

Conceptualization of the Antecedents and Impacts of KMS Utilization: A Preliminary Framework

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Abstract— The need for competitive advantage in organizations has become the hallmark of the present knowledge era. Knowledge Management Systems (KMS) provides the platform through which such goals can be realized when supplemented with other factors. In investigating how KMS contribute to organizational performance, this study conceptualizes the antecedents facilitating the effective use of KMS and relates how the usage of KMS influences both knowledge sharing practices and social capital development. Moreover, the interaction between knowledge sharing and social capital as well as their joint effect on human capital development is explored. Lastly, the framework provides theoretical explanation of how KMS utilization contributes to organizational performance by establishing the link between human capital development and organizational performance.

Keywords- Antecedents, Knowledge Management, Knowledge Management Systems, Intermediate-outcome Organization Performance

I. INTRODUCTION

The importance of knowledge as an organizational resource is gaining wider consideration, and the task of managing it has become crucial for organizations to become successful [1]. Knowledge Management (KM) has transcended over various stages, the early conceptualization of KM according to [1], focused on empowering knowledge workers and guiding how organizations adopt KM. As research trend on KM matures, research focus shifted to different activities that could be managed or facilitated by Information Technology (IT) [1]. According to [2] four popular process of KM in literature are creation, storage/retrieval, transfer and application. As studies on KM evolves into different conceptualizations, so does research on Knowledge Management Systems (KMS), which are a class of Information Systems or Technologies dedicated for the management of knowledge activities. The early applications of KMS were guided by the conception that knowledge is an object which can be extracted and stored concretely. Therefore, the codification and storage of what [3] later termed explicit knowledge was then the order of the day in KMS applications. By building on the work of Polyani, [3] suggested the concept of tacit and explicit knowledge.

Explicit knowledge translates for the view that knowledge is an object which can be codified, stored, expressed and

communicated [1] whereas tacit knowledge represents the skill or crafts as well as technical expertise which reside in individual experience and action [1]. Tacit knowledge has been emphasized as a core knowledge aspect which can help organizations maintain competitive edge when properly managed, because it is difficult if not impossible to imitate. But the delineation between tacit and explicit knowledge is blurred, therefore; [3] posits that both explicit and tacit knowledge are complementary and that knowledge is created by the interaction of both. Further, the widespread view that knowledge has both explicit and tacit dimensions posed challenges to the capabilities of earlier KMSs, the need for systems that are capable of leveraging both tacit and explicit knowledge necessitate various research works and different technologies which enable interactive and integrative knowledge activities have been mentioned as part KM systems or technologies. Therefore, this study conceptualizes KMS as integrative and interactive systems or technologies which facilitate the management of both explicit and tacit knowledge in organizations.

Based on the conceptual definition mentioned above, KMSs which leverage both integrative and interactive knowledge activities is believed to be a means through which organization's learning and intellectual capability increases by facilitating the sharing, accessibility to and utilization or application of knowledge. However, the adoption of KMS is not always successful despite the huge financial resources necessary for its implementation [4]. One major reason is that technology can only thrive when it is supplemented by other "soft" factors such as leadership and culture [5]. Prior studies have shown that the influence of technology on organizations performance comes through its complementary relationship with other organizational capabilities. Therefore, this study anticipates to conceptualizing the socio-technical factors serving as antecedents of KMS utilization and how KMS utilization impacts on organization's performance through intermediate outcomes such as knowledge sharing practices and social and human capital development.

II. OVERVIEW OF THE PROPOSED MODEL

Much literature in the information systems (IS) field have contributed immensely to the development of conceptual frameworks explaining system utilization. Further, research efforts in the field of KM have also strived to explore what

capabilities of KMS enable effective utilization of systems for knowledge activities. In order to gain a deeper insight into these requirements, the study conceptualizes the antecedents of KMS utilization on the integration of previous research works in both IS and KM studies. Moreover, based on review of several literatures on KM and KMS, this study argues that the utilization of KMS itself is not the end result of its implementation, “measuring KMS performance has posed a big challenge because of the need to justify the cost” [1]; therefore, the study proposed causal relationships between KMS usage and organizational performance by conceptualizing how the utilization of KMS impacts on knowledge sharing practices, social and human capital development in organization as the intermediate outcomes [6]. Figure 1 below depicts the proposed model.

III. ANTECEDENTS OF KMS UTILIZATION

Studies on IS, KM and KMS have proposed or found a number of success factors which are necessary for the effectiveness and usefulness of organizational KM practices as well as system utilization. Based on the review of literatures from these aforementioned research areas, this study conceptualizes three antecedents of KMS utilization. These antecedents are organizational characteristics, individual characteristics and Technological characteristics of the KMS.

A. Organizational Factors

Organization characteristics play a major role in providing the enabling environment for knowledge activities. Various organizational characteristics are associated with KMS implementation and KM practices. Review of literature reveals that some organizational factors among which are climate and structure [7] and cultural practices [8] play important roles in the utilization of KMS. According to [7], the possession of strong innovative and cooperative climate by any organization would make employees “receive a clear signal that it is acceptable or desirable for them to build up interaction networks to share and gather knowledge” of which KMS play a major role through by facilitating communication which diminishes distance and time constraints. Organization structure which has been categorized along the formalization, centralization and integration dimensions [9] plays important roles in eliciting the needs for communication and collaboration among employees. Organizations with less formalization and centralization and strong integration among units or departments tends to be more innovative by fostering individuals and groups freedom in terms of determining how tasks should be executed. Further, the importance of top management knowledge values on organizational knowledge activities have been mentioned [10], [11], it is seen as a promoter and sustainer of other organizational factors that drive knowledge activities; particularly knowledge sharing. It is believed that knowledge value that promote sharing will play a critical role in enabling effective KMS utilization, therefore, this study conceptualizes that perceived knowledge value of top management is an antecedents of KMS utilization. In addition, earlier study has found significant relationship between organization culture and KMS [8]. It was

found that process-oriented and open communication culture significantly influenced the factors that lead to the acceptance of KMS. They mentioned that KMS is different from other IS because KMS manages knowledge which resides in human and that culture is a major factor when considering human dimension. Therefore, this study conceptualizes that organizational cultural practices will greatly influence KMS utilization.

B. Individual/User Factors

Individual/user factors in this study refer to personal attributes of an employee or group of employees in an organization which predisposes them to the use of technology. According to [4], different interpretations of KMS suggest some common attributes inherent in such systems. One of these attributes is that KMS depends extensively on knowledge workers or organization employee’s transformation of KMS input into organization performance. As KMS facilitates communication, coordination, collaboration and access to knowledge repositories, it is only active participation on the part of user that can ensure the attainment of the benefits expected from its implementation. The importance of motivation and commitment to the use of technology; even when such technology is sophisticated and provides access to rich information has been argued to be paramount [12], [13]. In a study of the role of commitment and motivation on KMS implementation, [4] highlights three types of commitment and the continuum of motivation and how they can each impact on user attitude towards KMS usage. The types of commitment mentioned are: commitment by compliance, commitment by identification and commitment by internalization, while motivation are grouped into intrinsic and extrinsic with the extrinsic motivation further differentiated into: external regulation, introjected regulation, identified regulation and integrated regulation. The author argues that both commitment by compliance and identification may be spurious because they are engendered by incentives, rewards or the need to seek recognition; it is only commitment by internalization which is “self-referential” and “self-generated” [4] that can truly make individual to add values to organizational processes. Further, it was also argued that only intrinsic motivation in knowledge workers is not likely to be affected by their feeling of being controlled. Therefore, intrinsic motivation is self determining and can drive individuals to engage in activities for personal interest and enjoyment such as extending and exercising capabilities, exploration and learning [4].

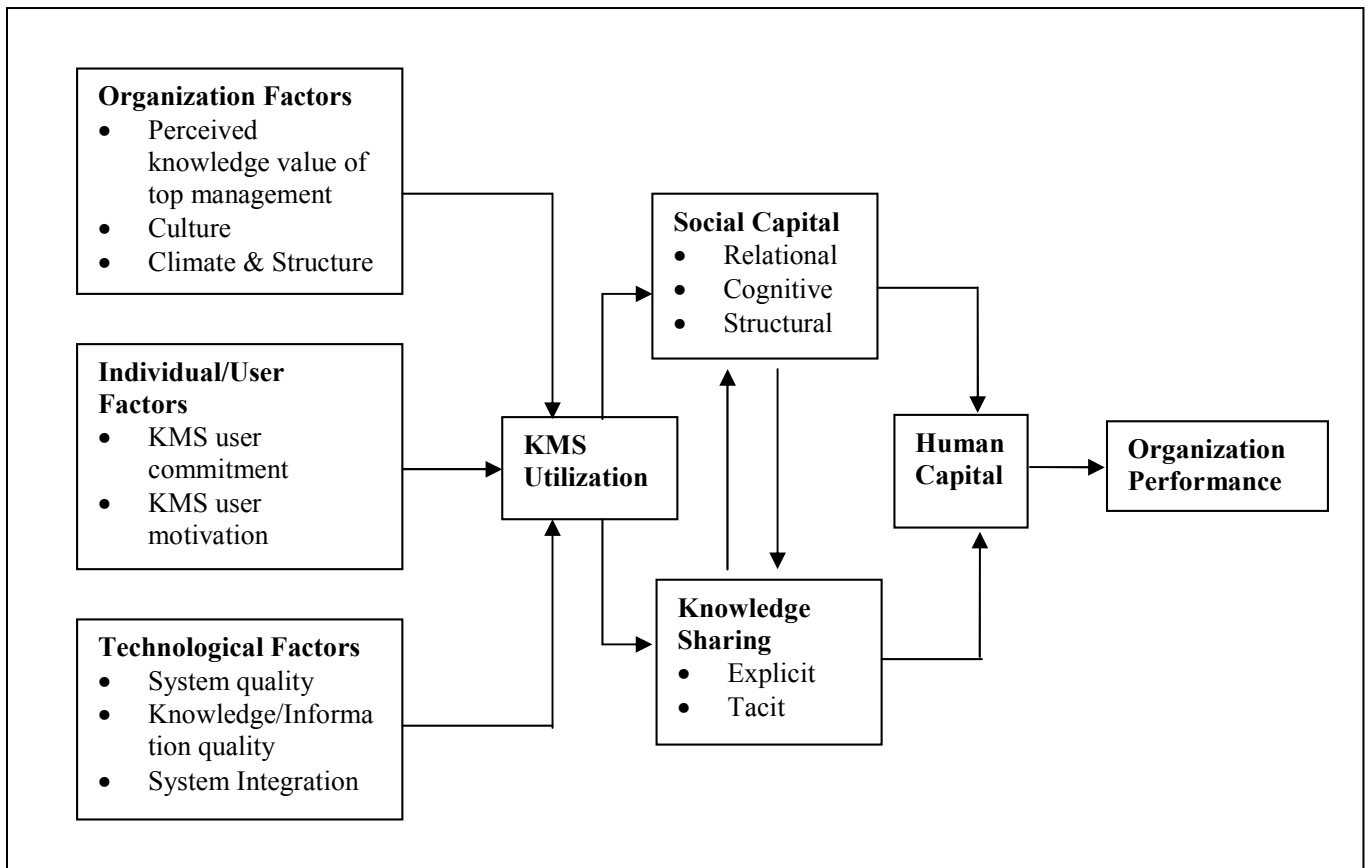


Figure 1. The Proposed Model

According to [4], KMS User Commitment “is the degree of commitment of the knowledge workers towards the KM program and related systems and processes based on the effect of social influences on his or her behavior” and KMS User Motivation is defined “as the degree to which system use is self-determined by the KMS users”. Therefore, this conceptual framework adopts these two construct as the individual/user factor impacting the utilization of KMS.

C. Technological Factors

Technological characteristics as mentioned in literature are the attributes of any technological innovation that can influence its usage. [14] categorized the characteristics into two: System quality and Information quality. In adopting these measures for KMS success, [1] investigated the joint influence of system quality and knowledge/information quality on user satisfaction and perceived KMS benefits to determine KMS use. Therefore, this study also adopts system quality and knowledge/information quality as determinants of technological characteristics. Furthermore, studies have investigated the need for integration among system, [15], [16]. Then, the integration of KM systems and as well as with other business systems used in an organization have been found worthy of consideration for KMS to deliver expected output.

Based on the aforementioned, this study conceptualizes that system quality, knowledge/information quality and level of system integration as technological factors that must be met for KMS to provide user expected outputs.

IV. KMS UTILIZATION

The importance of technology in facilitating KM practices, particularly in large and widely distributed organizations has gained tremendous attention in literature [5]. Technology may provide the platform through which organization can flatten and decentralize its operations when utilized under the right condition. KMS is a class of IS developed to facilitate and enhance the process through which organizations create, store/retrieve, transfer and apply knowledge [17]. Three modes as mentioned in literature through which KMS facilitate knowledge activities are: storage of lessons learned, access to expertise and enabling of knowledge network. Based on these, KMS facilitates active communication and intense collaboration which prior research have found to be important for attaining effective knowledge sharing practices and sustaining rich social capital that incorporate mutual trust, share goals and obligations [18]. Thus, it is conceived that effective utilization of KMS will contribute immensely to the development of organization’s knowledge sharing practices,

social and human capital development and consequently lead to organization performance

V. INTERMEDIATE OUTCOMES

According to [19], linking knowledge management processes to intermediate outcomes will provide a better understanding of KM performance. This is also believed to be applicable to KMS, as measuring KMS performance have been described as a big challenge because of the need to justify the cost [16]. For the purpose of this study, knowledge sharing practices, social and human capitals development are consider as intermediate variables through which KMS impacts on organization performance

A. Knowledge Sharing

Knowledge sharing among employees has been described as a competitive necessity [20] in the present knowledge era. According to [21], sharing of knowledge is not limited to ordinary transfer of knowledge between donor and receiver but also involve the creation of new knowledge via interaction which exists in a rich social network. Therefore, knowledge sharing contributes a great deal to the competency of organizational human capital. According to [10], “organizational knowledge sharing helps pass down idiosyncratic, competency-enhancing knowledge from the organization to individual or from one individual to another”. Thus, this study conceptualizes that effective knowledge sharing practices contribute a great deal to the development of organization social and human capital.

B. Social Capital

Social Capital which depicts “the importance of networks of strong, personal relationship developed over time” was first described in sociology [18]. In KM literature, three dimensions of social capital which are structural, relational and cognitive have been mentioned [18], [20]. Each of these three dimensions which translate for resources embedded in communication or networking, mutual trust and shared language or understanding play important role in knowledge sharing and human capital development. According to literature, knowledge sharing required shared understanding among individuals which social capital enables. Furthermore, [18] contend that social capital can improve organization performance by facilitating speedy and efficient knowledge creation and transfer and enhancing human capital development. Thus, conceptualizes that; organization social capital in terms of extensive social network, mutual trust and common understanding will facilitate effective knowledge sharing practices as well as the development of human capital.

C. Human Capital

The human capital of an organization is a collection of unique capabilities that are valuable, rare and inimitable and are a major determinant of an organization’s competitive performance [10]. Human capital have been found impacting organization performance based on its contributions to a number of indicators such as quality of product and services as well as growth potentials of organizations [10]. The ambiguity

and social complexity involved in the process of impacting competence in organizational human capital makes it non-substitutable and inimitable, therefore it is an organizational necessity required for performance. Thus, it is conceptualized that the degree of enrichment of organizational human capital will significantly influence performance in organization.

VI. ORGANIZATIONAL PERFORMANCE

In order to achieve a holistic comprehension of KMS effectiveness, it is imperative to link its utilization to outcomes via intermediate outcomes. Therefore, this study considers non-financial outcomes of KM in literature such as creativity, innovativeness as well as product and service differentiations which are facilitated by the availability of effective knowledge sharing practices and enriched social and human capital as the locus points of studying organizational performance through KMS utilization.

VII. CONCLUSION

In this paper, the antecedents of Knowledge Management Systems utilization are explored. Then, the modes by which KMS contributes to effective knowledge sharing practices and social capital development are explained. Moreover, the interaction between knowledge sharing and social capital as well as their joint effect on human capital development is explored. Lastly, the conceptual framework provides theoretical explanation of how KMS utilization contributes to organization performance by establishing the link between human capital development and organization performance. It is hoped that the conceptual framework which aims to guide a detail study of KMS utilization in organization will contribute to literature and practice by the delineation of social factors to organization and individual factors and integrate both with the technical factor to explore KMS utilization. Previous studies have either considered these factors separately or lump them together. Further, the study is hoped to provide strategic directions through KMS implementations and associated cost can be justified.

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