systems aided the employees of those organizations in improving their

work, doing their tasks differently, finding new ways to solve problems, communicating in a better way and finishing tasks in shorter time periods.

Alahbabi et al, 2018 showed that knowledge creation, storage, sharing and application have a positive impact on operational, quality and innovation performance in UAE public sector. Alyami and Ajmal, 2019 showed that knowledge acquisition, creation, capture, storage, retrieval, sharing, utilization have a positive impact on operational efficiency and sustainable development in UAE public sector . The same was confirmed when Alyami et al, 2022 found that knowledge management processes have a positive effect on the operational efficiency of UAE public sector regardless of organization size. The capability to develop operational efficiency from knowledge management processes was found to be the highest for large public sector organizations.

In Bahrain, Alalawi, 2005 explored KM adoption and awareness within the financial sector including banks, investment entities and insurance companies. Interestingly, he found that the level of awareness of KM systems potential benefits and gains was low. He found that knowledge is getting lost over generations. Furthermore, he highlighted those institutions perception towards KM as an additional cost. He justified this negative perception by companies' inability to realize and visualize KM benefits and gains over the long-term.

Alnawakda et al, 2008 found that KM implementation in Ministry of Health in Bahrain have impacted positively the ministry in terms of decision making and planning. They found that giving employees the access to timely and accurate information promotes their productivity levels. Also, they found that enhancing knowledge sharing culture motivated the ministry employees to improve the service quality. Mohammed Buheji, 2009 has found that KM affects positively the organizational competitiveness in the governmental sector.

H_1: Knowledge management has a positive association with sustaining competitive advantages in business organizations.

2.6 Employees' Attitude Towards Knowledge Resources

The existence of KM initiatives and practices at the workplace might not be sufficient to achieve their optimal effectiveness and desired outcomes (Donate and Guadamillas, 2011). Human-oriented organizational factors such as culture, leadership and HR practices are necessary for capitalizing on KM initiatives. Organizational climate may have an important role in influencing employees' perceptions towards knowledge management systems and resources (Chen, Huang and Hisao 2010).

Shahzad et al, 2014 assumed that human-oriented KM strategy which is driven by social interaction among workers should enhance organizational creativity. Interestingly, the study revealed that both constructs were negatively correlated. Thus, researchers recommended exploring the effect of workers attitude, culture support and workplace climate on this relationship.

Furthermore, Kim and Ju, 2008 found that universities faculty perceptions and attitudes towards the importance of knowledge sharing had the strongest impact compared to other knowledge sharing enablers such as rewarding systems, communication channels establishment, collaboration and trust. Also, Nigeria universities faculty attitude and perceptions towards knowledge sharing was found significantly correlated with their intention to share knowledge (Bello and Oyekunle, 2014). Both studies concentrated on the perception towards one aspect of KM that is knowledge sharing.

As Elmorshidy, 2018 illustrated, the perceived usefulness and ease of use have shaped KM systems users' attitudes towards utilizing those systems. The researcher has adopted Davies (1989) well-established Technology-Acceptance Model (TAM). This model considers users' perceived usefulness and perceived ease of use as antecedents to form a positive user attitude towards utilizing any information system or technology. Perceived usefulness is defined by Davies, 1989 as the extent of which a person tends to believe that using a particular system would improve his job performance. The perceived ease of use is defined by Davies, 1989 as the extent of which a person believes that using a particular system is effortless activity. Elmorshidy, 2018 demonstrated how KMS users' perceptions and attitudes have positively impacted their actual use of KMS. This usage has improved their work

performance, innovation capabilities and efficiency. The study covers both public and private sectors in Kuwait.

Many studies have been published verifying that perceived usefulness and perceived ease of use are essential to shape a positive attitude towards using new technologies, information systems and resources. For example, Teo and Zhou, 2014 applied TAM to study Singapore higher university students' intention to use technology. They showed that both perceived usefulness and perceived ease of use have a positive impact on students' attitude towards using technology. Cheng, 2013 has demonstrated that consumers' attitude towards using a new doors security systems was positively impacted by their ease of use and usefulness perceptions. Fawzy and Esawai, 2017 showed that both perceived usefulness and ease of use affect positively customers' attitudes towards using online banking services in Egypt.

In this paper, extra emphasis is given to workers and employees attitudes towards the available knowledge resources at their workplace. KM facilitates the effective utilization of knowledge assets and resources within firms, entities and organizations. Researches did not explore thoroughly workers attitudes towards the readily available knowledge resources and stock within their organizations. Researchers have been focusing on tacit knowledge holders' attitude towards the importance of sharing their knowledge, (Kim and Ju 2008; Bello and Oyekunle 2014).

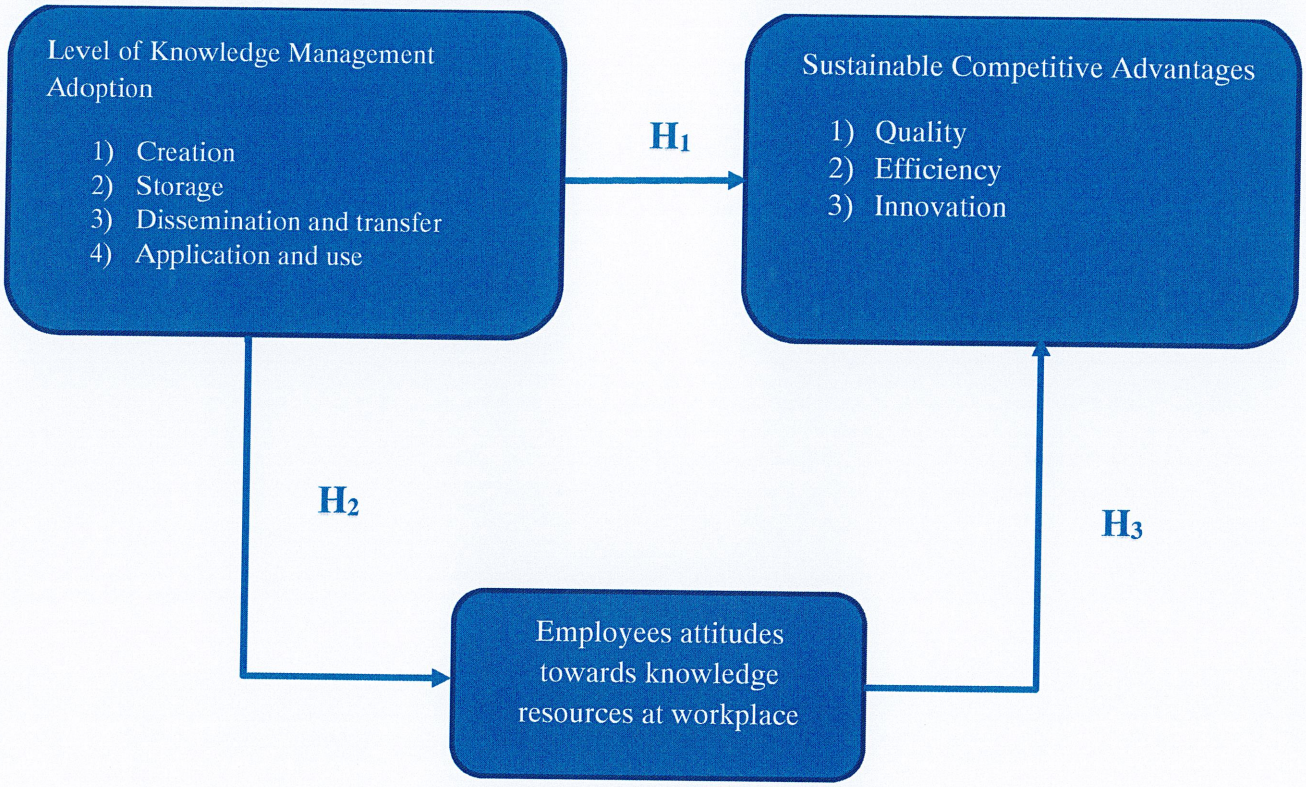
Muhammad Siddique, 2012 developed a list of 14 knowledge acquisition resources to evaluate employees' perceived importance of those resources in UAE. Those attitudes and perceptions were found to be strongly correlated with having KM practices at workplace. This implies the positive impact of launching effective KM initiatives on employees' perceptions towards the importance of the available knowledge assets. Moreover, having KM practices at work place was found positively correlated with gaining competitive advantages, improving operational efficiencies, promoting service and product qualities and developing innovation capacities.

H_2: Knowledge management has a positive association with employees' attitudes towards the available knowledge resources in business organizations.

H_3: Improving employee's attitudes towards knowledge resources aids organizations to sustain their competitive advantages.

2.7 Theoritical Framework

Figure 2.1: Theoritical Framwork



2.8 Summary

Knowledge has a dominant role in nowadays business world and has been observed as a principal source for business continuous growth and endurance. Business organizations establish knowledge management processes, initiatives and methodologies to capitalize on their organizational knowledge effectively. Those Knowledge management initiatives aid organizations to utilize and propagate their knowledge assets and resources. KM initiatives involves knowledge creation, storage, transfer and application.

Various studies emphasized on KM significance for sustaining competitive advantages via innovation, efficient use of resources or better financial performance worldwide and in Middle East as well. Furthermore, organizations improve their employees' attitudes towards the available knowledge resources at their workplace by launching KM initiatives.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

Chapter 3 Research Design and Methodology

3.1 Research Design

The research follows primary and cross sectional methodology. Spearman correlation and Partial least square structural equation modeling were carried out to evaluate the associations between the research variables.

3.2 Sampling and Population

Purposive sampling was used. A list of 122 business organizations in Bahrain was developed from the Commercial Registration Portal (SIJILAT). This portal was established by Ministry of Industry, Commerce and Tourism in the Kingdom of Bahrain to manage the registration and licensing of all commercial establishments in the country.

The complied list contains firms and organizations that operate in different business sectors. Moreover, the list contains both private and public ownership companies. Data is collected via an electronic questionnaire (English language, appendix) developed by using Google forms. It was a self administrated survey where companies were contacted and invited to participate in the research. Human resources and public relations departments were contacted by telephone to explain the objectives of the study and facilitate the survey distribution. 610 surveys were distributed by asking the organizations representatives to distribute the survey among 5 workers randomly, preferably from different functional departments and with different roles and responsibilities.

3.3 Conceptual Definitions of the Research Variables

The study explains the association between the:

1. Level of KM initiatives adoption in business organizations.
2. Sustaining quality, efficiency and innovation-based competitive advantages.
3. Organizations employees' attitudes towards the available knowledge resources at their workplace.

As per the reviewed literature, Business organization KM initiatives are broken into:

1. Level of knowledge creation initiatives adoption.
2. Level of knowledge dissemination (transfer) initiatives adoption.
3. Level of knowledge storage initiatives adoption.
4. Level of knowledge application initiatives adoption.

Also, by referring to the reviewed literature, competitive advantage can be seen as a comparative and defensive market position that is attained by business organizations via improved products/services quality, operational efficiency and enhanced innovation capabilities (Dirisu et al, 2013; Afshargasemi et al, 2013 and Udriyah et al, 2019).

Employees' attitudes towards the available knowledge resources at their workplace reflect their intention to utilize those resources. As per the well-established TAM model, the perceived usefulness, importance and ease of use shape workers attitudes towards utilizing those resources (Davies, 1989; Siddique, 2012 and Elmorshidy, 2018).

3.4 Measures

A survey was developed to suit the research objectives. The survey measures were adapted from previous published researches. The research constructs measures were adapted from previous researches where they were validated, tables (3.1 and 3.2). Furthermore, the research instrument was submitted to a number of instructors of the business administration college at the University of Bahrain for revision and approval prior to distribution. It consists of 4 section and 11 questions.

Section (1) measures workers attitudes towards the available knowledge resources at their workplace. This section measures workers perceptions towards those resources in terms of importance, usefulness and ease of use. Those measures were adapted from Davies,1989 TAM model and Siddique, 2012.

Section (2) measures the level of KM initiatives adoption in business organizations. KM initiatives are broken into knowledge creation, storage, transfer and application as per Girard and Girard, 2015. Measures are adapted from previous studies as follows:

Table 3.1: KM components measures

KM component	Studies
Knowledge Creation	Obeidat et al (2016), Wu and Chen (2014), Turulja and Bajgoric (2017), Alabdullat and Dababneh (2018), Fernandez (2014), Ju et al (2006), Alyami and Ajmal (2019), Alsa'di et al (2016), Ode and Ayavoo (2019), Landroguez and Ruiz (2016), Kianto et al (2016), Tang and Wong (2015), Lin (2015), Attia and Essam Eldin (2018), Darroch (2005), Andreeva and Kianto (2012).
Knowledge Storage	Alyami and Ajmal (2019), Lin (2015), Tang and Wong (2015), Fernandez (2014), Ode and Ayavoo (2019), Andreeva and Kianto (2012), Wu and Chen (2014), Ju et al (2006), Ayoub et al (2017), Turujla and Bajgoric (2017), Landroguez and Ruiz (2016).
Knowledge Transfer	Obeidat et l (2016), Alyami and Ajmal (2019), Wu and Chen (2014), Alabdullat and Dababneh (2018), Attia and Essam Eldin (2018), Darroch (2005), Andreava and Kianto (2012), Kianto et al (2016), Alsa'di et al (2016), Tang and Wong (2015), Fernandez (2017), Ju et al (2006).
Knowledge application	Obeidat (2016), Ju et al (2006), Ayob et al (2016), Ode and Ayavoo (2019), Landroguez and Ruiz (2015), Fernandez (2017), Alabdullat and Dababneh (2017), Turujla and Bajgoric (2017), Wu and Chen (2014), Alyami and Ajmal (2019).

Section (3) measures firms' competitive advantages via asking respondents to evaluate their firms' products, services and processes in terms of quality, resources utilization (efficiency) and innovation. Measures were adapted from previous studies as follows:

Table 3.2: Sustainable competitive advantages measures

Dimension	Studies
Quality	Wang and Kuruppuarachchi (2019), Li at al (2004), Ahmed and Schroeder (2011).
Efficiency	Alsa'di et al (2016), Alyami and Ajmal (2019), Li at al (2004), Ahmed and Shroader (2010), Kalaitzi et al (2019).
Innovation	Li at al (2004), Ahmed and Shroader (2010), Ode and Ayavoo (2019), Hussinki et al (2017), Obeidat et al (2016).

Last section gathers the respondents' individualistic demographical status:

1. Age
2. Gender
3. Nationality
4. Educational level
5. Organizational role
6. Functional department

Also, this section collects respondents business organizations information regarding the following:

1) Size by considering total number of employees
2) Organization age
3) Organization ownership type
4) Business sector

The questionnaire is attached in the report appendix.

3.5 Data Analysis

Data was analyzed statistically by using SPSS software. Non-parametric tests were used as data was collected by ordinal measurement scales. To achieve the research objectives the following was done:

Objective (1): The level of KM initiatives adoption in business organizations was determined by testing the sample median against the scale neutral point (Wilcoxon rank test).

Objective (2): The association between the level of KM initiatives adoption and sustaining competitive advantages was determined by Spearman correlation test.

Objective (3): The association between the level of KM initiatives adoption and employees attitudes towards using the available knowledge resources at their workplace was determined by Spearman correlation test.

Objective (4): The association between employees' attitudes towards using the available knowledge resources at their workplace and sustaining competitive advantages was determined by Spearman correlation test.

Moreover, respondents' attitudes towards using the available knowledge resources at their workplace were compared among different demographical groups via carrying out Man Whitney U and Kruskal Willas tests. In the same way, respondents' perceptions towards the level of KM initiatives adoption in their organizations were compared among different demographical groups.

Last but not least, the association between the research variables was tested via applying Partial Least Square Structural Equation Modeling (PLS-SEM) approach. PLS-SEM PLS-SEM method is a very attractive tool for researches as it has the ability to test complex models with many constructs, indicator variables and paths without assuming distributional rules on the data. PLS-SEM emphasizes prediction in estimating statistical models. SmartPLS software was employed to carry out the modeling. PLS-SEM results were used to validate the research hypotheses along with the Spearman correlation analysis.

3.6 Sample Characteristics

610 surveys were distributed. 90 responses were received and taken into consideration for data analysis. 1 incomplete response was noted in demographics section. This response was excluded in Kruskal wallis and Man Whitney U tests. 84% of the respondents were below 40 years old. Majority of respondents were found Bahraini's as shown in figures (3.1 and 3.2).

Figure 3.1: Respondents by age

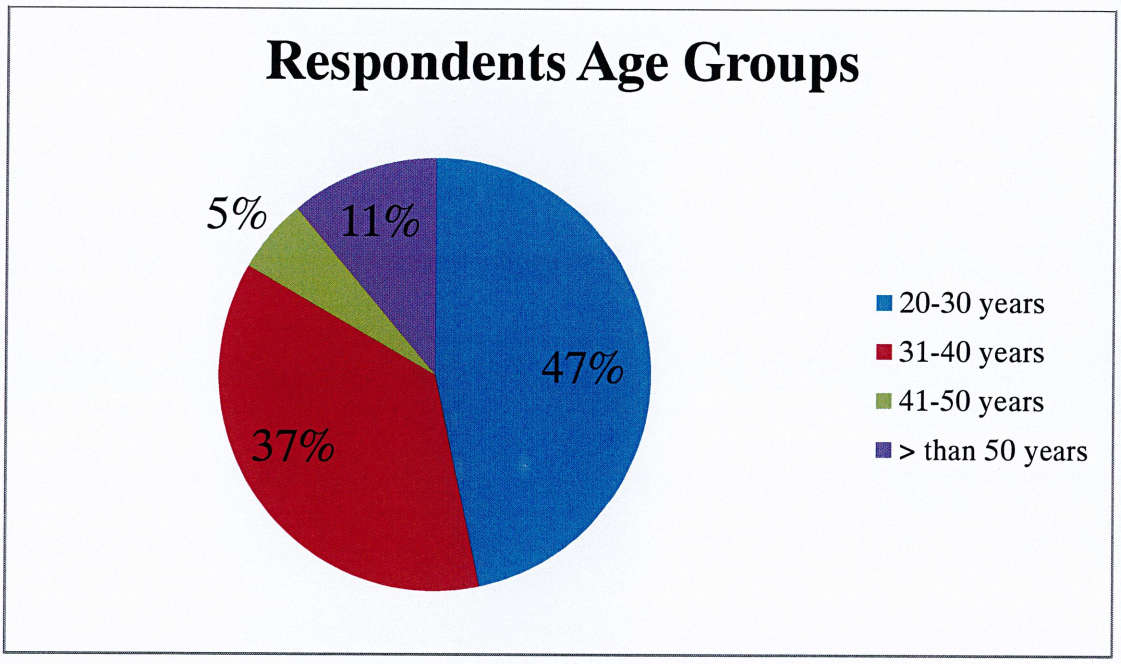
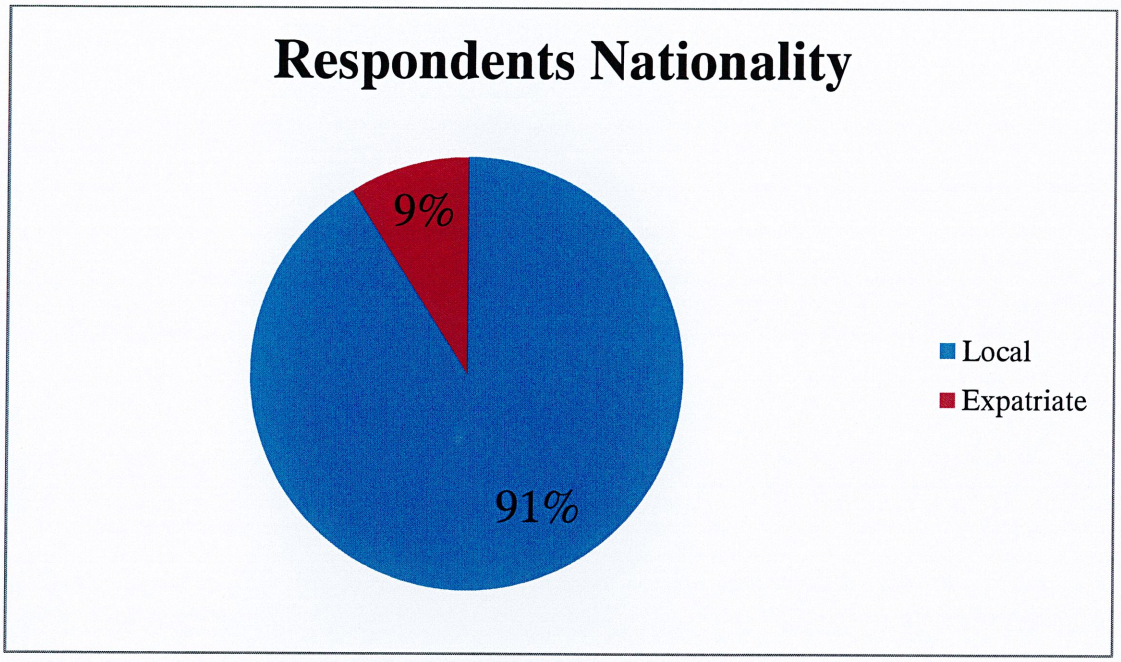
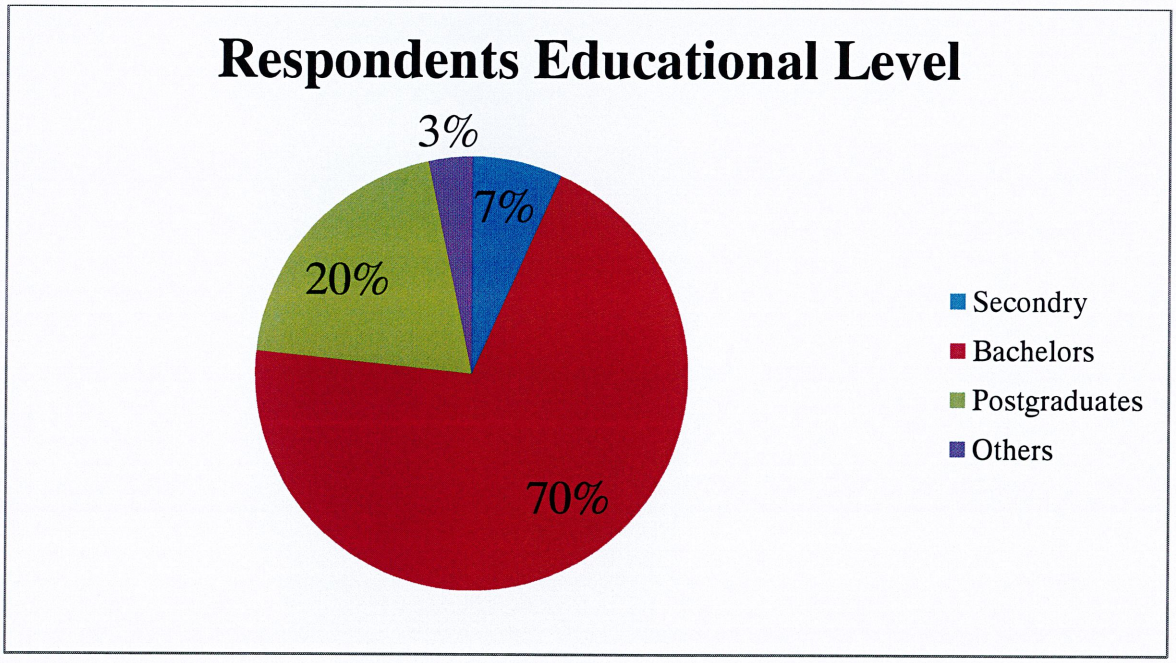


Figure 3.2: Respondents by Nationality



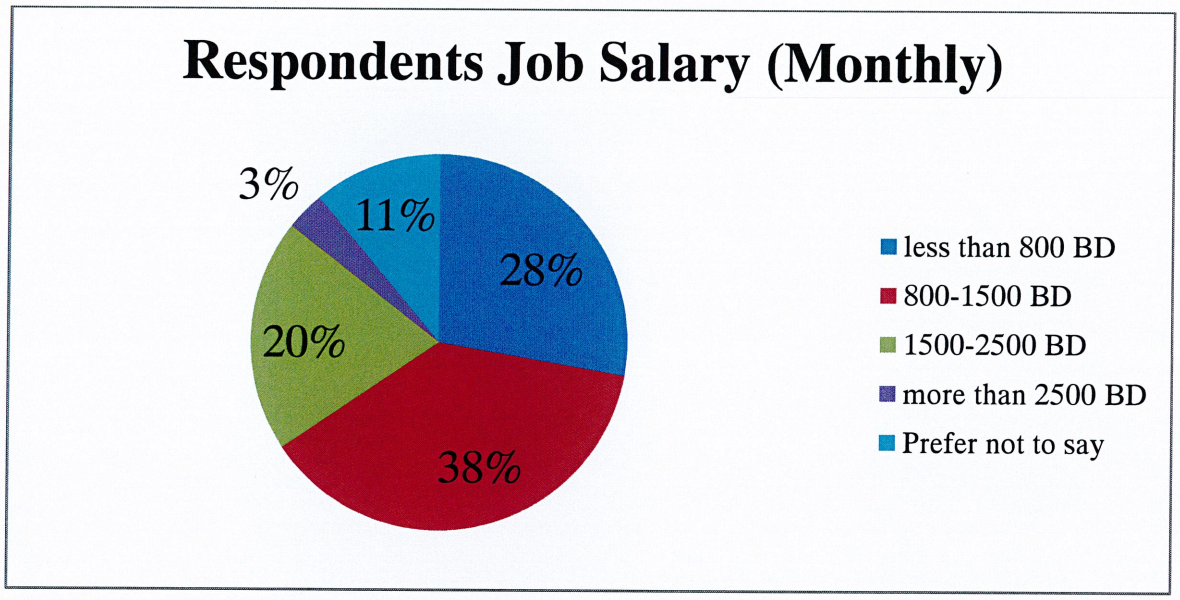
From educational level perspective, 70% of respondents were found to be bachelor degree holders. Postgraduate degrees holders were 20% of the responses, figure (3.3). This proves the ability of respondents to clearly understand the survey questions.

Figure 3.3: Respondents by educational level



In terms of occupation monthly salary, 66% of respondents were found to earn below 1500 BD/month, figure (3.4).

Figure 3.4: Respondents by salary



In terms of respondents organizations ownership type, 64% of respondents were found to be working for shareholding companies either public or closed ownership, figure (3.5). 61% of respondents organizations were found to be running in business for more than 20 years, figure (3.6). Companies sizes were determined based on their total number of employees. Majority of respondents were found to be employed in companies that have more than 100 employees, figure (3.7).

Figure 3.5: Respondents by employers' ownership type

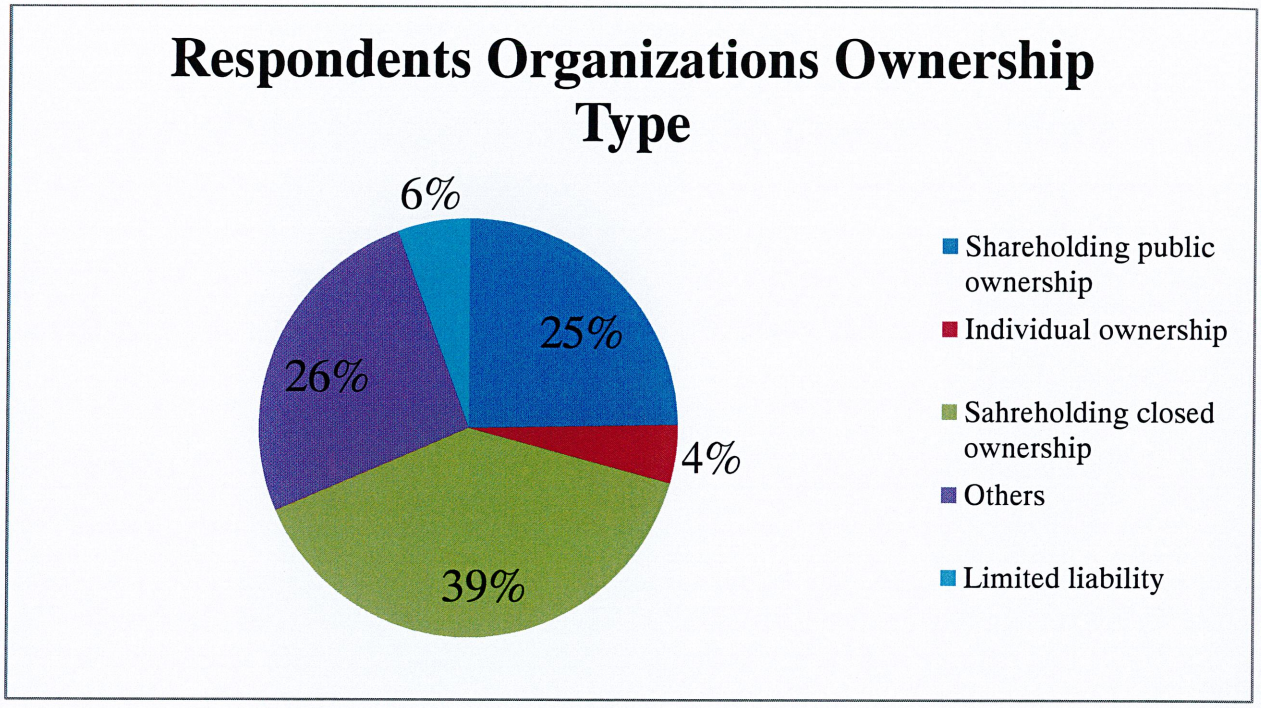


Figure 3.6: Respondents by organization age

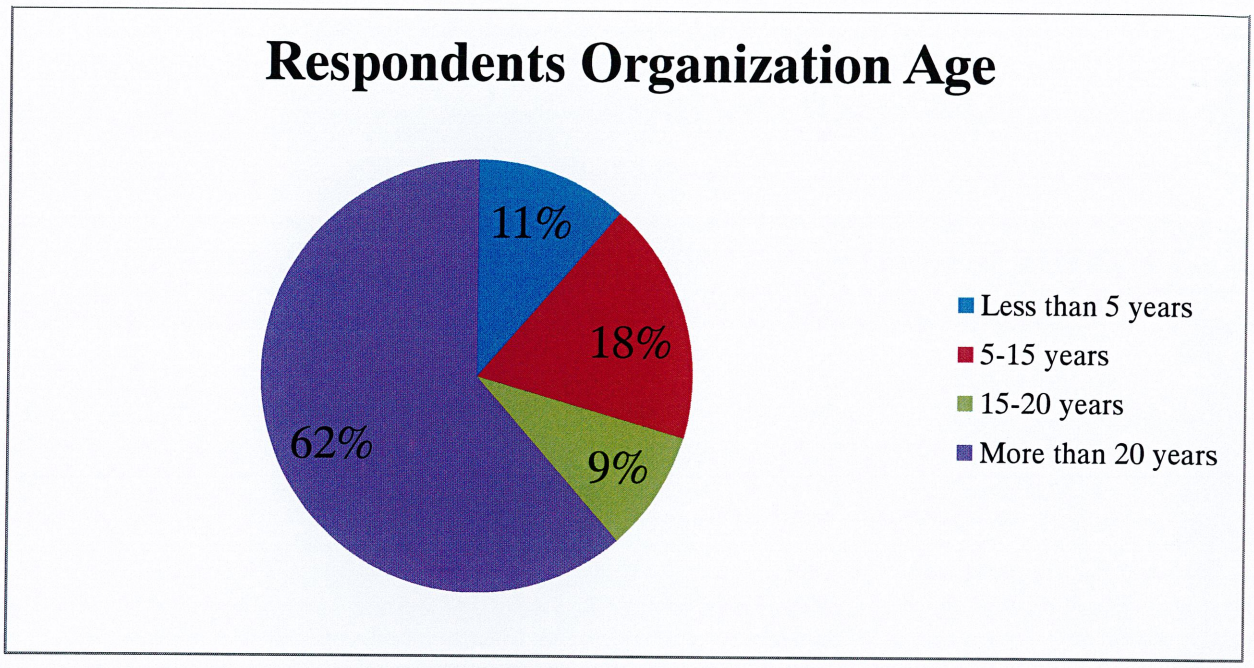
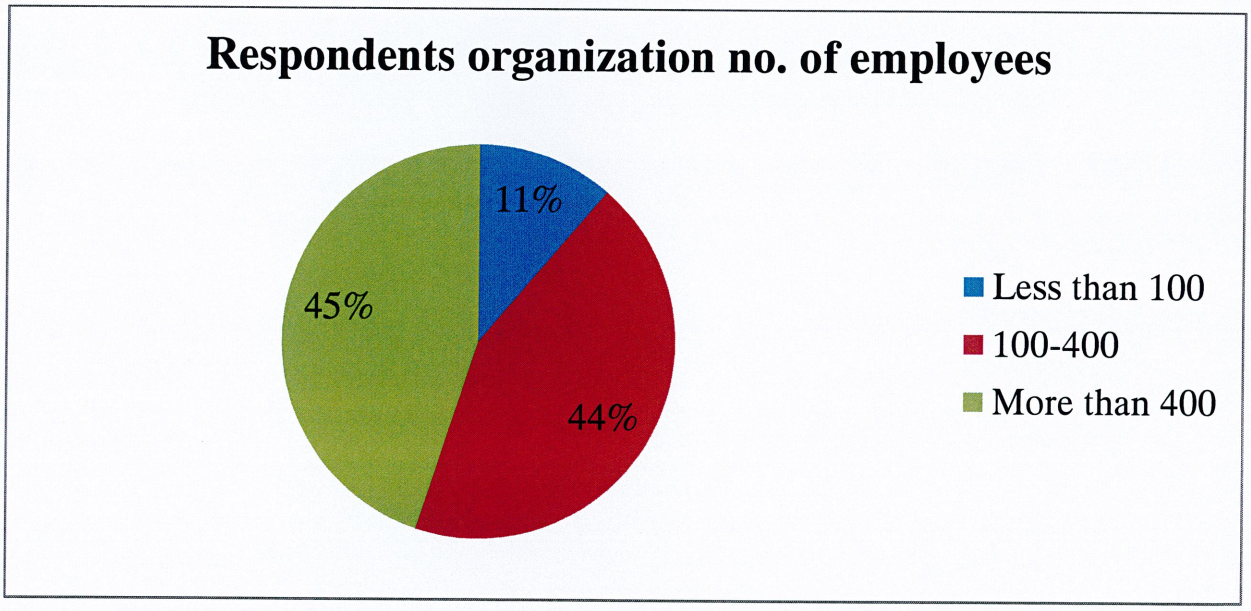
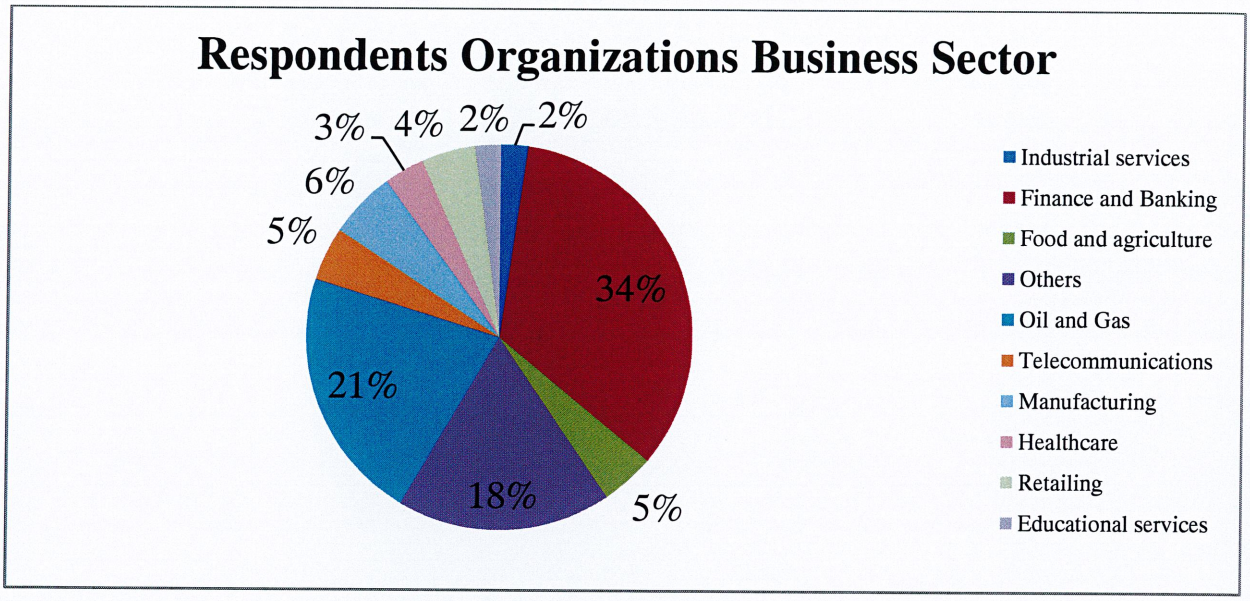


Figure 3.7: Respondents by organization size in terms of number of employees



In terms of respondent organization operating business sector, 34% of respondents were found to be working in financial services and banking sector whereas 21% are working in oil and gas sector, figure, (3.8).

Figure 3.8: Respondents by organization business sector



Respondents were found to be distributed among various functional departments in their organizations with different roles and responsibilities, figures (3.9 and 3.10)

Figure 3.9: Respondents by functional department

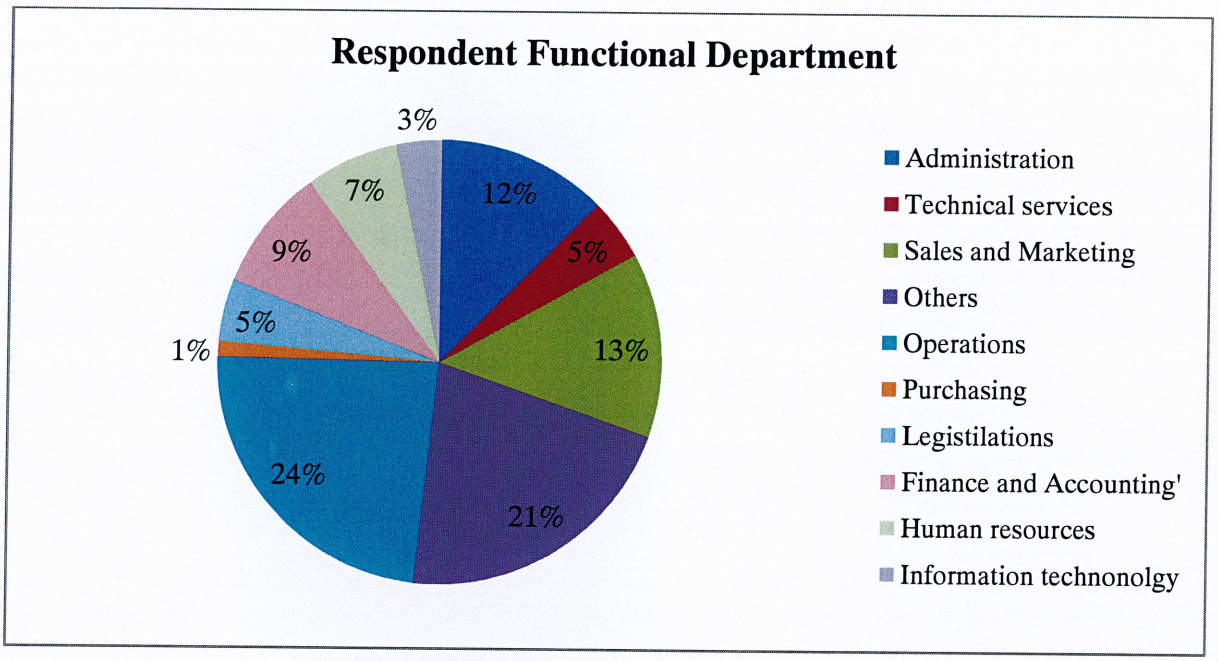
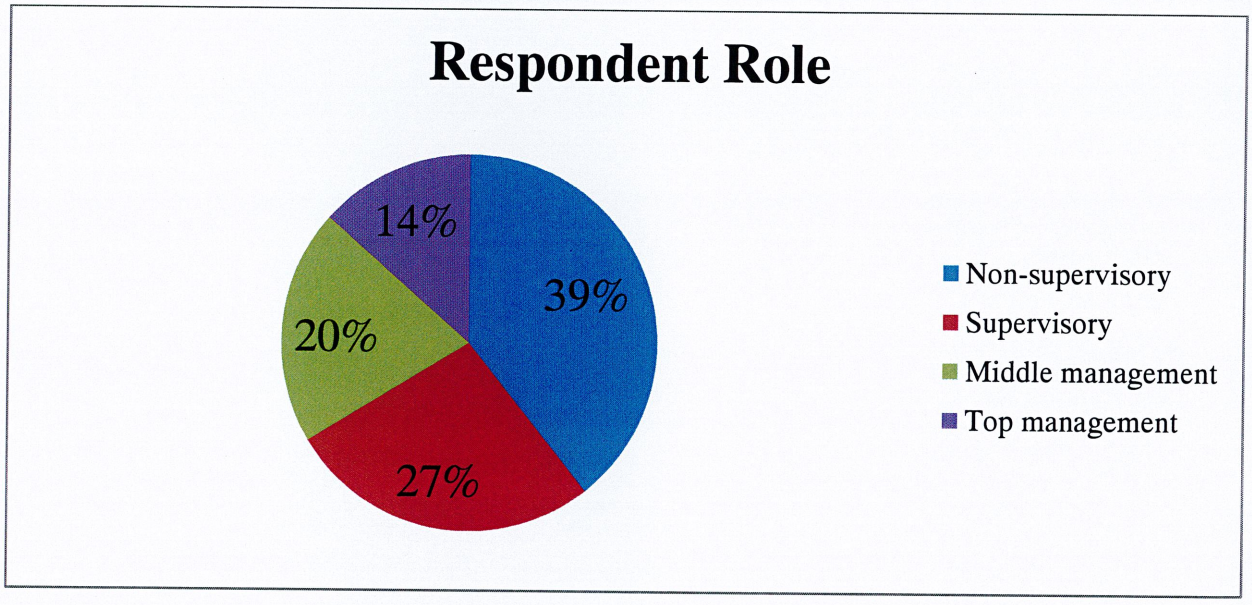


Figure 3.10: Respondents by role



3.7 Reliability and Validity

Table (3.3) demonstrates the summery of Reliability analysis of the research Instrument. Reliability is the extent to which set of variables are consistent in what is intended to measure. The internal consistency was tested to examine the reliability of each construct. The internal consistency of each construct was tested via computing Cronbach's Alpha by using Excel and SPSS. A Cronbach's alpha value of 0.70 or above implies strong scale reliability, Cronbach (1951) and Hair et al (2019). Based on the test results, all values exceeded the required minimum value of 0.70, keeping in mind that no items were deleted. This means the research measures were reliable and have strong internal consistency.

Table 3.3: Reliability analysis

Construct	Number of items	Alpha
Attitude towards Knowledge resources	**32**	**0.91**
Perceived Importance	21	0.94
Perceived Usefulness	6	0.91
Perceived Ease of Use	5	0.90
Level of knowledge management adoption	**39**	**0.93**
Knowledge creation	11	0.92
Knowledge storage	9	0.92
Knowledge transfer	12	0.94
Knowledge application	7	0.95
Sustainable competitive advantage	**22**	**0.9**
Quality	9	0.94
Efficiency	7	0.88
Innovation	6	0.88

On top of that, the research constructs measures were adapted from previous researches where they were validated, refer to section (3.4). Furthermore, the research instrument was submitted to a number of instructors of the business administration college at the University of Bahrain for revision and approval prior to distribution.

3.8 Summary

The research follows primary and cross sectional methodology. An electronic survey was distributed among a list of 122 business organizations in Bahrain. The survey measures were adapted from previous published researches.

The study explains the association between the:

1. Level of KM initiatives adoption in business organizations.
2. Sustaining quality, efficiency and innovation-based competitive advantages.
3. Organizations employees' attitudes towards the available knowledge resources at their workplace.

The collected data was analyzed statistically by using SPSS and SmartPLS3 software. To test the research hypotheses and the association between the research variables, Spearman correlation and PLS-SEM modeling were employed.

CHAPTER 4

ANALYSIS AND RESULTS

Chapter 4 Analysis and Results

4.1 Data Normality Testing

Data was tested for normality by carrying out Kolmogorov-Smirnov and Shapiro-Wilk tests via SPSS.

Table 4.1: Data Normality test

Variable	Kolmogorov-Smirnov Significance	Shapiro-Wilk Significance
Knowledge creation	0.191	0.420
Knowledge storage	0.074	0.120
Knowledge transfer	0.157	0.236
Knowledge application	**0.001**	**0.007**
Perceived importance	**0.002**	**0.001**
Perceived usefulness	**0.000**	**0.000**
Perceived ease of use	**0.000**	**0.001**
Quality	0.061	**0.000**
Efficiency	0.197	0.310
Innovation	**0.000**	**0.000**

As per the table above, 5 variables data don't follow normal distribution. Thus, non-parametric tests and PLS SEM modelling were employed in this study for data analysis.

Nonparametric tests are methods of statistical analysis that do not necessitate normality of distribution. Also, the study sample size is relatively small (n=90). Thus, the application of nonparametric tests is a suitable option. Also, nonparametric tests can be applied on ordinal data. Also, PLS-SEM attracts researchers as it is flexible in terms of data normality requirement, sample size, and the specification of the relationship between constructs and their indicator variables.

4.2 Descriptive Statistics

4.2.1 Central Tendency And Dispersion

Research variables central tendency and data variability are shown by Medians and inter-quartile ranges (IQR) in table (4.2). The IQR means that that 50% of the responses were fallen between 25th and 75th percentiles. Wider IQR reflects higher dispersion.

4.2.1.1 KM Initiatives Adoption

Table 4.2: KM medians and IQR's

Variable	Median	25th percentile	75th percentile	IQR
Level of KM adoption				
Knowledge creation	3.36	2.55	3.84	1.30
Knowledge storage	3.22	2.67	4.00	1.33
Knowledge transfer	3.00	2.38	3.77	1.40
Knowledge application	3.29	2.71	4.00	1.29

Respondents were found to be slightly positive towards the level of knowledge management adoption in their organizations. KM medians were found to be marginally above the scale neutral point except for Knowledge transfer.

To test whether the KM initiatives components are statistically above the neutral point, Wilcoxon rank test was done, table (4.3).All KM components except knowledge transfer were found significantly above the neutral point.

Table 4.3: KM components comparison with scale neutral point

Variable	Median	Significance
Knowledge creation	3.36	0.02**
Knowledge storage	3.22	0.00**
Knowledge transfer	3.00	0.62
Knowledge application	3.29	0.013*

4.2.1.2 Employees Attitude Towards Workplace Knowledge Resources

Respondents were found carrying a positive attitude towards the available knowledge resources at their workplace. Respondents agreed on the importance, usefulness and ease of use of those resources, table (4.4).

Table 4.4: Employees attitudes medians and IQR's

Variable	Median	25th percentile	75th percentile	IQR
Attitude towards KM resources at workplace				
Perceived importance	3.67	3.1	3.95	0.86
Perceived usefulness	4.00	3.67	4.33	0.67
Perceived ease of use	3.60	3.00	4.00	1.00

To test whether respondents perceived importance, usefulness and ease of use of the available knowledge resources are statistically above the neutral point, Wilcoxon rank test was done, table (4.5). Respondents' positive perception towards their available knowledge resources at workplace is confirmed as the attitude variables were found to be significantly above the scale neutral point.

Table 4.5: Employees' attitudes comparison with scale neutral point

Variable	Median	Significance
Perceived importance	3.67	0.00**
Perceived usefulness	4.00	0.00**
Perceived ease of use	3.60	0.00**

4.2.1.3 Organizations Competitive Advantages

Respondents confirmed their organizations' sustainability of quality, efficiency and innovation based competitive advantages, table (4.6).

Table 4.6: Competitive advantages medians and IQR's

Variable	Median	25th percentile	75th percentile	IQR
Sustainable competitive advantages				
Quality	3.94	3.44	4.56	1.11
Efficiency	3.43	3.00	4.00	1.00
Innovation	3.67	3.17	4.00	0.83

To test respondents' agreeableness of their organizations acquirement of quality, efficiency and innovation competitive advantages, Wilcoxon rank test was done. Respondents' positive perception towards their organizations' competitive strengths is confirmed, table (4.7).

Table 4.7: Competitive advantages comparison with neutral point

Variable	Median	Significance
Quality	3.94	0.00**
Efficiency	3.43	0.00**
Innovation	3.67	0.00**

4.2.2 Workplace Knowledge Resources Importance Ranking

Respondents ranked a number of both tacit and explicit workplace knowledge resources based on their importance on 5-point Likert scale, table (4.8).

Table 4.8: Workplace knowledge resources perceived importance rank

Rank	Knowledge Resource	Perceived importance total score (Summation of respondents Likert item ratings)	Average Likert scale rating among 90 respondents
1	Lessons learned from previous projects	363	4.03
2	Daily experiences	356	3.96
3	Senior employees and mentors	353	3.92
4	Direct supervisors and teams leaders	353	3.92
5	Co-workers and teammates	343	3.81
6	Training sessions	335	3.72
7	Customers	328	3.64
8	Internet	326	3.62
9	Line managers	318	3.53
10	Benchmarked companies and best practices	316	3.51
11	Competitors	315	3.50
12	Formal meetings with consultants and experts	314	3.49
13	Shared databases	307	3.41
14	Research and development entities	303	3.37
15	Performance appraisals	299	3.32
16	Informal discussions	297	3.30
17	Document repositories	290	3.22
18	Suppliers	282	3.13
19	Social networking sites (twitter, facebook, instgram, etc)	279	3.10
20	Conferences and seminars	271	3.01
21	Organization website	270	3.00

4.3 Demographical Groups Analysis

4.3.1 Employees Attitude Towards Workplace Knowledge Resources Among Different Demographical Groups

4.3.1.1 Individual Demographical Groups

Medians of employees' attitudes towards the available knowledge resources were compared among various demographical groups.

Man Whitney U test was done to evaluate whether male and female attitudes differ, table (4.9). Male and female workers attitudes don't differ significantly as per the results.

Table 4.9: Employees attitudes by gender

Variable	Male Median (n=65)	Female Median (n=25)	Significance
Perceived Importance	3.67	3.71	0.69
Perceived Usefulness	4.00	4.00	0.18
Perceived ease of use	3.80	3.40	0.11

Man Whitney U test was done to evaluate whether locals and expatriate workers attitudes differ, table (4.10). Attitudes don't differ significantly among locals and expatriates as per the results. However, the small number of expatriate respondents has to be taken into consideration.

Table 4.10: Employees attitudes by nationality

Variable	Locals Median (n=81)	Expatriates Median (n=8)	Significance
Perceived Importance	3.67	3.57	0.84
Perceived Usefulness	4.00	4.09	0.90
Perceived ease of use	3.60	3.70	0.79

Kruskal Willas test was done to evaluate whether workers attitudes differ by respondents' roles within their organizations, table (4.11). Attitudes don't differ significantly among different supervisory and management levels.

Table 4.11: Employees attitudes by role

Variable	Non-supervisory (n=35)	Supervisory Median (n=24)	Middle Management Median (n=18)	Top Management Median (n=12)	Significance
Perceived Importance	3.57	3.55	3.81	4.00	0.12
Perceived Usefulness	4.00	4.00	4.00	4.42	0.14
Perceived ease of use	3.80	3.40	3.10	4.00	0.42

Kruskal Willas test was done to evaluate whether workers attitudes differ by respondents' age, table (4.12). Attitudes don't differ significantly among different age groups.

Table 4.12: Employees attitude by age

Variable	21-30 years old (n=42)	31-40 years old (n=33)	41-50 years old (n=5)	Above 50 years old (n=10)	Significance
Perceived Importance	3.65	3.81	3.57	3.76	0.41
Perceived Usefulness	4.00	4.00	4.00	4.09	0.74
Perceived ease of use	3.40	3.80	3.80	3.20	0.36

Kruskal Willas test was done to evaluate whether workers attitudes differ by respondents' job salary, table (4.13). Knowledge resources perceived usefulness differs significantly by employee monthly salary.

Table 4.13: Employees attitude by job salary

Variable	Less than 800 BD (n=25)	800-1500 BD old (n=34)	1500-2500 BD (n=18)	Above 2500 BD (n=3)	Prefer not to say (n=10)	Significance
Perceived Importance	3.57	3.69	3.64	4.24	3.93	0.17
Perceived Usefulness	4.17	3.92	4.17	4.33	4.00	0.018*
Perceived ease of use	3.80	3.50	3.60	3.80	3.7	0.93

Kruskal Willas test was done to evaluate whether workers attitudes differ by employee educational level, table (4.14). Attitudes don't differ with employee educational level.

Table 4.14: Employees attitudes by educational level

Variable	Secondary school (n=6)	Bachelors (n=63)	Postgraduates (n=18)	Others (n=3)	Significance
Perceived Importance	3.57	3.67	3.60	3.00	0.96
Perceived Usefulness	3.84	4.00	4.00	4.00	0.09
Perceived ease of use	3.80	3.60	3.10	3.80	0.19

Kruskal Willas test was done to evaluate whether workers attitudes differ by employees' functional department, tables (4.15 and 4.16). Knowledge resources perceived ease of use differs significantly by this factor.

Table 4.15: Employees' attitudes by functional department part (1)

Variable	Administration (n=11)	Technical support and R&D (n=4)	Sales and marketing (n=12)	Operations and production (n=21)	Purchasing and procurement (n=1)	Significance
Perceived Importance	3.71	4.02	3.69	3.38	3.10	0.58
Perceived Usefulness	2.67	4.59	4.33	4.00	3.83	0.12
Perceived ease of use	2.80	2.90	3.80	3.20	4.00	0.017*

Table 4.16: Employees attitudes by functional department part (2)

Variable	Legal compliance (n=4)	Finance and accounting (n=8)	Human resources (n=6)	IT (n=3)	Others (n=19)	Significance
Perceived Importance	3.81	3.55	3.96	3.90	3.52	0.58
Perceived Usefulness	4.42	4.00	4.00	3.67	4.00	0.12
Perceived ease of use	4.10	4.00	3.10	3.60	3.60	0.017*

4.3.1.2 Organizational Demographical Groups

Kruskal Willas test was done to evaluate whether workers attitudes differ by respondents' organization ownership, table (4.17). Attitudes don't differ with organizations ownership type.

Table 4.17: Employees attitudes by organizations ownership type

Variable	Public shareholding (n=22)	Individual ownership (n=4)	Closed Shareholding (n=35)	Limited Liability (n=5)	Others (n=23)	Significance
Perceived Importance	3.50	3.65	3.71	3.76	3.71	0.57
Perceived Usefulness	4.00	3.50	4.00	4.17	4.00	0.20
Perceived ease of use	3.1	3.4	4.00	4.00	3.60	0.15

Kruskal Willas test was done to evaluate whether workers attitudes differ by business sector type, tables (4.18 and 4.19). Knowledge resources perceived importance differs significantly by business sector.

Table 4.18: Employees attitudes by business sector part (1)

Variable	Industrial services (n=2)	Financial and Banking services (n=30)	Food and agriculture (n=4)	Oil and gas (n=19)	Telecommunications (n=4)	Significance
Perceived Importance	2.39	3.77	3.69	3.24	3.76	0.03*
Perceived Usefulness	2.92	4.17	3.17	4.00	4.42	0.38
Perceived ease of use	2.60	3.70	2.60	3.20	4.10	0.079

Table 4.19: Employees attitudes by business sector

Variable	Manufacturing (n=5)	Healthcare (n=3)	Retailing (n=4)	Educational services (n=2)	Others (n=16)	Significance
Perceived Importance	3.81	4.43	3.95	2.88	3.69	0.03*
Perceived Usefulness	4.00	4.00	4.08	3.00	4.17	0.38
Perceived ease of use	3.80	3.40	4.30	1.70	3.70	0.079

Kruskal Willas test was done to evaluate whether workers attitudes differ by organizations' age table (4.20). Attitudes don't differ with organizations age.

Table 4.20: Employees attitudes by organization age

Variable	Less than 5 years (n=10)	5-15 years (n=16)	15-20 years (n=8)	More than 20 years (n=54)	Significance
Perceived Importance	3.41	3.71	4.00	3.67	0.24
Perceived Usefulness	4.17	3.83	3.75	4.00	0.08
Perceived ease of use	3.40	3.40	3.90	3.80	0.24

Kruskal Willas test was done to evaluate whether workers attitudes differ by organizations size, table (4.21). Attitudes don't differ with organizations size.

Table 4.21: Employees attitudes by organization size

Variable	Less than 100 employees (n=10)	100-400 employees (n=39)	More than 400 employees (n=40)	Significance
Perceived Importance	3.53	3.67	3.60	0.93
Perceived Usefulness	3.92	4.00	4.00	0.32
Perceived ease of use	3.60	3.60	3.50	0.99

4.3.2 Level Of Knowledge Management Adoption

4.3.2.1 Individual Demographical Groups

Medians of level of Knowledge management adoption were compared among various demographical groups. Man Whitney U test was done to evaluate whether males and females perceptions towards the level of knowledge management adoption were different, table (4.22). Male and female workers perceptions don't differ significantly as per the results.

Table 4.22: Perceived KM adoption by gender

Variable	Male Median (n=65)	Female Median (n=25)	Significance
Knowledge creation	3.36	3.00	0.37
Knowledge storage	3.22	3.00	0.67
Knowledge transfer	3.17	2.83	0.17
Knowledge application	3.43	3.00	0.73

Man Whitney U test was done to evaluate whether locals and expatriate workers perceptions towards the level of knowledge management adoption were different, table (4.23). Perceptions don't differ significantly among both types of workers as per the results. However, the small number of expatriate respondents has to be taken into consideration.

Table 4.23: Perceived KM adoption by nationality

Variable	Locals Median (n=81)	Expatriates Median (n=8)	Significance
Knowledge creation	3.36	3.14	0.89
Knowledge storage	3.14	3.17	0.89
Knowledge transfer	3.00	2.75	0.89
Knowledge application	3.29	3.00	0.74

Kruskal Willas test was done to evaluate whether workers perceptions towards the level of knowledge management adoption differ by respondents' roles within their

organizations, table (4.24). Perceptions don't differ significantly among different supervisory and management levels.

Table 4.24: Perceived KM adoption by employee role

Variable	Non-supervisory (n=35)	Supervisory Median (n=24)	Middle Management Median (n=18)	Top Management Median (n=12)	Significance
Knowledge creation	3.27	3.45	3.09	3.91	0.15
Knowledge storage	3.00	3.17	3.73	4.00	0.22
Knowledge transfer	2.92	2.92	3.00	3.88	0.46
Knowledge application	3.14	3.29	3.43	4.07	0.63

Kruskal Willas test was done to evaluate whether workers perceptions towards the level of knowledge management adoption differ by respondents' age groups, table (4.25). Perceptions don't differ significantly among different age groups.

Table 4.25: Perceived KM adoption by age

Variable	21-30 years old (n=42)	31-40 years old (n=33)	41-50 years old (n=5)	Above 50 years old (n=10)	Significance
Knowledge creation	3.45	3.27	3.00	2.69	0.22
Knowledge storage	3.28	3.00	3.00	3.22	0.89
Knowledge transfer	3.21	3.00	3.00	2.38	0.15
Knowledge application	3.22	3.71	3.43	2.86	0.13

Kruskal Willas test was done to evaluate whether workers perceptions towards the level of knowledge management adoption differ by respondents' job salary, table (4.26). Perceptions don't differ significantly by monthly salary.

Table 4.26: Perceived KM adoption by job salary

Variable	Less than 800 BD (n=25)	800-1500 BD old (n=34)	1500-2500 BD (n=18)	Above 2500 BD (n=3)	Prefer not to say (n=10)	Significance
Knowledge creation	3.00	3.36	3.36	2.82	3.45	0.58
Knowledge storage	2.89	3.28	3.89	3.22	3.22	0.39
Knowledge transfer	2.92	3.00	3.5	2.92	2.84	0.90
Knowledge application	3.00	3.57	3.64	3.43	3.15	0.27

Kruskal Willas test was done to evaluate whether workers perceptions towards the level of knowledge management adoption differ employee educational level, table (4.27). Perceptions don't differ with employee educational level.

Table 4.27: Perceived KM adoption by educational level

Variable	Secondary school (n=6)	Bachelors (n=63)	Postgraduates (n=18)	Others (n=3)	Significance
Knowledge creation	2.68	3.45	3.36	2.82	0.51
Knowledge storage	2.73	3.22	3.78	3.00	0.10
Knowledge transfer	2.38	3.17	3.00	2.00	0.36
Knowledge application	3.00	3.43	3.22	3.00	0.72

Kruskal Willas test was done to evaluate whether workers perceptions towards the level of knowledge management adoption differ by employee functional department, tables (4.28 and 4.29). Perceptions don't differ with that factor.

Table 4.28: Perceived KM adoption by functional department part (1)

Variable	Administration (n=11)	Technical support and R&D (n=4)	Sales and marketing (n=12)	Operations and production (n=21)	Purchasing and procurement (n=1)	Significance
Knowledge creation	2.55	2.82	3.64	3.45	3.73	0.11
Knowledge storage	2.78	3.45	3.34	3.78	4.00	0.90
Knowledge transfer	1.83	3.00	3.46	3.25	3.25	0.36
Knowledge application	2.43	3.43	3.22	3.43	3.71	0.47

Table 4.29: Perceived KM adoption by functional department part (2)

Variable	Legal compliance (n=4)	Finance and accounting (n=8)	Human resources (n=6)	IT (n=3)	Others (n=19)	Significance
Knowledge creation	3.36	3.32	3.45	3.00	3.36	0.11
Knowledge storage	3.56	3.33	3.22	3.22	3.00	0.90
Knowledge transfer	3.35	3.63	2.84	2.58	3.00	0.36
Knowledge application	3.93	3.14	3.36	3.29	3.57	0.47

4.3.2.2 Organizational Demographical Groups

Kruskal Willas test was done to evaluate whether workers perceptions towards the level of knowledge management adoption differ by respondents' organization ownership type, table (4.30). Perceptions don't differ with organizations ownership type.

Table 4.30: Perceived KM adoption by organization ownership type

Variable	Public shareholding (n=22)	Individual ownership (n=4)	Closed Shareholding (n=35)	Limited Liability (n=5)	Others (n=23)	Significance
Knowledge creation	3.05	2.96	3.64	3.36	3.00	0.07
Knowledge storage	3.00	2.95	3.33	3.22	3.22	0.75
Knowledge transfer	2.88	3.00	3.50	3.17	2.67	0.36
Knowledge application	3.07	2.93	3.71	4.00	3.29	0.26

Kruskal Willas test was done to evaluate whether workers perceptions towards the level of knowledge management adoption differ by business sector type, tables (4.31 and 4.32). Level of knowledge creation initiatives differs significantly by business sector.

Table 4.31: Perceived KM adoption by business sector part (1)

Variable	Industrial services (n=2)	Financial and Banking services (n=30)	Food and agriculture (n=4)	Oil and gas (n=19)	Telecommunications (n=4)	Significance
Knowledge creation	2.14	3.45	2.00	3.45	3.55	0.03*
Knowledge storage	2.06	3.45	2.34	3.22	4.12	0.1
Knowledge transfer	2.09	3.00	2.00	3.25	3.75	0.12
Knowledge application	1.93	3.57	1.86	3.57	4.29	0.15

Table 4.32: Perceived KM adoption by business sector part (2)

Variable	Manufacturing (n=5)	Healthcare (n=3)	Retailing (n=4)	Educational services (n=2)	Others (n=16)	Significance
Knowledge creation	3.36	3.45	3.68	2.00	3.00	0.03*
Knowledge storage	3.33	3.22	4.00	3.39	3.11	0.1
Knowledge transfer	2.92	2.67	3.96	2.09	2.88	0.12
Knowledge application	3.43	2.86	3.57	2.00	3.43	0.15

Kruskal Willas test was done to evaluate whether workers perceptions towards the level of knowledge management adoption differ by organization age, table (4.33). Level of knowledge creation initiatives differs with organizations age.

Table 4.33: Perceived KM adoption by organization age

Variable	Less than 5 years (n=10)	5-15 years (n=16)	15-20 years (n=8)	More than 20 years (n=54)	Significance
Knowledge creation	2.82	3.41	3.27	3.45	0.045*
Knowledge storage	2.89	3.28	3.45	3.28	0.36
Knowledge transfer	2.96	2.71	2.75	3.00	0.96
Knowledge application	3.00	3.00	3.57	3.43	0.59

Kruskal Willas test was done to evaluate whether workers perceptions towards the level of knowledge management adoption differ by organization size, table (4.34). Perceptions don't differ with organization size.

Table 4.34: Perceived KM adoption by organization size

Variable	Less than 100 employees (n=10)	100-400 employees (n=39)	More than 400 employees (n=40)	Significance
Knowledge creation	3.14	3.00	3.45	0.26
Knowledge storage	3.56	3.22	3.45	0.70
Knowledge transfer	3.09	2.83	3.38	0.10
Knowledge application	3.36	3.14	3.64	0.16

4.4 Spearman Correlation Analysis

4.4.1 The Association Between KM Adoption and Sustaining Competitive Advantages in Business Organizations

The association between the level of knowledge management adoption and holding sustainable competitive advantages was tested via the Spearman correlation test, table (4.35).

Table 4.35: Level of KM adoption and sustainable competitive advantages spearman correlation

	Knowledge creation	Knowledge Storage	Knowledge transfer	Knowledge application	Quality	Efficiency	Innovation
Knowledge creation	1.00						
Knowledge Storage	0.76 Sign = 0.00**	1.00					
Knowledge transfer	0.85 Sign = 0.00**	0.75 Sign = 0.00**	1.00				
Knowledge application	0.77 Sign = 0.00**	0.78 Sign = 0.00**	0.83 Sign = 0.00**	1.00			
Quality	0.51 Sign = 0.00**	0.50 Sign = 0.00**	0.54 Sign = 0.00**	0.57 Sign = 0.00**	1.00		
Efficiency	0.63 Sign = 0.00**	0.66 Sign = 0.00**	0.67 Sign = 0.00**	0.65 Sign = 0.00**	0.62 Sign = 0.00**	1.00	
Innovation	0.65 Sign = 0.00**	0.57 Sign = 0.00**	0.65 Sign = 0.00**	0.64 Sign = 0.00**	0.53 Sign = 0.00**	0.68 Sign = 0.00**	1.00
** correlation is significant at 0.01 (2-tailed)							

Based on the above table, a significant positive association exists between the level of knowledge management adoption and having sustainable quality, efficiency and innovation based competitive advantages.

Knowledge creation initiatives has a moderate positive association with having quality based competitive advantages compared a stronger association with both efficiency and innovation based competitive advantages. Knowledge storage initiatives has a moderate positive association with having quality and innovation based competitive advantages compared a stronger association with efficiency based competitive advantages. Knowledge transfer initiatives has a moderate positive association with having quality based competitive advantages compared a stronger association with both efficiency and innovation based competitive advantages. Knowledge application initiatives has a moderate positive association with having quality based competitive advantages compared a stronger association with both efficiency and innovation based competitive advantages.

4.4.2 The Association Between KM Adoption and Employees Attitudes Towards Knowledge Resources

The association between the level of knowledge management adoption and the employees' attitude towards the available knowledge resources was tested via the Spearman correlation test as follows in table (4.36).

Table 4.36: Level of KM adoption and employees attitudes spearman correlation

	Knowledge creation	Knowledge Storage	Knowledge transfer	Knowledge application	Perceived importance of knowledge resources	Perceived usefulness of knowledge resources	Perceived ease of use of knowledge resources
Knowledge creation	1.00						
Knowledge Storage	0.76 Sign = 0.00**	1.00					
Knowledge transfer	0.85 Sign = 0.00**	0.75 Sign = 0.00**	1.00				
Knowledge application	0.77 Sign = 0.00**	0.78 Sign = 0.00**	0.83 Sign = 0.00**	1.00			
Perceived importance of knowledge resources	0.49 Sign = 0.00**	0.49 Sign = 0.00**	0.39 Sign = 0.00**	0.35 Sign = 0.00**	1.00		
Perceived usefulness of knowledge resources	0.46 Sign = 0.00**	0.39 Sign = 0.00**	0.44 Sign = 0.00**	0.41 Sign = 0.00**	0.48 Sign = 0.00**	1.00	
Perceived ease of use of knowledge resources	0.59 Sign = 0.00**	0.49 Sign = 0.00**	0.48 Sign = 0.00**	0.49 Sign = 0.00**	0.39 Sign = 0.00**	0.49 Sign = 0.00**	1.00
** correlation is significant at 0.01 (2-tailed)							

Based on the above table, a significant positive association exists between the level of knowledge management adoption and having a positive employees' attitude towards the available knowledge resources at workplace.

Knowledge creation initiatives have a moderate positive association with employees' perceptions towards the importance and usefulness of workplace knowledge resources compared to a stronger association with their perception towards the ease of use of those resources. Knowledge storage initiatives have a moderate positive association

with employees' perceptions towards the importance, usefulness and ease of use of workplace knowledge resources. Knowledge transfer initiatives have a moderate positive association with employees' perceptions towards the importance, usefulness and ease of use of workplace knowledge resources. Knowledge application initiatives have a moderate positive association with employees' perceptions towards the importance, usefulness and ease of use of workplace knowledge resources.

4.4.3 The Association Between Employees' Attitudes Towards Knowledge Resources And Holding Competitive Advantages in Business Organizations

The association between the employees' attitude towards the available knowledge resources and having sustainable competitive advantages was tested via the Spearman correlation test as follows in table (4.37).

Table 4.37: Employees attitudes and sustainable competitive advantages spearman correlation

	Perceived importance of knowledge resources	Perceived usefulness of knowledge resources	Perceived ease of use of knowledge resources	Quality	Efficiency	Innovation
Perceived importance of knowledge resources	1.00					
Perceived usefulness of knowledge resources	0.48 Sign = 0.00**	1.00				
Perceived ease of use of knowledge resources	0.39 Sign = 0.00**	0.49 Sign = 0.00**	1.00			
Quality	0.29 Sign = 0.00**	0.33 Sign = 0.00**	0.31 Sign = 0.00**	1.00		
Efficiency	0.39 Sign = 0.00**	0.51 Sign = 0.00**	0.42 Sign = 0.00**	0.62 Sign = 0.00**	1.00	
Innovation	0.25 Sign = 0.02*	0.27 Sign = 0.01*	0.30 Sign = 0.00**	0.53 Sign = 0.00**	0.68 Sign = 0.00**	1.00

** correlation is significant at 0.01 (2-tailed)
* correlation is significant at 0.05 (2-tailed)

Based on the above table, a significant positive association exists between the organization employees' attitude towards the available knowledge resources and holding sustainable competitive advantages. Employees' perceived importance, usefulness and ease of use of the available knowledge resources at their workplace have a weak positive association with holding quality and innovation based competitive advantages compared to moderate positive association with holding efficiency based competitive advantages.

4.5 PLS SEM Modeling

Partial least squares-structural equation modeling (PLS-SEM) technique was used to investigate the relationship between the research variables. This data analysis technique was applied to the data set by employing the SmartPLS 3. It requires minimal normality of data. Data analysis follows Hair et al (2019).

4.5.1 Measurement Model

4.5.1.1 Reliability Analysis

The measurement model establishment in PLS-SEM requires the evaluation of construct reliability, convergent validity and discriminant validity.

The reliability of research latent constructs reflective indicator variables was determined by obtaining composite reliability, Cronbach's α and Dijkstra–Henseler Rho_A. The threshold value for these three measures is 0.70. Results were as follows:

Table 4.38: SEM reliability analysis

Variable	Cronbach's Alpha	rho_A	Composite Reliability
Level of KM Adoption	0.94	0.94	0.96
Employees Attitudes towards resources	0.76	0.76	0.86
Sustainable Competitive Advantages	0.83	0.84	0.9

4.5.1.2 Validity Analysis

Convergent Validity

Reflective measured constructs measurement items convergent validity was assessed. Convergent validity was evaluated by confirming that the average variance extracted (AVE) of the latent variables is higher than 0.5 as shown in table 4.39, Hair et al (2019). Also, all factor loadings are above 0.708, table (4.42) and figure (4.1).

Table 4.39: Convergent validity analysis

Variable	Average Variance Extracted (AVE)
Level of KM Adoption	0.84
Employees Attitudes Towards resources	0.67
Sustainable Competitive Advantages	0.75

Discriminant Validity

Constructs discriminant validity was evaluated by Fornell–Larcker criterion. The square root of all research constructs AVE's were found to be greater than the absolute values of their correlations, table (4.40) (Fornell and Larcker, 1981). Thus, constructs are truly distinct from each other.

Table 4.40: Discriminant validity part (1)

Fornell-Larcker test			
	Level of KM Adoption	Employees Attitudes Towards resources	Sustainable Competitive Advantages
Level of KM Adoption	SQRT(AVE) = **0.92**	0.58	0.76
Employees Attitudes Towards resources	0.58	SQRT(AVE) = **0.82**	0.57
Sustainable Competitive Advantages	0.76	0.57	SQRT(AVE) = **0.87**

Moreover, reflective measurement items cross loadings to the other latent constructs were found to be lower compared to their respective latent construct, table (4.41).

Table 4.41: Discriminant validity part (2)

Cross loadings			
	Level of KM Adoption	Employees Attitudes Towards resources	Sustainable Competitive Advantages
Knowledge Creation	**0.92**	0.58	0.69
Knowledge Storage	**0.89**	0.55	0.68
Knowledge Transfer	**0.93**	0.52	0.70
Knowledge Application	**0.92**	0.48	0.70
Resources Percived Importance	0.45	**0.77**	0.41
Resources Percived Usefulness	0.46	**0.87**	0.5
Resources Percived Ease of use	0.51	**0.83**	0.48
Quality	0.56	0.49	**0.83**
Efficiency	0.7	0.58	**0.91**
Innovation	0.69	0.39	**0.86**

4.5.1.3 Summary of Measurement Model

The measurement model is summarized as follows:

Table 4.42: Measurement model summary

Construct		Factors Loadings	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Level of KM adoption	Knowledge creation	0.92	0.94	0.94	0.96	0.84
	Knowledge storage	0.89				
	Knowledge transfer	0.93				
	Knowledge application	0.92				
Sustainable competitive advantages	Quality	0.83	0.83	0.84	0.9	0.75
	Innovation	0.91				
	Efficiency	0.86				
Attitude towards workplace knowledge resources	Percieved importance	0.77	0.76	0.76	0.86	0.67
	Percieved usefulness	0.87				
	Percieved ease of use	0.83				

4.5.2 Structural Model

4.5.2.1 Multicollinearity

The variance inflation factor (VIF) values for the constructs were below the ideal threshold value of 3.00, table (4.43) (Hair et al 2019). This indicates that there is no multi-collinearity issues.

Table 4.43: Multi collinearity analysis

INNER VIF VALUE			
	Level of KM Adoption	Employees Attitudes Towards resources	Sustainable Competitive Advantages
Level of KM Adoption		1	1.5
Employees Attitudes Towards resources			1.5
Sustainable Competitive Advantages			

4.5.2.2 Predictive Capability

The structural model predictive capability was evaluated via obtaining its path coefficients and their significance, the coefficient of determination (R^2) and the predictive relevance (Q^2).

The structural model's predictive relevance is estimated through the blindfolding procedure with an omission distance of 7. The cross-validated redundancy index Q^2 values for endogenous constructs were above 0, table (4.44). This confirms the predictive relevance of the model, (Hair et al 2019).

Table 4.44: Model cross validated redundancy

Construct cross validated redundancy			
Variable	SSO	SSE	Q^2
Level of KM Adoption	360	360	
Employees Attitudes Towards resources	270	212.5	**0.213**
Sustainable Competitive Advantages	270	156	**0.42**

The predictive relevance of the model is further aided by the coefficient of determination (R^2), table (4.45). The model shows a substantial predictive capability for competitive advantages sustainability and moderate predictive capability for employees' attitudes towards knowledge resources.

Table 4.45: Model coefficients of determination (R^2)

Variable	R^2	R^2 ADJUSTED
Employees Attitudes Towards resources	0.334	0.326
Sustainable Competitive Advantages	0.596	0.587

Path coefficients and significance are shown in table (4.46).

Table 4.46: PLS SEM model path coefficients and their significance

Relationship	Path coefficient	T statistics	P values
Level of KM Adoption >> Sustainable Competitive Advantages	0.65	7.03	**0.00**
Level of KM Adoption >> Employees Attitudes Towards resources	0.58	8.39	**0.00**
Employees Attitudes Towards resources >> Sustainable Competitive Advantages	0.19	1.696	**0.045**

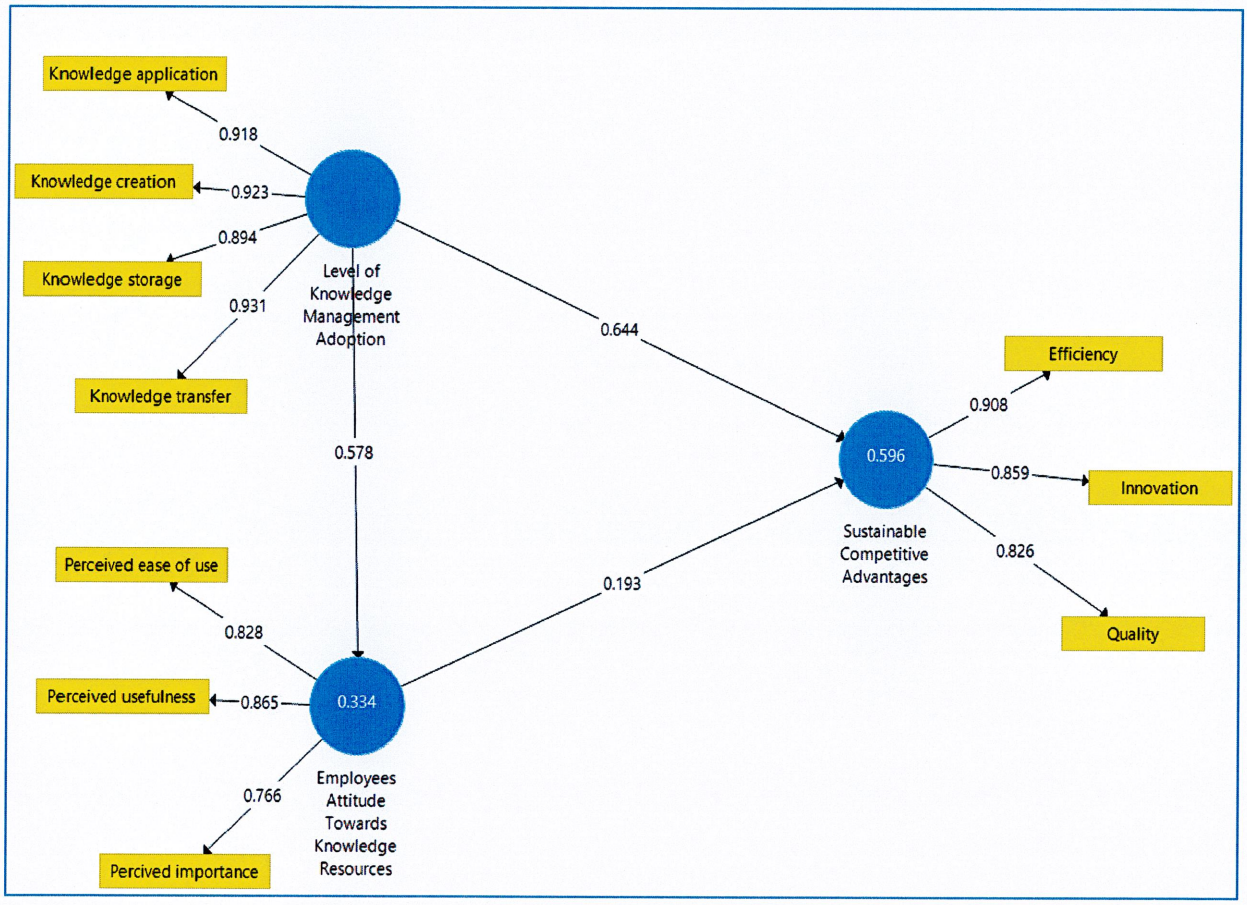
The study followed Roldán and Sánchez-Franco (2012) to report one-tailed and corresponding p-values for the acceptable significance level of path coefficients, as Kock (2015) suggests that "A one-tailed test is recommended if the coefficient is assumed to have a sign (positive or negative), which should be reflected in the hypothesis that refers to the corresponding association. If no assumptions are made about the coefficient sign, a two-tailed test is recommended".

H_1 suggests that knowledge management adoption has a positive association with sustaining competitive advantages in business organizations. Both spearman correlation and PLS-SEM modeling indicate that positive and significant relationship. Hence, the null hypothesis is rejected and H_1 is accepted at 99% level of confidence, tables (4.35 and 4.46).

H_2 suggests that knowledge management adoption has a positive association with employees' attitudes towards the available knowledge resources in their organizations. Both spearman correlation and PLS-SEM modeling indicate that positive and significant relationship. Hence, the null hypothesis is rejected and H_2 is accepted at 99% level of confidence, tables (4.36 and 4.46).

H_3 suggests that improving employees' attitudes towards the available knowledge resources aids business organizations to sustain competitive advantages. Both spearman correlation and PLS-SEM modeling indicate that positive and significant relationship. Hence, the null hypothesis is rejected and H_3 is accepted at 95% level of confidence, tables (4.37 and 4.46).

Figure 4.1: Research PLS-SEM model, path coefficients and factor loadings



CHAPTER 5 DISCUSSION

Chapter 5 Discussion

Majority of survey respondents were below 40 years old. Such age groups are expected to be well-enriched with knowledge, on-job training and continuous development by their employers and organizations. Moreover, majority of respondents were found well-educated which illustrates their capability to clearly understand the survey questions.

The survey respondents assume mixed roles and responsibilities in their organizations. As well as that, they work in different functional departments and earn different salaries. Thus, broader and unbiased views, perceptions and attitudes towards the level of KM adoption and knowledge resources are available in this research. On top of that, respondents belong to different organizations that operate in different business sectors in Bahrain. Also, those organizations differ from ownership type point of view.

The central aim of this research is to investigate the relationship between the level of knowledge management initiatives adoption and the sustainability of quality, efficiency or innovation-based competitive advantages in Bahrain business organizations. The empirical analysis revealed several findings.

5.1 KM Initiatives Adoption in Bahrain

First, KM initiatives adoption in Bahrain business organization was found to be moderate. Employees are slightly positive about the steps, initiatives and processes that their organizations promote or launch to create, store, transfer and apply knowledge. Thus, Alalawi, 2005 claim of low level of awareness of the importance and benefits of KM among firms in Bahrain remains valid. Companies may still perceive investing in KM systems as additional unnecessary costs with unrealized gains and benefits. Thus, this study tries to highlight and present the positive association between KM firms' competitive advantges sustainability.

By referring to table (5.1) that shows respondents mean perceptions towards knowledge creation initiatives in their workplace, organizations are recommended to put efforts in developing internal knowledge creation processes. Organizations need to launch brainstorming inter-departmental sessions to generate new ideas. On top of that, organizations shall always identify its internal knowledge capabilities by

capitalizing workforce skills, developing workforce abilities and valuing their inputs. In addition, organizations shall share frequently reports, problems, projects status and make them easily available for their employees. Also, organizations can aid knowledge creation by being sensitive to external environment such as market, suppliers, customers, competitors, best practices and conferences.

Table 5.1: Knowledge creation initiatives means

Knowledge creation initiative	Mean
My organization took steps to identify expertise, knowledge and internal skills	3.10
My organization works on developing staff abilities and skills.	3.33
My organization has been identifying external best practices for benchmarking purposes	3.17
My organization has been inviting external experts to conduct seminars, webinars and workshops	3.11
My organization conducts regular interdepartmental brainstorming sessions to generate knowledge and new ideas	2.97
My organization took steps to increase the use of internet and e-resources to access information	3.43
My organization rewards creative employees	3.29
My organization values employees' attitudes, opinions, suggestions and feedbacks	3.39
My organization issues reports about projects status, results and problems and make them easily available for all employees	3.10
My organization collects information from its customers or suppliers regularly	3.19
My organization is sensitive to changes in its external environment and markets information	3.43

The level Knowledge transfer and dissemination initiatives adoption was perceived the lowest among the other KM practices. By referring to table (5.2) that shows respondents mean perceptions towards knowledge transfer initiatives in their workplace, organizations can promote knowledge transfer by conducting interdepartmental meetings regularly, improving knowledge transfer between functional departments, motivating their employees' to transmit their knowledge, accepting both internal and external critics and facilitating the usage of IT-infrastructure for knowledge exchange. Organizations are encouraged to allocate time periods for knowledge exchange within the normal working hours. Moreover, employees shall be trained on knowledge sharing techniques. Just as importantly,

employees shall be made aware of their firms' business advancements and shall be involved into the decisions making processes.

Table 5.2: Knowledge transfer initiatives means

Knowledge transfer initiative	Mean
My organization encourages knowledge transfer between different functional departments	3.17
My organization conducts regular inter-departmental meetings to evaluate and share information	3.12
My organization conducts training sessions to teach employees how to share and transfer knowledge	2.94
My organization encourages the use of IT-based communication means in its daily activities and operations	3.41
My organization creates supportive environment for knowledge sharing	3.13
My organization accepts internal criticism	3.04
My organization accepts external criticism	3.21
My organization involves employees from all levels in the decision making process	2.67
My organization allocates suitable time slots within the normal working hours to exchange knowledge and information	2.74
My organization issues reports regularly to inform employees about any advancement made by the firm	2.99
My organization has procedures for receiving employees' proposals and suggestions	3.04
My organization motivates employees to share and transmit their knowledge	3.08

By referring to table (5.3) that shows respondents mean perceptions towards knowledge storage initiatives in their workplace, organizations launch documentation and codification systems to store knowledge. Such systems are strengthened continuously by discharging obsolete information, improving security systems, and making them readily accessible. Moreover, organizations promote mentoring and coaching to familiarize new employees with their tasks and to retain the retired employees' knowledge. The study showed that organizations don't really encourage senior employees to transfer their knowledge before retirement. This validated Alalawi, 2005 finding of having knowledge loss over generations in Bahrain financial organizations. In the same direction, organizations don't truly utilize mentoring and coaching to familiarize new employees with their tasks although employees rated mentors as a greatly important knowledge resource at workplace.

Table 5.3: Knowledge storage initiatives means

Knowledge storage initiative	Mean
My organization took steps for better documentation of internal knowledge	3.28
My organization developed procedures and systems to codify and store knowledge	3.23
My organization developed systems to protect knowledge from inappropriate use or theft	3.59
My organization IT infrastructure facilitates the storage and access to knowledge	3.58
My organization encourages senior employees to transfer their knowledge before leaving or retirement	3.00
My organization encourages mentoring and coaching to familiarize their new employees to their tasks	3.13
Knowledge resources are readily available and accessible within the workplace	3.30
My organization is capable of discharging obsolete knowledge and information	3.24
My organization updates its knowledge records and databases regularly	3.40

By referring to table (5.4) that shows respondents mean perceptions towards knowledge application initiatives in their workplace, organizations can capitalize on their knowledge capabilities by developing procedures and systems to apply the lessons learned from previous experience. Also, organizations develop systems to convert new thoughts, ideas, customers' feedbacks and employees' suggestions into its products and services designs.

Table 5.4: Knowledge application initiatives means

Knowledge application initiative	Mean
My organization developed processes and procedures for applying knowledge learned from past experiences	3.28
My organization developed processes and procedures for applying knowledge learned from mistakes and failures	3.42
My organization encourages applying the new working methods that employees have been trained on	3.22
My organization developed processes to use its knowledge resources in problems solving	3.13
My organization incorporates customers' feedbacks and recommendations into its products/services new designs	3.21
My organization incorporates employees' suggestions and proposals into its products/services new designs	3.27
My organization has processes of incorporating knowledge into the development of new products and services	3.23

جامعة البحرين
كلية إدارة الأعمال
قسم الإدارة و التسويق

بحث علمي لاستكمال متطلبات درجة الماجستير في إدارة الأعمال

بحث في إدارة المعرفة و استدامة الميزات التنافسية في مؤسسات الأعمال في مملكة البحرين

إعداد

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سلمت بتاريخ/ 6 يونيو 2022

5.2 Employees Attitudes Towards the Available Knowledge Resources at Workplace

Second, business organizations employees exhibit a positive attitude towards the available knowledge resources at their workplaces. Workers perceive the available tacit and explicit knowledge resources important, useful and easy to use

Employees' attitude towards the available knowledge resources doesn't differ by gender, nationality. However, it does with other individual and organizational factors such as job salary, employee functional department and organizational business sector. Higher income employees perceive workplace knowledge resources useful compared to others. This shows the natural willingness of employees to learn and absorb knowledge when they are satisfied in terms of monetary compensation.

Employees who work in legal compliance and purchasing sections perceive their workplace knowledge resources easy to use and utilize. Business organizations establish legal compliance departments to guarantee the adherence to internal controls and external regulations. The study provides a positive sign regarding the regulatory and governance information availability and accessibility to the legal compliance departments. In contrast, employees who work in technical support and R&D departments placed the lowest rating to their workplace knowledge resources in terms of ease of use. Such departments usually are equipped with well-educated workers. However, those departments don't operate in business organizations main production and profitability lines. Hence, companies might not realize the strategic gains of investing in knowledge structures in such departments.

Employees' attitude towards knowledge resources varied significantly among different business sectors. Healthcare sector employees perceived resources highly important. This can be justified by considering healthcare as a dynamic knowledge intensive sector.

In addition to that, knowledge resources were perceived important in Retailing, financial, banking and telecommunications sector. Retailing sector rely heavily on products information availability for employees to aid them to clarify customers queries. Banks and financial institutions are greatly controlled by government rules and regulations. If employees aren't knowledgeable of regulatory updates, they may

adopt incorrect practices and put the institution at risky regulatory position. Also, Market researches and customers insights aid banks and financial institutions to take well-informed decisions about investments, products and services offerings, and how best to meet customer demands and prospects. Telecommunication companies leverage knowledge to compete. Such companies rely on various functions to excel in business including customer services, technological infrastructure, electronics retailing and consumers' behaviours. Those functions require an enormous amount of knowledge for employees out of their technical majors, functional roles, areas of expertise and comfort zones.

Interestingly, tacit knowledge resources including lessons learned from previous projects, daily experiences, senior employees and mentors, direct supervisors, co-workers were perceived the most important knowledge resources, table (4.8). Tacit knowledge narrows know-how gaps and aids employees to absorb others' experiences. Human capital is one of the most vital assets. Companies acquire competitive advantages by leveraging employees' experiences. On the other hand, respondents' lowest importance rating went to organization websites, conferences and seminars. This rating shows a scope for improvement of converting organization websites into an informative useful knowledge sharing platforms. Furthermore, the rating suggests identifying and revising the criteria of sending employees to useful and informative conferences and seminars.

5.3 KM Adoption and Sustaining Competitive Advantages Association

Third, the result supports H_1 which claims a significant positive association between the level of knowledge management adoption and sustaining quality, efficiency and innovation-based competitive advantages in business organizations. Both spearman correlation and PLS-SEM models reveal a significant positive association.

The spearman correlation shows that knowledge creation, transfer and application initiatives have a moderate positive association with sustaining quality based competitive advantages compared a stronger association with both efficiency and innovation based competitive advantages. Exchanging , sharing and applying new ideas, knowledge and thoughts drive innovation and cost leadership whereas product

and service quality are determined by how well those new ideas are incorporated to the companies' operations and how valuable are they perceived by consumers.

Knowledge storage initiatives have a moderate positive association with having quality and innovation based competitive advantages compared a stronger association with efficiency based competitive advantages. When knowledge is stored properly, workers can timely obtain the required knowledge and information and hence tasks are accomplished in shorter time periods.

The study results matches with Koohang, Palizkewicz and Goluchowski, 2015 where they found that adopting KM processes of knowledge acquisition, codification, transfer and use improve firms' efficiency, quality, innovation and profitability in firms. Darroch , 2005; Mirghani et al, 2009; Chen et al ,2010; Lee et al, 2013 and Abdi and Senin, 2015; AlSa'di et al(2017), Ayoub et al (2017), showed that KM is positively related with business organizations efficient use of resources and innovation. Darroch, 2005 have found that being sensitive to market and customers' information affects positively firms' innovation capabilities. Ayoub et al (2017) showed that KM encourages technical innovation in manufacturing firms. They validated that KM incorporate and integrate effectively suppliers/customers inputs, criticisms and feedbacks into firms operations which aids the firm technical innovation. The study result is consistent with those researches and suggests the constructive impact of launching KM practices by organizations on sustaining competitive advantages.

In addition to that, Ju et al, 2006 found that Taiwanese manufacturing firms can develop their innovation capabilities by adopting processes of acquiring and integrating business partners knowledge, identifying market best practices and carrying out benchmarking. The study supports this finding. Also, the study results comply with Tang and Wong, 2015 finding in Malaysian manufacturing sector where they demonstrated that firms can improve their innovation capabilities by being sensitive to external knowledge and supportive to internal knowledge.

In addition to that, the study results comply with Lee et al, 2013 where knowledge transfer was found to be significantly related to manufacturing firms' technological innovation. Also, Darroch, 2005 and Andreeva and Kianto, 2012 found that firms' innovation is positively related with using technology to disseminate knowledge.

Moreover, the study results complies with Teerajetgul and Chareonngam, 2008 where they found that establishing knowledge exchange networks with business partners and facilitating internal knowledge sharing aids construction firms to sustain competitiveness.

The study result is consistent with Lee et al (2013) where knowledge storage was found to be significantly related to technological innovation in Malaysian manufacturing firms. As well as that, the study results conform to Alqubaisi and Ajmal, 2017 finding of the significant relationship between knowledge creation, sharing and application with operational efficiency in UAE oil and gas sector. Also, it complies with Alahbabi et al, 2018 and Alyami and Ajmal, 2019 finding of KM positive impact on operational efficiency, quality and innovation in UAE public sector.

5.4 KM Adoption and Employees Attitudes Towards Knowledge Resources at Workplace Association

Fourth, the results also support H_2 that claims a positive association between the level of knowledge management initiatives adoption and the employees' attitude towards the available knowledge resources in their workplace. Both spearman correlation and PLS-SEM models reveal a significant positive association.

Knowledge creation initiatives have a moderate positive association with employees' perceptions towards the importance and usefulness of workplace knowledge resources compared to a stronger association with their perception towards the ease of use of those resources. Knowledge can be created internally by developing and exploiting employees' skills that will aid them to utilize the available resources easily.

Knowledge storage, transfer and application initiatives have a moderate positive association with employees' perceptions towards the importance, usefulness and ease of use of workplace knowledge resources. The study results support Siddique (2012) finding of the positive association between knowledge resources perceived importance and adopting KM practices.

5.5 Employees Attitudes Towards Knowledge Resources at Workplace and Sustaining Competitive Advantages Association

Fifth, the results also support H_3 which claims a positive association between organizations' employees' attitude towards the available knowledge resources and sustaining quality, efficiency and innovation based competitive advantages. Both spearman correlation and PLS-SEM models reveal a significant positive association.

Employees' perceived importance, usefulness and ease of use of the available knowledge resources at their workplace have a weak positive association with holding quality and innovation based competitive advantages compared to moderate positive association with holding efficiency based competitive advantages. Employees' positive attitude towards knowledge resources maximizes their gains from past experience, mentors, supervisors, team leaders, teammates, business partners, etc. Subsequently, employees are able to carry out jobs and tasks and a productive way with lower mistakes and down time.

The study result is consistent with Elmorshidy (2018) finding of having ease-to-use KM systems lead to better innovation capabilities in Kuwait public and private sectors.

5.6 Summary

The central aim of this research is to investigate the relationship between the level of knowledge management initiatives adoption and the sustainability of quality, efficiency or innovation-based competitive advantages in Bahrain business organizations.

The empirical analysis revealed several findings. First, the level of KM initiatives adoption in Bahrain business organization was found to be moderate. Second, business organizations employees exhibit a positive attitude towards the available knowledge resources at their workplaces. Workers perceive the available tacit and explicit knowledge resources important, useful and easy to use. Third, results support H_1 which claims a significant positive association between the level of knowledge management adoption and sustaining quality, efficiency and innovation-based competitive advantages in business organizations. Both spearman correlation and

PLS-SEM models reveal a significant positive association. Fourth, results also support H_2 that claims a positive association between the level of knowledge management initiatives adoption and the employees' attitude towards the available knowledge resources in their workplace. Both spearman correlation and PLS-SEM models reveal a significant positive association. Fifth, the results also support H_3 which claims a positive association between organizations' employees' attitude towards the available knowledge resources and sustaining quality, efficiency and innovation based competitive advantages. Both spearman correlation and PLS-SEM models reveal a significant positive association.

CHAPTER 6

CONCLUSION, RESEARCH LIMITATIONS AND RECOMMENDATION

Chapter 6 Conclusion, Research Limitations and Recommedndations

6.1 Conclusion

The level of knowledge management adoption in business organizations in Bahrain is a fairly uncultivated area of research. This research highlights the importance of KM adoption and proposes that knowledge management practices that include creation, storage, transfer and application of knowledge could be the toolkit to sustain business organizations quality, efficiency and innovation based competitive advantages. Moreover, the research presents the impact of having a positive employees' attitude towards the workplace knowledge resources on sustaining business competitiveness.

Purposive sampling was used. A list of 122 business organizations in Bahrain was developed from the Commercial Registration Portal (SIJILAT). Companies were contacted and invited to participate in the research. Human resources and public relations departments were contacted by telephone to explain the objectives of the study and facilitate the survey distribution. 610 surveys were distributed by asking the organizations representatives to distribute the survey among 5 workers randomly, preferably from different functional departments and with different roles and responsibilities. 90 responses were received and considered in data analysis. 1 incomplete response was noted in demographics section.

The findings reveal the positive association between knowledge management initiatives adoption and sustaining quality, efficiency and innovation based competitive advantages. Furthermore, it shows that by launching KM initiatives, employees' attitude towards knowledge resources is improved. Last but not least, the results reveal the positive association between employees' attitude towards knowledge resources and sustaining companies' competitive advantages.

6.2 Research Theoritical Implications

This study contributes to the body of literature as it reconfirms the positive association between knowledge management and the sustainability of competitive advantges in business organizations. Also, the relationship of KM and firms' sustainability of competitive advanatges has rarely been examined in Bahrain. Moreover, employees'

attitudes towards workplace tacit and explicit knowledge resources has rarely been highlighted and explored in GCC countries.

Furthermore, the study recommends business organizations and academics to explore organizational and individual factors that improve employees' attitudes towards knowledge resources at their workplace to realize the potential gain on firms' sustainability of competitive advantages.

6.3 Research Managerial Implications

This research study recommends the following practical and managerial implications for Bahrain business organizations. Business organizations shall effectively launch and adopt knowledge management initiatives to sustain their quality, efficiency and innovation based competitiveness.

To encourage knowledge creation, organizations shall identify and develop their internal knowledge abilities, experiences and skills. Simultaneously, organizations shall be sensitive and absorptive to external knowledge via exchanging information with business partners and customers, studying markets demands, identifying best practices and attending to effective sector seminars and events.

To facilitate useful knowledge storage, organizations shall invest into IT infrastructure and systems that aid them to retain, store and codify knowledge. Organizations shall establish systems that update knowledge databases and discharge obsolete information. Those systems shall be readily and easily accessible to employees to maximize organizational realized benefits. Moreover, organizations shall support coaching and mentoring to retain and transfer their tacit cumulative knowledge abilities.

To smoothen knowledge transfer, organizations shall promote internal knowledge transmission and sharing via conducting interdepartmental knowledge exchange sessions, share internal reports with their employees, motivate employees to share their experiences and involve them in the decision making processes.

Organizations shall capitalize on their knowledge capabilities by developing procedures and practices to apply knowledge into their and products and services

designs, being able to learn from past experiences and mistakes, and integrate new working methods into their day-today activities.

6.4 Research Limitations and Future Research

The findings of this study have to be seen in light of some limitations. First, the sample is relatively small compared to the research population that encompasses all business organizations in Bahrain. This may cause sample bias and question the generalizability of the research results. Future researches can target larger sample and response rate to bring more statistical power and a greater extent of representation.

Secondly, data was collected in the first half of 2021 and conditions were probably dynamic throughout year 2021 due to COVID-19 pandemic waves where a lot of companies established new remote working strategies, experienced production lines shut downs and financial difficulties.

Generally, respondents' filling an electronic survey will be young and more educated than a general sample of the population. Also, people normally resist long surveys. This may restrain the response rate. Furthermore, online surveys tend to provide lower respondents accountability. Respondents probably answer quickly to finish and this would influence the quality of the collected data. Thus, it is suggested that the survey shall be accompanied by interviews and observations. By using both quantitative and qualitative approaches, analysis will be empowered and findings will be validated.

Other than that, the research population represents the private business sector in a developing and emerging GCC country that is did not yet rely on knowledge and technology intensively. Thus, it is recommended to replicate the study in highly knowledge-intensive and developed economies where a huge reliance on knowledge, technonolgy and human capital exists. Domestically, the study might be replicated in public and governmental sectors to generalize its findings.

Nevertheless, this research finding could be generalized to other GCC countries (Qatar, Saudi Arabia, Kuwait, United Arab Emirates and Oman). In spite of physical borders, those countries have with Bahrain the same culture, tribes, religion and traditions. Furthermore, oil and gas considered as the backbone of GCC countries economy and hence they all strive to diversify their economies via magnifying the role of knowledge in their future economical visions.

Finally, the research PLS-SEM model treats knowledge management as a composite construct. Future studies shall separate KM into its components while modelling relationships. Moreover, the research data were self-reported. Future researches may adopt other objective and independent measures especially for organizations' competitive advantages.

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Appendices

The following electronic survey was developed by Google form, adapted as section 3.4 and distributed.

An Examination of Knowledge Management Adoption and Sustainable Competitive Advantages in Business Organizations in the Kingdom of Bahrain

Mohammed Ali Almalki - 20082790

Supervised by: Prof. Minwir Alshammari

Dears,

You are invited to participate in this survey as a part of research project entitled **"An Examination of Knowledge Management Adoption and Sustainable Competitive Advantages in Business Organizations in the Kingdom of Bahrain."**

This research aims to investigate the level of knowledge management adoption in Bahrain business organizations and its relationship with having sustainable competitive advantages. Moreover, the study aims to investigate employees' attitudes towards the available knowledge resources at workplace and the association of this attitude with having sustainable competitive advantages.

The survey consists of 4 sections containing 11 questions. Your active participation is highly appreciated. Hereby, it is assured that the information collected from you will not be disclosed to any third party and used only for the research work and statistical analysis.

Section (1): Employees' attitudes towards knowledge resources at workplace

1) **Workers have multiple knowledge acquisition resources at workplace. Kindly evaluate the following resources based on <u>their importance</u> for you to acquire knowledge from.**

Daily experiences
Lessons learned from previous projects
Co-workers and teammates
Senior employees and mentors
Direct supervisors and teams leaders
Line managers
Suppliers
Customers
Competitors
Benchmarked companies and best practices
Informal discussions
Performance appraisals
Formal meetings with consultants and experts
Training sessions
Conferences and seminars
Organization website
Internet
Social networking sites
Research and development entities
Document repositories
Informal discussions
Shared databases

Not at all	To small extent	To a moderate extent	To a great extent	To very great extent

2) **Kindly indicate express your degree of agreeableness with the following statements**

The available knowledge resources make employees capable of finishing tasks more quickly.
The available knowledge resources enhance employees' job performance.
The available knowledge resources enhance employees' productivity.
The available knowledge resources enhance employees' effectiveness.
The available knowledge resources make tasks easier to do.

Generally, it would be useful to utilize the available knowledge resources within our organization.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

3) **Kindly indicate express your degree of agreeableness with the following statements**

Learning how to use and utilize the available knowledge resources is easy.
It is easy to become skilful at interacting with the available knowledge resources.
The available knowledge stock within our organization is clear and easily understandable.
The available knowledge resources are flexible to deal with.
Generally, it would be easy to utilize the available knowledge resources within our organization.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Section (2): Level of KM adoption

4) **Kindly indicate to what extent your organization has launched and practice the following Knowledge Management practices <u>to create and acquire knowledge</u> within the workplace.**

My organization took steps to identify expertise, knowledge and internal skills.
My organization works on developing staff abilities and skills.
My organization has been identifying external best practices for benchmarking purposes.
My organization has been inviting external experts to conduct seminars, webinars and workshops.
My organization conducts regular interdepartmental brainstorming sessions to generate knowledge and new ideas.
My organization took steps to increase the use of internet and e-resources to access information
My organization rewards creative employees.
My organization values employees' attitudes, opinions, suggestions and feedbacks.
My organization issues reports about projects status, results and problems and make them easily available for all employees.

My organization collects information from its customers or suppliers regularly.
My organization is sensitive to changes in its external environment and markets information.

Not at all	To small extent	To a moderate extent	To a great extent	To very great extent

5) **Kindly indicate to what extent your organization has launched and practice the following Knowledge Management practices <u>to store and maintain knowledge</u> within the workplace.**

My organization took steps for better documentation of internal knowledge.
My organization developed procedures and systems to codify and store knowledge.
My organizations developed systems to protect knowledge from inappropriate use or theft.
My organization IT infrastructure facilitates the storage and access to knowledge.
My organization encourages senior employees to transfer their knowledge before leaving or retirement.
My organization encourages mentoring and coaching to familiarize their new employees to their tasks.
Knowledge resources are readily available and accessible within the workplace.
My organization is capable of discharging obsolete knowledge and information.
My organization updates its knowledge records and databases regularly.

Not at all	To small extent	To a moderate extent	To a great extent	To very great extent

6) **Kindly indicate to what extent your organization has launched and practice the following Knowledge Management practices to <u>facilitate knowledge transfer</u> within the workplace.**

My organization encourages knowledge transfer between different functional departments.
My organization conducts regular inter-departmental meetings to evaluate and share information.
My organization conducts training sessions to teach employees how to share and transfer knowledge.
My organization encourages the use of IT-based communication means in its daily activities and operations.

My organization creates supportive environment for knowledge sharing.
My organization accepts internal criticism.
My organization accepts external criticism.
My organization involves employees from all levels in the decision making process.
My organization allocates suitable time slots within the normal working hours to exchange knowledge and information
My organization issues reports regularly to inform employees about any advancement made by the firm.
My organization has procedures for receiving employees' proposals and suggestions.
My organization motivates employees to share and transmit their knowledge.

Not at all	To small extent	To a moderate extent	To a great extent	To very great extent

7) **Kindly indicate to what extent your organization has launched and practice the following Knowledge Management practices <u>to utilize and apply</u> its knowledge capabilities within the workplace.**

My organization developed processes and procedures for applying knowledge learned from past experiences.
My organization developed processes and procedures for applying knowledge learned from mistakes and failures.
My organization encourages applying the new working methods that employees have been trained on.
My organization developed processes to use its knowledge resources in problems solving
My organization incorporates customers' feedbacks and recommendations into its products/services new designs.
My organization incorporates employees' suggestions and proposals into its products/services new designs.
My organization has processes of incorporating knowledge into the development of new products and services.

Not at all	To small extent	To a moderate extent	To a great extent	To very great extent

Section (3): Competitive Advantages (Quality, Efficiency and Innovation measures)

8) **Kindly express your degree of agreeableness with the following**
My organization products/services are highly reliable and consistent.

My organization provides accurate information about its products/services to its customers.
My organization products/services are certified for quality.
My organization has effective quality control systems, procedures and policies.
My organization usually satisfies its customers' needs from the first time.
My organization brand has excellent customer recognition.
My organization and products/services have a strong reputation for quality.
My organization warranty claims have been reducing in the last 3 years.
My organization delivers its products/services on time.

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

9) Kindly express your degree of agreeableness with the following

My organization is able to produce products or offer services at lower prices compared to its competitors.
My organization manages its operating costs effectively.
My organization has improved its assets utilization.
My organization have been reducing its usage of resources while maintaining or increasing revenues
My organization have been reducing its wastage of resources while maintaining or increasing revenues
My organization has been reducing the cost of processing its feedstock and resources.
My organization has been increasing the recycling rates of its resources.
My organization have secured and accessed resources at lower prices compared to its competitors

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

10) Kindly express your degree of agreeableness with the following

My organization products/services are highly customized and as per our customers wants.
My organization can alter the offered products and services easily to meet its customers' wants.
My organization responds to customers new demands and needs in its products and services.
My organization renews its production and operational methods continuously.
My organization is faster in bringing new ideas and services to the market
Compared to competitors, our organization brought more new products/services to the market in the past 3 years

Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree

Section (4): Demographical questions

11) Demographics

What is your age group?
20 - 30 / 31 – 40 / 41 – 50 / More than 50

What is your gender?
Male / Female

What is your monthly income?
Less than 800 BD / 800 - 1500 BD / 1500 - 2500 BD / More than 2500 BD

What is your organization ownership type?
Governmental / Private-closed ownership / Private-public ownership

How would you classify your company?
Oil-Gas / Manufacturing / Service / Retailing / Communication / Construction / Real-estate / Hospitality and tourism / Financial services and banking / Education / Medical / others

How old is your company?
Less than 5 years / 5-15 years / 15-20 years / More than 20 years

What is your organization total no. of employees?
Less than 100 / 100-400 / More than 400

What is your specific role in your organization?
Non-management / Supervisory / Middle management / Top management

What is your functional department in your organization?
Administration / Operations and production / Sales and marketing / Purchasing and procurement /Technical support or R&D / Finance and accounting / IT / Human resources / Legal compliance / others

What is your educational level?
Secondary school / Bachelors / Postgraduates / Others

Are you
Local (Bahraini) / Expatriate

الملخص

الغرض: يجذب مجال إدارة المعرفة اهتمام الكثيرين في علم الإدارة نظراً لديناميكية و تنافسية الأسواق و الاقتصاد في وقتنا الحالي. إدارة المعرفة ينظر إليها بشكل متزايد كأداة داعمة للميزات التنافسية في المؤسسات و الشركات التجارية. يهدف هذا البحث إلى استكشاف مدى قيام و تطبيق المؤسسات و الشركات الربحية في البحرين لمبادرات إدارة المعرفة المؤسسية و أثر تلك المبادرات على استدامة الميزات التنافسية في هذه المؤسسات.

بالإضافة إلى ذلك، يهدف البحث إلى استكشاف أثر مبادرات إدارة المعرفة على إقبال موظفي المؤسسات الربحية على استخدام مصادر المعرفة المتوفرة في أماكن عملهم. أخيراً، تلقي هذه الورقة الضوء على علاقة هذا الإقبال على مصادر المعرفة باستدامة الميزات التنافسية أيضاً.

الطريقة: بعد الاطلاع على العديد من الدراسات في المجال ذاته، تم تقسيم مبادارت إدارة المعرفة في الشركات الربحية إلى أربع أقسام: استحداث المعرفة، مشاركة المعرفة، تخزين المعرفة و تطبيق المعرفة. بعد ذلك، تم فهم مدى إقبال موظفي مؤسسات على مصادر المعرفة من خلال قياس وجهة نظرهم في: أهمية مصادر المعرفة المتوفرة، عمليتها و سهولة استخدامها. أخيراً، تم تقسيم استدامة الميزات التنافسية للشركات بـ: استدامة جودة المنتجات/الخدمات، كفاءة العمليات و الابتكار.

من خلال الدخول على منصة (سجلات) التبعة لحكومة مملكة البحرين، تم إعداد قائمة بشكل عشوائي مكونة من 122 مؤسسة ربحية. تم التواصل مع أقسام العلاقات العامة و الموارد البشرية في هذه المؤسسات من أجل نشر استبيان الكتروني لجمع المعلومات بغرض التحليل للوصول إلى أهداف هذه الدراسة. 610 استبيان تم توزيعه بالطلب من ممثلي التواصل الشركات بتوزيع الاستبيان على 5 موظفين. تم استلام 90 استبيان للتحليل.

النتائج: بحسب نتائج الدراسة، مستوى تطبيق إدارة المعرفة في المؤسسات الربحية في مملكة البحرين معتدل. يرى موظفي القطاع الخاص في المملكة مستوى مبادارت إدارة المعرفة في الشركات و المؤسسات من منظور محايد مائل بشكل طفيف إلى الإيجابية. مع ذلك، كشف التحليل الاحصائي عن علاقة إيجابية بين مستوى مبادرات إدارة المعرفة في المؤسسات و مدى استدامة ميزاتها التنافسية. أيضاً، كشف التحليل عن العلاقة الإيجابية بين هذه المبادرات و إقبال موظفي المؤسسات على استخدام مصادر المعرفة المتوفرة في أماكن عملهم. أخيراً، رصد التحليل العلاقة الإيجابية بين إقبال الموظفين على استخدام مصادر المعرفة و استدامة الميزات التنافسية للشركات التي يعملون بها.

جامعة البحرين
كلية إدارة الأعمال
قسم الإدارة و التسويق

بحث علمي لاستكمال متطلبات درجة الماجستير في إدارة الأعمال

بحث في إدارة المعرفة و استدامة الميزات التنافسية في مؤسسات الأعمال في مملكة البحرين

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