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A Gestalt Evaluative Framework for Modelling Systemic Knowledge Management

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Abstract

A review of extant knowledge management (KM) literature has revealed a gap in KM models. Despite a plethora of KM models proposed by researchers, most of these models tend to be primarily concentrated on either descriptive or prescriptive approaches. Very few researchers have developed KM models that adopt a systems approach in terms of KM implementation. To bridge this gap, a new model comprising four "KM components" that better reflect systemic KM implementation is thus proposed – centred on a gestalt evaluative framework of knowledge inputs and outcomes. The proposed model not only provides a strategic tool to offer insights into why KM implementation should be approached systemically, but also sheds light on how knowledge inputs and outcomes are inter-related for different KM components. The case of IBM, using the gestalt evaluative framework, is used to illustrate the applicability of the systemic KM model by analysing the implementation of the company's Intellectual Capital Management (ICM) programme. In conclusion, the challenges facing the developments of better KM models are outlined. Future research directions in the field of KM modelling are also recommended.

Keywords:

Knowledge management (KM), KM implementation, information management, KM models, KM components, descriptive and prescriptive approaches, systemic approach, systemic model, gestalt evaluative framework.

Background

While the most important source of wealth in contemporary society is knowledge, three significant changes in the way knowledge was "managed" occurred during the twentieth century. First, there was the "industrial revolution", in which knowledge was applied to industrial tools, processes and products. Second, then came the "productivity revolution" with proponents of knowledge like Frederick Taylor and Henry Ford advancing the use of knowledge assets to improve the productivity of human labour. Third, the present-day revolution, termed loosely as the "learning or knowledge revolution", in which knowledge is considered to be a manageable asset, and what we commonly called "knowledge management (KM)" is now employed to enhance business competitiveness. Because of its strategic benefits, companies are under immense pressure to create new and novel ways of differentiating themselves through KM efforts. In recent years, one key aspect of corporate strategies is centred on the acquisition, and creation of knowledge. Indeed, to derive competitive advantage, companies are constantly striving to employ best KM practices in organisational processes and business activities. Besides, to capitalise on knowledge available both internally and externally, KM implementation is directed not only at influencing organisational productivity, corporate effectiveness and business performance, but also aimed at improving total business value (Akbar, 2003; Gupta and McDaniel, 2002; Ofek and Sarvary, 2001; DeTienne and Jackson, 2001)

With KM being viewed as a source of competitive advantage, scholars and practitioners alike became increasingly attracted to the science and art of modelling KM systems. This has gathered momentum in recent years and has in fact propelled the genesis of pioneering works on new models for learning organisations and

knowledge enterprises. In particular, to implement activities around the goal of optimising value from knowledge, the idea of developing KM models to conceptualise, investigate and address knowledge-based issues has become a favourite theme in KM research. For example, Wiig's (1997) model proposes "KM pillars" that represent the major functions needed to manage knowledge effectively. Hitherto, KM models can be categorised into two main groups, namely: descriptive and prescriptive (Holsapple and Joshi, 1999; Van der Spek and Spijkervet, 1997; Wiig, 1997; Leonard-Barton, 1995). First, the descriptive group of KM models characterises research attempts to describe the nature of KM phenomena such as studying the processes that organisations undergo in KM activities. For example, studies have tried to show that effective KM practices rely on mechanisms associated to organisational memory (Lubit, 2001; Appleyard and Kalsow 1999) or KM practices involving the use of networked communities to share knowledge (Goh, 2005a; Bowonder, 2000). Second, the prescriptive group of KM models characterises research on how organisations should be structured for KM implementation. For example, it has been proven that traditional organisational structures of allocating and accumulating physical resources do not suit KM implementation and that organisations should be managed differently to build KM capabilities (Goh, 2004; Alavi and Leidner, 2001; Gold, Malhotra and Segars, 2001; Lee and Kim, 2001).

Motivation for a Systemic KM Model

The development of KM models has incorporated different disciplines like information management, psychology, cognitive sciences, information economics and organisational learning. Although researchers have proposed a plethora of KM models, very few have adopted approaches that proffer new strategic thinking on how effective KM could be systemically accomplished (Goh, 2005a; Chih-Ping, Jen-Hwa and Hung-Huang, 2002; Gupta and McDaniel, 2002). The majority of KM models continued to remain largely either descriptive or prescriptive in approach. Seemingly, these KM models tend to be gleaned from concepts focused on information management and the like. But in fact, KM differs starkly from information management because the former involves a deliberate intention of extracting information critical for business success, while the latter is more concerned with making information available in a consistent, timely and efficient manner to end users. Increasingly, the heightened interest on KM models has reached a level that adopting merely a descriptive or prescriptive approach is less likely to proffer new strategic perspectives for KM implementation. Instead, recognising that the essence of KM is to maximise intellectual assets and total business value, the need for systemic approaches to KM modelling has been well-supported (Goh, 2004; Alavi and Leidner, 2001; Nonaka, Toyama, and Konno, 2001; Grant, 2001; Sarvary, 1999; Kinney, 1998).

Figure 1: Emergence of a Systemic Model

	Descriptive	Prescriptive	Systemic
Entity	KM processes	KM structures	KM components
Related disciplines or fields	Information management, psychology and cognitive sciences	Information management, information economics; organisational learning	Knowledge management and strategic management
Thematic focus	Descriptive behaviour and phenomena associated to knowledge	Prescriptive actions and measures for effective KM practices	Strategic KM perspectives at the systems level
KM Outcomes	Organisational Effectiveness and Firm Productivity	Corporate Competitiveness and Performance	Intellectual Assets Enhancement, Total Business Value

Perhaps, as systemic models are not extensively developed yet, it is understandable that KM researchers will continue to propose studies using essentially the same approach for different contexts. Yet, to contribute to KM modelling, the emergence of a systemic model seems inevitable as depicted in Figure 1. Whatever the systemic KM model may be, it is vital to note that the underpinning objective of developing KM models is to foster new strategic thinking that will aid KM implementation and ultimately evolve into best KM practices. Thus, the model is culled from literature relating to KM itself and yet, at the same time, took into consideration relevant works on strategic management of knowledge (King, Marks and McCoy, 2002; Nidumolu, Subramani and Aldrich, 2001; Stonehouse, Pemberton and Barber, 2001; Holsapple and Joshi, 1999).

A Gestalt Evaluative Framework

While many KM success stories have been reported, there are equally many failure stories. Apparently, it has been suggested that specific “KM components” are “absolutely essential” to the success of KM implementation. Allegedly, because knowledge constitutes a complex mix of experiences, ideas, and capabilities that reside in the minds of individuals, the strategic approach of managing “KM components” seems to be conceptually more appealing than the notion of managing “knowledge” itself (Goh, 2004; Tuomi, 2000; Nonaka 1994). Furthermore, as were frequently cited in studies, the challenges of effective KM implementation are not solely dependent on technological solutions alone, but rather on understanding KM issues relating to knowledge inputs and outcomes (Goh, 2004; Akbar, 2003; King, Mark and McCoy, 2002). Though most KM models aim to specify a set of procedures for determining what knowledge and how knowledge should be manipulated, the proposed model is deliberately focused on addressing a current void in KM modelling, i.e., limited research efforts are dedicated to the development of systemic models. Drawing from the limitations of KM models as discussed and highlighted in Figure 1, the following guidelines for the systemic KM model are suggested:

- Simple and easy to understand;
- Systematic and well- structured;
- General and yet comprehensive;
- Represents a road map and guidance for implementation;
- Answers “what is” KM and “how to” do it.

Using the above suggested guidelines, it is therefore proposed that a gestalt evaluative framework, consisting of suitable KM components with knowledge inputs and outcomes conceived as "dynamic KM actions", be developed. The underlying intention is firstly, to address the current void in KM modelling and secondly, to foster better understanding in KM excellence.

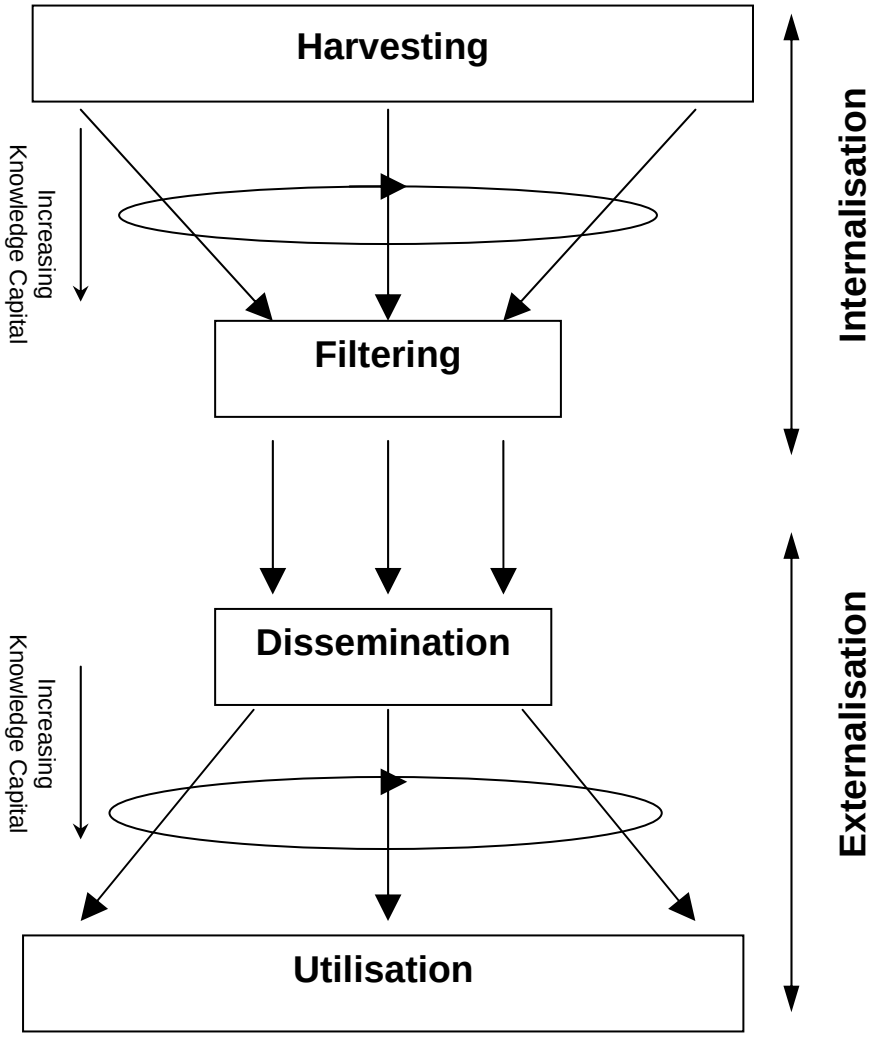
Components of KM

The KM components are fundamentally concerned with generic practices deployed by organisations in the treatment of knowledge for business use. For example, operational procedures (e.g. the use of data warehousing tools) may be established within organisations to "harvest" knowledge or tacit experiences for internal use. While the field of knowledge management is burgeoning with "KM components" all the time, this study distils only those that support the eventual evolution of "knowledge receptacles". By relying on a synthesis of relevant KM literature, a systemic model is proposed as illustrated in Figure 2, whose basic KM components are identified based on the design, provision and delivery of KM systems, namely: (1) harvesting, (2) filtering, (3) dissemination, and (4) utilisation. While actual KM implementation is organisation-specific and technology-dependent, these components constitute systemic entities and as a result, are classifiable using a gestalt as shown in Figure 3.

Knowledge Inputs and Outcomes

Based on a literature review of KM approaches, the knowledge inputs and outcomes are represented along the respective dimensions: (1) internalising and externalising knowledge, and (2) value-generating and value-enhancing, as they are singled out to materially impact on the attainment of competitive advantage (Goh, 2004; Gupta and McDaniel, 2002; Alavi and Leidner, 2001; Raisinghani, 2000; Holsapple and Joshi, 1999). Firstly, knowledge input encompasses a binary notion of how knowledge assets are transferred; and secondly, knowledge outcome incorporates integrated perspectives on how value is created and to what extent, through knowledge inputs being applied on KM components. For example, the "harvesting" component involves "internalising knowledge" to generate value in terms of intellectual capital; while the "utilisation" component entails the action of "externalising knowledge" to enhance intellectual capital.

Figure 2: Systemic KM Model



Harvesting

Before knowledge can be utilised for any specific purpose, it has to be harvested. However, the act of harvesting knowledge requires one to distinguish between information and knowledge, as the boundaries between them are usually blurred (Jacob and Ebrahimpur, 2001). Since the real value of knowledge stems from its business use, harvesting knowledge will require identifying its future relevance to business or in other words, the potential exploitation for business to generate value in intellectual capital. To this end, the KM component of “harvesting” has been proven to be positively correlated to competitive advantage (Parikh, 2001; Yli-Renko, Autio and Sapienza, 2001). Moreover, knowledge-based activities such as inter-organisational collaboration and sharing, personnel movement, linkages between alliance partners or joint ventures also contribute to “knowledge harvesting” (Gold, Malhotra and Segars, 2001).

Filtering

Because not all knowledge fits organisational needs, mechanisms are thus necessary to sift through them so that only those that are useful become available (Lubit, 2001). To filter knowledge efficiently, an organisation needs to know how the filtered knowledge may contribute to business activities in terms of differentiation, competitiveness and value enhancement (Hibbard and Carillo, 1998; Mullin, 1996). For this reason, filtering knowledge often involves a mixed combination of technological tools (e.g. data mining techniques) and management solutions (e.g. screening procedures) that are guided by an organisation's long term goals. Very often, only knowledge assets that are relevant to decision-making and applicable for organisational innovations are filtered (Parikh, 2001, Chandra, Kumar and Smirnov, 2001). Yet, if "filtering" is not managed properly, "knowledge overload" may seep into an organisation, constrict learning and even inhibit KM success (Gogan, 1998; Senge, 1994).

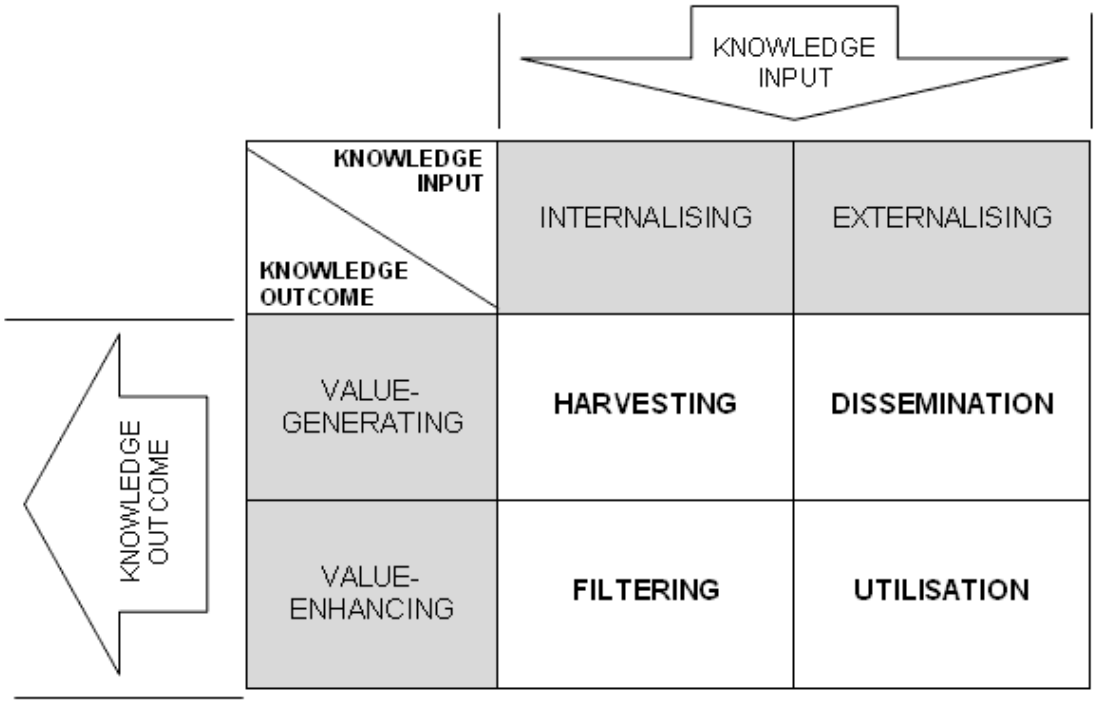
Dissemination

One central purpose of KM implementation is dissemination (Buckman, 1998). This process requires the facilitation of communications and managing the transfer, flow and exchange of knowledge across organisational boundaries – under which the asset of quiescent knowledge is moved into actualization (Fahey and Prusak, 1998). With efficient dissemination of knowledge, an organisation's performance improves dramatically since intellectual capital is generated to help make informed and better business decisions (DeTienne and Jackson, 2001). However, to manage "dissemination" efficiently requires shared understanding, compassion, and learning that promote flexible and customised KM practices; instead of a biased orientation towards hoarding knowledge that encourages behaviours, control tendencies and overly protective cautiousness in sharing knowledge or tacit experience (Pfeffer and Sutton, 2000; Beech and Crane, 1999).

Utilisation

Unless knowledge undergoes explicit utilisation in a real-world scenario, all the other KM components, even if implemented efficiently, would have been in vain. True competitive advantage is created only if knowledge has been utilised for organisational activities and businesses (Pfeffer and Sutton, 2000). Besides, knowledge utilisation enables active learning to take place to help organisations become more competitive and self-sustaining. Fundamentally, it bridges the gap between the availability of knowledge and the potential of such knowledge. In essence, knowledge utilisation encompasses "learning-by-doing" - which involves "testing knowledge" in practical settings and thereby gaining more contextual knowledge and enhanced value in terms of intellectual capital (Parikh, 2001).

Figure 3: Gestalt Evaluative Framework



In summary, the systemic KM model is proposed as a management tool to articulate why KM components are crucially essential and how knowledge inputs should be employed in the execution of KM implementation. To aid conceptual understanding, the gestalt as depicted in Figure 3 illustrates how knowledge inputs and outcomes are inter-related via the role of each KM component; and also provides an evaluative framework for analysing the effectiveness of KM implementation. For instance, a knowledge worker may identify an organisation's KM implementation to be "lacking" in a particular KM component (e.g. dissemination). The analytical results may then be used to institute changes for knowledge inputs to improve the execution of a particular component (e.g. through the use of social networks) for achieving better knowledge outcome.

Case Analysis: International Business Machines (IBM)

To survive in the new knowledge age, corporations have to understand the importance of maximising intellectual assets. Successful companies must be astutely aware of the fact that technological infrastructures and supporting ICT tools alone no longer suffice in KM implementation. Rather, the ability to employ knowledge inputs that impact on a company's KM effectiveness is vital to harnessing intellectual capital. Indeed, the objective of KM implementation is not to seek short-term returns, but to develop long-term strategic capabilities through a systemic approach to understanding the requirements of KM initiatives. For decades, International Business Machines or IBM has been an intellectual capital-intensive company, with KM being a core activity in most of its businesses. As championed by its Chairman and Chief Executive Officer, Lou Gerstner, who once said that: "behind the scenes, we have been re-engineering IBM from top to bottom, with one unique goal, that is, to foster a high-performance culture and turn IBM into a premier knowledge management company". In IBM, there are three broad inter-linked cycle-sets of activities: business management, project management and intellectual capital

management. Each set of these activities has its own goals, processes, roles and constraints and types of information that can be systematically manipulated for operational functions. IBM has categorised these activities into six information or knowledge areas: operational data, assets, intellectual capital, research and analysis, intranet information, and Internet information; and all these activities are driven by knowledge. Hence, IBM's KM strategy is to embed knowledge processes into the fabric of the company's business operations. At the company level, it has explicitly identified four major processes: (1) Making knowledge visible; (2) Increasing knowledge intensity; (3) Building knowledge infrastructure; and (4) Developing a knowledge culture.

The company's flagship KM project, termed the "Intellectual Capital Management (ICM)" Programme was implemented in response to global mounting pressures for greater business agility, organisational innovation and corporate responsiveness to customer demand. The driver behind the ICM Programme was in fact IBM Global Services, whose mission was to strengthen intellectual capital and knowledge asset re-use, sharing and exploitation. The underlying rationale behind ICM Programme was thus to establish, formalise and institutionalise knowledge management (KM) as a foundation for strong business growth. The company thus worked to develop solutions and methodologies, and then meld them with infrastructural platforms, people and technology within a networked team environment. Over the years, IBM has also actively deployed these KM solutions, which are based on Lotus Notes Domino, the IBM intranet, email and linked telephone systems, on a global scale to support the company's businesses and to transform it to a truly knowledge-based organisation. Using the systemic model and gestalt evaluative framework for KM implementation, the analytical results of IBM's ICM Programme and knowledge components are summarised in Figure 4 and Figure 5 respectively.

Figure 4: Analytical Results of IBM's ICM Programme

		KNOWLEDGE INPUT	
		INTERNALISING	**EXTERNALISING**
KNOWLEDGE OUTCOME	**VALUE-GENERATING**	Besides being directly available to subject experts, the knowledge cockpit internalises new knowledge assets for IBM employees. This is done by generating value in terms of intellectual capital through the following: ▪ Produces new business-related information and knowledge; ▪ Allocates mobile agents that collect relevant information throughout the Internet, which may emerge as a gold mine of knowledge; ▪ Enables intellectual capital assets to be integrated into everyday tasks and business operations.	The knowledge café externalises knowledge assets for subsequent use by IBM employees to support company's business activities. It generates value in intellectual capital through the following: ▪ Supports calendar and event management; ▪ Enhances team configuration; ▪ Facilitates team discussion management; ▪ Supports document management (team and individual); ▪ Promotes issue-based structural collaboration management; ▪ Enables customisation of intellectual capital for unique needs.
	VALUE-ENHANCING	Competency networks filter knowledge assets for internalise use in IBM. These networks enhance value of intellectual capital through the following: ▪ Creates knowledge bases containing leading edge information (e.g. best client practices, techniques and education materials); ▪ Develops reconfigurable categories and subcategories and document repositories; ▪ Produces advanced features by allowing structured collaboration, forums, group configuration with different levels of security control.	The AssetWeb externalises knowledge assets for explicit utilisation in businesses. It enhances the value of intellectual capital through the following: ▪ Content management for evaluating and structuring intellectual capital; ▪ Content management to support the information architecture and information workflow within enterprise processes; ▪ Collaboration and teamwork to support community building and intellectual creation; ▪ Engagement configuration management to support a consistent and intuitive methodology in generating client solutions.

Figure 5: Knowledge Components of IBM's ICM Programme

HARVESTING	DISSEMINATION
Knowledge Cockpit: The knowledge cockpit is designed for business intelligence and knowledge discovery. It is a novel way of mining knowledge assets for internal use by providing employees with the flexibility in the ways they harvest knowledge. By empowering individuals with the responsibility in mining knowledge, the cockpit captures information, data and experiences from a wide range of different sources and funnels them to one single location, thus saving time and money in harvesting knowledge. It also utilises advanced mining techniques to discover knowledge assets, and then transforms them into consistent knowledge repositories. In addition, decision support tools are also included to transform "harvested knowledge" into a compact, comprehensible and transferable format.	**Knowledge Café:** The knowledge café, based on a Lotus Notes application, provides discussion forums as an informal meeting place where knowledge, comments and thoughts can be disseminated. Designed to foster creativity and idea generation using team dialogue and collaboration, it is especially useful for facilitating knowledge dissemination among many team members that are widely distributed geographically. To enable ease of connection with daily activities of employees, discussion threads are preserved in an easy-to-follow topic-and-response format. Users can also browse through the topics that are open for discussion and review the responses that others have contributed. Employees can also compose their own responses and propose new topics for discussion.
FILTERING	**UTILISATION**
Competency Networks: Being an integral part of the company's ICM, competency networks are basically communities of subject knowledge experts within the company. Each community encapsulates a core competence, and the competency network enables effective and efficient segregation of intellectual assets relating to a given competency. With the presence of each community, knowledge is automatically filtered as a core competence and made available to a wide audience of knowledge workers within IBM. Typically consisting of a core team and an extended team, a competency network within IBM is organised and structured to be fully responsible for the evaluation, structuring and update of knowledge bases so that a network may holistically enhance the value of intellectual capital.	**AssetWeb:** In IBM's ICM, the AssetWeb is specially designed as an enterprise knowledge infrastructure for the company's KM solution. It develops new knowledge assets in the form of know-how, experiences, wisdom, ideas, objects, codes, models and technical architectures that are structured for knowledge utilisation to deliver maximum value to customers and shareholders. It serves as an operational tool for the utilisation of knowledge assets to enhance intellectual capital. Tools incorporated within the AssetWeb include version management, automatic multi-database searching, "yellow pages", and user preference configurators, with flexibility for new navigational mechanisms to be added onto the system to support client solutions.

Conclusion

In conclusion, a majority of KM models developed in extant literature do not seem to adopt a systems approach in KM implementation. Currently, the implementation of most KM models tends to be either descriptive or prescriptive in approach. By making a deliberate attempt towards developing a systemic KM model, it is envisaged that more effective approaches of KM implementation could be identified. In this paper, it is asserted that KM implementation involves four "KM components" in which associated processes and related mechanisms occur based on knowledge inputs and outcomes. Rather than specifying KM as a progression of descriptive phenomena or a set of prescriptive actions, a systemic model of four KM components is developed to illustrate how intellectual capital attributing from knowledge inputs emerges. The four KM components, framed with two-dimensional knowledge inputs and outcomes, are collectively regarded as the gestalt evaluative framework for analysing KM implementation. To test the applicability of the systemic KM model, the Intellectual Capital Management (ICM) Programme implemented by International Business Machines (IBM), was used to examine the roles of these KM components.

The case analysis, based on the gestalt evaluative framework, has illuminated the meaning of a systems approach to implementing KM effectively starting from obtaining "raw knowledge" to actually applying "potentially valuable knowledge". Perhaps, one reason why there are so many different studies on KM implementation is that most authors have constantly attempted to validate their research studies through an appropriate KM model but found that there was no single universal model that accurately represented their work. Understandably, like all management modelling research, it is extremely difficult to reach a unanimous consensus on what really constitutes a perfect "systemic KM model". Obviously, the ideal solution is highly complex and probably impossible to reach in an exploratory study. That probably explains why so researchers have dedicated enormous amounts of energy to developing KM models with seemingly dissimilar approaches, and hence achieving differing results as discussed earlier.

This research study, by challenging the status quo of concentration on descriptive and prescriptive approaches in the development of KM models, provides fresh perspectives to the already diverse ways in which KM models are conceived previously. Nevertheless, given the current gap in KM modelling, this research has sowed the seeds for a stream of "systemic KM models". Studies may be conducted on other knowledge enterprises to further strengthen the interpretation of the systemic KM model and consolidate the applicability of the gestalt evaluative framework. Future works should thus channel new thinking along the lines of unifying or integrating KM models rather than developing new ones, as exclusive preoccupation with developing new divergent KM models may result in disparate and potentially "weak appreciation" of KM implementation. Last but not least, this paper has opened up promising areas of KM studies along modelling themes and has also simultaneously heightened the need to re-vitalise KM research on gestalt frameworks to further advance the KM discipline in the positive direction.

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