Designing a Customer-Centric Knowledge Management Strategy for Health Services in Bahrain

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Abstract: The world's economy is shifting from a traditional one towards a knowledge-based economy. A tra¬ditional economy is known for resource scarcity, tangibility, limitability, an increasing marginal cost, and decreasing marginal utility. In contrast, a knowledge-based economy enjoys resource abundance, intangibility, inimitability, and diminishing marginal cost. The objectives of this paper is to propose a customer-centric knowledge management (CCKM) strategic model for public organizations and to explore its application to a public service setting, viz. e-health services in the Ministry of Health (MoH) in the Kingdom of Bahrain. As the paper seeks to propose a new model, it adopts an exploratory approach to the development of the model based on review of relevant scholarly literature. Principles of the model have been applied to the MoH services in the Kingdom of Bahrain. The e-health system provides an integrated and comprehensive knowledge about patients that help to improve health care provided to patients and ultimately maximize customer satisfaction. Some principles of the proposed CCKM model have been found applied to the MoH in the Kingdom of Bahrain. In order to leverage full potential of ICT in health service, ICT uptake needs to be accompanied by organizational changes in people, structure, and processes, in order to develop effective customer knowledge management.

Keywords: customer, knowledge management, business process reengineering, customer relationship management, and e-health strategy

INTRODUCTION

As today's organizations exist and operate in dynamic environments that are rife with turbulence and uncertainty and increased demands from customers for better quality, faster deliveries, and lower costs, it is becoming imperative for them to adapt to changing environments by developing long-term scenario plans and innovative products and services.

Knowledge is increasingly, becoming a primary engine of growth in today's dynamic world and is making nations more competitive as they shift from information-based to knowledge-based economies in an attempt to gain sustainable continuous improvement (SCI). The premise of knowledge-based strategies is based on the ability of an organization to create or leverage its distinctive core competencies (DCCs) in order to attain a SCI. The ability to plan for selection and establishment of a successful customer-centric knowledge management (CCKM) strategic model is a process driven by creative thinking and results in innovative actions [1].

The dramatic shifts in today's knowledge economy makes the most valuable resource that creates SCI for an organization is what it *knows* not what it *owns*. Drucker[2] pointed out that the most valuable assets of the 21st century organization are its knowledge and knowledge workers. Tangible assets of an organization include financial assets as well as physical assets such as technology, machines, equipments, buildings, and facilities; whereas intangible resources include knowledge about customers or suppliers, knowledge and experience in handling process technologies, skills and expertise in research and development, and financial know-how in acquiring and raising capital.

There is greater realization in developing countries of opportunities created by the creation, acquisition, distribution, and use of organizational knowledge as a non-depleting resource for economic development. The ability of public organizations, in particular, to succeed in delivering products and services is becoming highly related to organizational ability to leverage its DCCs, e.g. the ability to use knowledge to maximize the experience and satisfaction of customers and citizens.

The concept of knowledge management (KM) is not commonly applied in public organizations of developing countries. The information and communication (ICT) infrastructure is essential for knowledge management but not enough to create an

impact in service delivery. Changes in organizational structure and culture and work environment are needed in order to secure full potential of ICT solutions.

The objective of this paper is to propose a CCKM strategic model for public organizations and to explore its application in a public service setting. As the CCKM model is newly proposed, the paper adopts an exploratory approach to its development based on review of relevant scholarly literature and relevant reports of the Kingdom of Bahrain.

This paper is divided into four parts. The first part provides a comprehensive review of the conceptual definitions, roots and building blocks of the proposed CCKM model followed by a brief description of application of KM principles to a public setting, viz. Ministry of Health (MoH) in the Kingdom of Bahrain. The third part addresses CCKM challenges in the public sector whereas the final part of the paper is the conclusion.

The Proposed Customer-Centric Knowledge Management Model

The SCI of organizations usually comes from what it knows, how quickly it acquires new knowledge, how efficiently it uses what it knows, and how quickly it applies new knowledge [3]. Therefore, effective development, maintenance, and expansion of customer knowledge and relationships are becoming a strategic imperative for customer-centricity in virtually every industry[4].

As organizations grow and interact with more and more customers through increasingly diverse media and channels, having a systematic approach to manage customer knowledge becomes critical. CCKM is needed not only to capture simple transactional information, i.e. by customer relationship management (CRM) systems, but to extend the formation of strategic partnerships and to develop new products and services. Customer knowledge refers to the methodologies and systems employed in the acquisition and distribution of valuable customer derived information and knowledge concerning the provisioning of customer services or products throughout an organization. Customer knowledge is described as the creation of new knowledge gained by organizations and their customers sharing platforms and processes[5].

This part of the paper provides a comprehensive review of the conceptual definitions, roots and building blocks of the proposed CCKM model**.** The proposed CCKM model represents a revision of the customer knowledge management model of Al-Shammari [1] customized for public organizational settings. The theoretical constructs of the

model have been reworked into the context of public service customer-centric knowledge management**.**

Definitions of Basic Concepts of the CCKM Model

The conceptual foundations of the CCKM model covered in this part of the paper include KM, CRM, and business process reengineering or redesign (BPR).

Knowledge Management

The concept of KM encompasses three major parts: knowledge capture and/or creation, knowledge sharing and dissemination, and knowledge application[6]. Since the business environment usually is dynamic, so is the need to create a holistic business strategy that seeks to develop knowledge-intensive, cross-functional capabilities and add value to customers based on pluralistic perspectives to change. Since knowledge, and in particular CK, is the heart of newly emerging KM and CRM business strategies, the term CKM is thought to be a more accurate representation of the merger between CRM and KM.

CKM is not just about customer data nor is it just about customer relationships, viz. social (people-based) or transactional (technology-based); rather, CKM is a knowledge-based business strategy enabled by a holistic organizational reinvention manifested by changes in people, structure, processes, and technology. Research specifically on the concept of CKM has shown growing appearance in the literature. CKM may seem to be just another duplicate name of CRM or KM, to the extent that some researchers have called for it to replace the term CRM[7]. Although CKM incorporates the principles of both KM, and CRM, but it differs from these along a number of key variables as follows [8]:

Knowledge in customer-oriented processes entails the following[8]:

- measuring inputs, service costs and outputs in terms of allocated budgets;
- acquiring and continuously updating knowledge on customer needs;
- applying customer knowledge to continuously improve
- performance through a process of learning from successes and failures;
- the implementation of appropriate systems to support customer knowledge acquisition, sharing and measurement of CRM effectiveness; and
- constantly contrasting the balance between service inputs and the changing needs of customer).

Customer knowledge falls into three categories [8]:

- knowledge for customers (satisfy customers' knowledge needs)
- knowledge about customers (understand customers' profile, needs, and motivations and address them)
- knowledge from customers (customers' knowledge about products and services – through interaction with customers)

Customer Relationship Management

Definitions of CRM are wide ranging from narrow to wide. One view of CRM is the utilization of customer related information or knowledge to deliver products or services to customers[9]. While such dentitions are widespread, they tend to offer a narrow insight into the goals or basic characteristics of CRM. As CRM evolves, richer definitions are emerging, with an emphasis on CRM goals, logistics and complex character[10]. According to Light [11], CRM evolved from business processes such as relationship marketing and the increased emphasis on improved customer retention through effective CRM. Relationship marketing emphasizes that customer retention affects company portability in that it is more efficient to maintain an existing relationship with a customer than create a new one[12]. In this perspective, CRM is also defined as an all- embracing approach, which seamlessly integrates sales, customer service, marketing, field support and other function that touch customers[13]. When integrating people, process and technologies and leveraging the Internet, the relationship with customers including e-customers, distribution channel members, internal customers and suppliers are maximized. Andoe *et al.*[14] argue that CRM is technologically orientated and that advanced ICT such as data warehousing and data mining, are crucial to the functionality and effectiveness of CRM systems. Furthermore, Peppard [15] suggests that ICT advancements in global networks, convergence and improved interactivity, are key to explaining the growth of e-business and CRM. In another view of CRM,

By examining customer relationships via the CLC model, companies can determine when opportunities (or threats) exist for improved or new knowledge-based exchanges that will also affect which specific customer products/services and/or processes should be developed. According to Knox *et al.* [16] CLC include suspects, prospects, customers, and advocates. The CLC passes through the following three major stages: acquisition, retention, and expansion such as up-selling and cross-selling.

Business Process Reengineering

Business process reengineering (BPR) or redesign (which is a narrow definition of BPR), is a strategic action that targets business processes, rather than complete transformation of the enterprise, and should be conducted with a clear understanding of the company's vision, strategy, and competitive directions in customer processes and/or services.

Process automation is not a replacement for BPR as it leaves the existing processes intact and only using computerizing existing processes to speed them up without addressing their fundamental deficiencies. Many job designs, work flows, control mechanisms, and organizational structures have been developed for operational command and control rather than for strategic competitive purposes. ICT power needs to be used not to automate outdated business processes, but to 'obliterate' them[17]. Only through streamlining business processes can organizations can gain remarkable improvements in operational performance, service quality, and customer satisfaction.

Designing organizational processes around the customer is essential for successful customer-centric strategies. Business process redesign or reengineering (BPR) methodologies recognize processes or transactions as the link between strategy and systems development[18].

Roots of the CCKM Model

A review of the literature clearly shows that there is a lack of a clear and simple conceptual model for understanding CCKM. This creates a wide variety of possibilities for understanding and implementing CCKM as a concept or an approach. Through literature review and establishing new perspectives, the components of KM and CRM, business process reengineering (BPR), and ICT are amalgamated into a CCKM model. CCKM is conceived as a holistic model that results from the integration several interrelated concepts, techniques, and methodologies rooted in people, process, and technology, and is aimed at creating satisfied customers.

The following contributions have participated directly or indirectly, and at various levels, to the development of the CCKM model:

- The Socio-technical Systems Model[19] which views an organization as a system of coordinated human and technical components (tasks, activities, and tools) that interact with each other as well as with its external environment.
- The Environmental and Organizational Impacts of IS Model [20-21] whose framework is based on five organizational pillars, viz. strategy, people, process, technology, and structure, and their surrounding external environment conditions.
- The Work System Framework [22-23], the

elements of the which are based on results for customers, products and services, business processes, people, information, technology, context, and infrastructure.

- The Process-oriented KM Strategies [24-25] which intend to bridge the gap between human- and technology-driven KM approaches by emphasizing process-oriented knowledge content.
- Corporate Knowledge Resources Model [26] which includes human (people), structural (process and technology), and customer relationship (data) knowledge.
- The 'IDIC' CRM Implementation and Management Framework [27] which is based on identifying customers, differentiating them, interacting with them, and customizing offerings. The framework is supported with process, organization, technology, and culture.
- BPR Implementation Methodology[28-29] in which key activities of reinventing are organized into three phases referred to as the 3 R's, which include redesign, retool, and re-orchestrate.
- Customer Acquisition and Management Model [30] which creates a customer-oriented organization, by suggesting three stages of customer acquisition and management: identification of broad customer segments, clarification of customer needs and behaviors, and achieving intimacy with customers.
- A revised 'DIKAR' Model[31]- the original DIKAR model prevents a 'technology-push' KM strategy, by starting at the 'results end', identifying the results and locating KM within a demand side, not supply side, knowledge context. The model is used in a customer context and starts with data then proceeds through information, knowledge, action, and ends with results.
- CRM Implementation Model[32] looks at CRM as an integrative approach that combines people, process and technology, and seeks to manage relationships by focusing on customer retention and relationship development.
- A Strategic Framework for CRM[16] includes five major processes: strategy development process, value creation process, channel and media integration process, information management process, and performance assessment process.
- The CRM Value Chain Model [33] identifies five primary stages: customer portfolio analysis, customer intimacy, network development, value proposition development, and manage the customer lifecycle.

Building Blocks of the CCKM Model

The CCKM value chain primary activities include capturing data from customers, creating profiles of customers, composing knowledge about customers, maximizing value for customers, measuring return on relationships with customers, and mastering the learning throughout CCKM change, whereas the CCKM value chain support activities include reorganizing people, reconfiguring processes, and retooling ICT.

The CCKM model is divided in 4 parts as follows:
- Part One - *Strategizing*: This is the first stage in the CCKM process. It deals with *diagnosing* drivers for CCKM in the external as well as internal environment and planning of a strategic change. This part consists of setting a CCKM Strategy.
- Part Two - *Reinventing*: This phase addresses the *enabling* role of reinvention of organizational infrastructure in successful implementation of CCKM. Flexibility, responsiveness, and dynamism in major organizational pillars of people, processes, structure, and technology are needed in order to be able to meet discontinuous environmental changes. This level deals with reinvention of the major organizational pillars: people, processes, and technology. The three organizational pillars represent the CCKM value chain *enabling* activities that transcend CCKM primary activities to reflect the fact that they enable these activities, and they continue to cut across these activities in Parts (III) and (IV). The three CCKM enabling tools are as follow (3 Rs):
  - Reorganizing People: refers to the *'who'* element of CCKM and represents a change in the human resources and organizational structure.
  - Retooling ICT Systems: refers to the *'what'* element of CCKM and represents changes in the ICT infrastructure.
  - Redesigning Processes: refers to the *'how'* element of CCKM and represents changes in business processes as well as CCKM value-chain activities.

- Part Three - *Capitalizing*: This part is concerned with the *analysis and blueprinting* of CCKM value chain. CCKM value chain focuses six activities (3 Cs) This level includes the following value chain activities (3 Cs):

o Capturing Data *from* Customers: represents the customer interaction component of CCKM.
o Compiling Profiles *of* Customers
o Creating Knowledge *about* Customers

- Part Four - *Mastering*: This part represents end results of the *implementation* of CCKM. The aim is to create a knowledge-based customer-centric strategy that seeks to create value for customers.

Applying CCKM Principles to the Ministry of Health in the Kingdom of Bahrain

This is an exploratory study of a newly proposed CCKM model that has not been empirically tested before. Therefore, this paper doesn't anticipate the CCKM model to be found applied as a whole in one particular organization. This part of the paper addresses the application of CCKM principles to the Ministry of Health (MoH) e-services in the Kingdom of Bahrain based on secondary data such as official publications, reports, web sites, and presentations.

The MOH in Bahrain has embarked on an elaborate plan of internal computerization which encompasses some of the services that are part of the e-health services project. The e-health services are offered as part of the eGovernment initiatives in the Kingdom of Bahrain.

e-Government and Health Strategy

The Government for the Kingdom of Bahrain encounters a variety of challenges such as demands for efficiency; cost cutting and a value for money service; finding alternative ways of funding; ensuring appropriate human resources; supporting improved management practices; developing a proper structure; higher customer expectations; and knowledge armed customers[34].

The eGovernment strategy in Bahrain is focused on ensuring effective delivery of government services to customers, residents and businesses and to deliver customer value through collaborative Government. Based on the design-reality gap theory, Bahrain's e-government is shown to be an exemplary success when design mirrors reality[35].

The MOH aims through its strategy to provide services and quality health care for all customers and residents alike. As part of the service enablement strategy, e-health services are amongst the 200 key governmental services that have been identified for delivery through electronic channels out of more than 300 services provided by 32 government agencies. The 200 services have been identified based

upon importance of service (customer demand and importance) and feasibility of electronic delivery[36].

The key customer-centric implications from the eGovernment strategy are as follows[37]:

1. *eGovernment Leader:* to maintain and improve upon its position as a regional eGovernment leader that is committed to using leading edge technologies to serve and provide value to its customers.

2. *All Government Services*: to provide services to customers and to work towards electronic enablement of all key services.

3. *Integrated, Best-in-Class:* to strive to increase levels of customer satisfaction with government services by redesigning processes in a customer-centric fashion. Services will be delivered such that customers interact with one rather than multiple government agencies..

4. *Available to All:* to ensure effective delivery of applicable government services to all, irrespective of their education, nationality, age or income, as governments do not choose their customers.

5. *Channel of Choice:* to provide customers multiple (but integrated) channels for availing government services.

Process Re-engineering at the MOH

Currently, 200 key governmental services are electronically enabled and are provided through departmental websites or through the eGovernment Portal. Based on the current level of eReadiness of the governmental agencies, the service enablement strategy proposes the electronic enablement of the 200 services over a three years period (2007-2010). To enable these services in the phasing proposed, thirteen key agency projects have been proposed as part of the Bahrain's eGovernment strategy[38].

Examples of e-health services provided to customers are as follows [39]:

o Obtaining results of laboratory and radiology tests
o Provisioning of electronic health record
o Issue of birth certificate
o Issue of death certificate
o Students registration for CHS
o Licensure for medical practitioners, nurses & allied health
o Licensure for food shops and other health-related organizations

- o Issue and renewal of licenses for clinics and medical centers
- o Registration of pharmacies and renewal

To provide health benefits and services, the MoH adopted Re-engineering process through the development of standards, medical protocols and treatment, and adoption of new ICTs. One of the important services that have been re-engineered is the birth registration and issuance of certificates until receipt of the certificate by mail.

Knowledge Management at the MoH

The health care industry is a very intensive knowledge field where experience and tacit knowledge play an important role in delivering effective health care to patients. The ability of MoH to collect, store, and create information and the sharing of knowledge ultimately enhances the decision making process and help improve customer satisfaction. Because of the complex nature of the MoH business, most of the creation of clinical and non-clinical information and knowledge gathering are focusing around the patient (customer knowledge) such as x-rays, lab tests, medications, cost of treatment, etc (patient management system). In addition, some sets of information in the health sector are concerning the operation of the organization in term of financial, human resources, etc. Each sets of related information or knowledge is needed by certain people in the MoH [40].

The MoH has recognized the importance of utilizing people experiences and knowledge and, thus, started several initiatives to enhance KM. However, because of budget constraints, the options were very limited. The MoH has succeeded in building parallel solutions around its backbone IT infrastructure to provide and obtain external knowledge to its stakeholders. External tacit knowledge is provided to and obtained from the following: patients, suppliers, businesses, private health providers, and health insurance. External tacit knowledge is provided to and obtained from the following: Central Informatics Organization (CIO), Civil Service Bureau (CSB), eGovernment, Pension Fund, and Ministry of Finance. Although the MoH has not yet developed a dedicated KM comprehensive system, it has created several initiatives such as the creation of KM section, online access to the main health IT system (central repository), collaborated communication center, health statistics and indicators, intranet web site, e-health services, business intelligence, document management, telemedicine, and project management documentation. The KM initiatives have resolved some of the KM issues and still more remain to be solved[40].

Customer Relationship Management at the MoH

Although the concept of CRM is popular in profit-oriented organizations to retain, expand, and satisfy customers (patients), it has been also applied to public settings[41] CRM helps generate value to customers in order to enhance their trust and loyalty and help them and health providers sustaining relationship for mutual benefits.

A fully-dedicated CRM module does not exist in the current e-health system despite the fact that the high level of ICT and KM capabilities help MoH build effective CRM and empower customers with information accessibility in order to manage its relationships with them, better understand their needs, provide better healthcare and, ultimately, enhance their satisfaction. Besides, there is much potential for the application of CRM system to seamlessly integrate customer information, and ultimately knowledge, through multiple customer contact channels (i.e., web, eGovernment, email, telephone, etc.) across processes of sales, customer service, marketing, field support and other functions that touch customers.

Value Added of E-Health Services

MoH provides choice of channels to customers so that they may access services as convenient to their situation. Currently, the MoH provides most of its electronic Services via Mobile Channels, Kiosks, and e-health services. Based on feedback from customers conducted by e-Government, it has been found that e-health services are among the most important services, and would like them to be improved.

Benefits envisaged from the e-health project for the MoH are [39]:

- o Cost savings through reduced duplication of effort, speeding patient treatment, improving safety.
- o Single patient view for clinics that can be leveraged across multiple departments to increase productivity, streamline processes and maintain compliance.
- o Instantaneous retrieval of patient information by clinics from other institutions – even during consultations with a patient - without having to log into a separate system.
- o Elimination of error instances (clinics not having access to either the latest drug formulae or the complete medication history of the patient) in the current manual prescribing process, causing time delays for patients in getting the right medication.

Concluding Remarks

As the world's economy is shifting from a traditional one towards a knowledge-based economy, developing countries known for resource scarcity are anticipated to move towards adoption of knowledge-based economies in order to enjoy resource abundance, intangibility, inimitability, and diminishing marginal cost. The ability of public organizations, in particular, to succeed when faced with limited resources and expanding demands on public services is becoming highly related to organizational ability to leverage DCCs, e.g. the ability to continue to use knowledge to enhance service quality and maximize the experience and satisfaction of customers through effective and efficient delivery of innovative products and services.

The paper proposed the CCKM model as a strategic change that demands changes in processes, as well as the social, structural, and technical elements of public organization. The challenge in CCKM is to recognize the fact it is a strategy change not an ICT solution that will not be achieved only by putting in place a technological solution.

In their effort to add value for customers, public organizations may face several issues such as dealing with CCKM as a strategic change, not just an ICT project, aligning CCKM with major organizational components (people, structure, process, and technology), and emphasizing intellectual (human) capital as much as relationship (customers) capital of organizations. ICT infrastructure, application, and integration are essential but need to be coupled with changes in people, processes, and structure.

Basically, the profit-oriented side of CRM may not be popular in public healthcare organizations. However, CRM can be used at the same time to reduce healthcare costs; increase the values of interaction with patients, and to consequently enhance quality of health service and ultimately maximize customer satisfaction.

The case study of the MoH in Bahrain shows the similarities and differences between the theory and practice in implementing principles of the CCKM model. The MoH system creates information about the patient through the e-health system, which in turn provides an integrated and comprehensive view of patients (customer knowledge) that help to improve health care provided to patients.

In order to leverage full potential of ICT in health service, ICT uptake needs to be accompanied by organizational changes in people, structure, and processes, in order to develop effective customer knowledge management. Although MoH undertook several organizational changes, customer information have not yet been fully integrated across CRM applications, such as marketing, sales, and services, and via customer integrated contact channels such as kiosks, eGovernment, email, fax, and mobiles. Customer related information have not been integrated into a CRM system to build effective and integrated two-way relationship between customers and MoH health service providers.

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