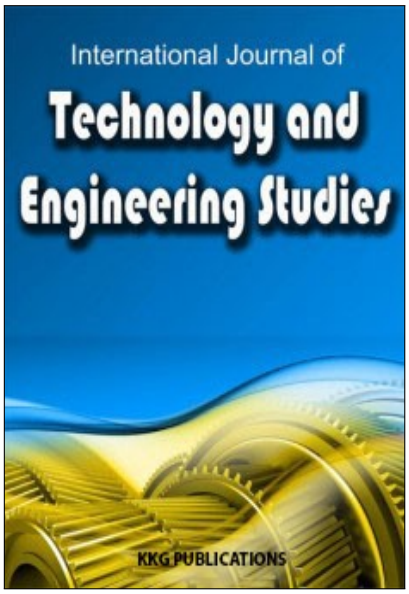
This article was downloaded by:
Publisher: KKG Publications



Key Knowledge Generation
Publication details, including instructions for author and
subscription information:
http://kkgpublications.com/technology/

Towards a Framework for Knowledge Management for Enhancement of Social Inclusion

DONALD TUTANI [1], WILLARD MUNYOKA [2]

[1, 2] University of Venda, South Africa

Published online: 10 August 2016

To cite this article: D. Tutani and M. Willard, "Towards a framework for knowledge management for enhancement of social inclusion," *International Journal of Technology and Engineering Studies,* vol. 2, no. 4, pp. 95-100, 2016.
DOI: https://dx.doi.org/10.20469/ijtes.2.40001-4

To link to this article: http://kkgpublications.com/wp-content/uploads/2016/2/Volume2/IJTES-40001-4.pdf

PLEASE SCROLL DOWN FOR ARTICLE

KKG Publications makes every effort to ascertain the precision of all the information (the "Content") contained in the publications on our platform. However, KKG Publications, our agents, and our licensors make no representations or warranties whatsoever as to the accuracy, completeness, or suitability for any purpose of the content. All opinions and views stated in this publication are not endorsed by KKG Publications. These are purely the opinions and views of authors. The accuracy of the content should not be relied upon and primary sources of information should be considered for any verification. KKG Publications shall not be liable for any costs, expenses, proceedings, loss, actions, demands, damages, expenses and other liabilities directly or indirectly caused in connection with given content.

This article may be utilized for research, edifying, and private study purposes. Any substantial or systematic reproduction, redistribution, reselling, loan, sub-licensing, systematic supply, or distribution in any form to anyone is expressly verboten.

International Journal of Technology and Engineering Studies
vol, 2, no. 4, pp. 95-100, 2016

IJTES

TOWARDS A FRAMEWORK FOR KNOWLEDGE MANAGEMENT FOR ENHANCEMENT OF SOCIAL INCLUSION

DONALD TUTANI [1]*, WILLARD MUNYOKA [2]

[1, 2] University of Venda, South Africa

Keywords:
Knowledge Creating
Knowledge Sharing
Social Inclusion
Heterogeneity of Knowledge

Abstract. The focus of this paper is to present a perceived modified knowledge management framework to enhance knowledge sharing and generation. Although a range of tools and frameworks exists to facilitate knowledge sharing, such a platform does not consider the language barriers and heterogeneity of knowledge resulting in some communities excluded from the process of knowledge generation and assimilation. The proposed model is based on the voluntary submission of knowledge units to fellow communities. In this study, the focus is on the economic benefit of social inclusion and the role of ICT. Knowledge base (an agent), human agents, and research centers can effectively corroborate using ICT. Knowledge management, though important to organizations, can be applied to communities too.

Received: 24 June 2016
Accepted: 28 June 2016
Published: 10 August 2016

INTRODUCTION

Communities possess knowledge units which when taped and put to public domain can benefit other communities. Current social network groups like facebook assume homogeneity amongst the communicating parties. For example, it is assumed that communicating parties share a language and other social cultural background. This assumption limits the full potential of the social networking sites.

There is therefore, a need to reengineer the concept of social networking to embrace the social diversity. Disadvantaged communities, in most cases, use local languages which may not be available on the World Wide Web (WWW). The communication barrier that the WWW presents makes social inclusion unrealizable by a wider range of disadvantaged communities thereby making it difficult for knowledge sharing [1]. We postulate that social interaction contributes to the knowledge body. The existing social networks are not necessarily focused on taping the knowledge claims that can exist in social interaction. We believe that there is need to model a social network framework with a view of accumulation, validating, combining and reusing the knowledge claims shared by societies. If the framework takes into consideration the diversity of societies, then we have social networks which encompass the societies excluded and hence accumulate their stories which may have economic values into the main stream of production for economic growth. In this paper we are proposing such a model. The model makes use of informediaries to transfer knowledge between communities.

Our proposed model is based on voluntary submission of knowledge units to fellow communities. Sharing of intangible information results in such personal benefits as “heightened self-esteem and pride, increased self-efficacy, more respect from others and a better reputation, and reduced alienation or stronger feelings of commitment” [2].

The rest of the paper is organized as follows: We first outline the concept of knowledge management after which we present our proposed model. The challenges of the proposed model follow.

BACKGROUND: KNOWLEDGE MANAGEMENT

There are two dimensions of knowledge - Tacit and Explicit. On one hand, explicit knowledge is formal, systematic and precise and is external. On the other hand, tacit knowledge is internal and therefore difficult to formalize and to express. Tacit knowledge is personal and is not readily available without personal involvement and interest. Tacit knowledge is intuitive and is earned through experience and skill. The transfer of the tacit knowledge “requires the close involvement and cooperation of the knowing subject” [3].

Organizational success may also depend on how they capitalize on their knowledge base, either tacit or explicit. The importance of knowledge led to the coining of the concepts of Knowledge Management Model (KM Models). A range of

*Corresponding author: Donald Tutani
†Email: dtutani@yahoo.com

© 2016 The Author(s). Published by KKG Publications. This is an Open Access article distributed under a Creative Commons Attribution-NonCommercial-NoDerivatives 4.0 International License.

KM Models have been developed that can be referenced for knowledge management. Some of these models are outlined below.

SECI [4]

SECI (Socialization, Externalization, Combination, Internalization) model, developed by Ikujurio Nonaka first appeared in 1991 and attained recognition as a useful and rigorous approach to describing the way knowledge is generated, transferred and re-created in organization [5]. The model identifies two forms of knowledge (tacit and explicit). The tacit knowledge is in the minds of people or embedded in a social group and explicit knowledge represents codified, amplified (combination) form of tacit knowledge. The codified knowledge (explicit) is then internalized by other individuals and groups.

The model proposes that the interplay of tacit and explicit forms of knowledge is accomplished through systems and structures, and a corporate culture which facilitates the interaction of four knowledge creating processes as per the following description:

- Socialization- the sharing of tacit knowledge between individuals though joint activities and physical proximity.
- Externalization: the expression of tacit knowledge in public comprehensible form
- Combination: the conversion of explicit knowledge into more complex sets of explicit knowledge: communication, dissemination, systematization of explicit knowledge
- Internalization: the conversion of externalized knowledge into tacit knowledge on an individual or organizational scale

Critical for Nonaka is the interaction dynamic between forms of knowledge across different organizational levels. He posits that the spiral resulting from the exchange of tacit and explicit knowledge across different organizational levels is the key to knowledge creation and re-creation. The implication is that organizations should recognize the importance of this interaction dynamic and imbed the mechanisms that make it possible.

Nonaka and Konno also introduced the concept of Ba, which in English means place. In KM Ba is a space for dynamic knowledge conversion and resultant relationships [6]. Four Bas are defined which basically further explain the four dimensions mentioned above.

TABLE 1
SECI MODEL (ADAPTED FROM [7])

	Tacit Knowledge	To	Explicit Knowledge
Tacit Knowledge	Socialization		Externalization
From			
Explicit Knowledge	Internalization		Combination

The N-Form Organization

Hedlund suggests that the principal attribute of the model is its conjoint analysis of two sets of concepts: tacit/explicit knowledge, and four levels of social aggregation [8]. He injects into these a set of dynamics related to knowledge creation, development, transfer and use, yielding a structure that is built around three basic dimensions:

- Two types of knowledge (tacit and articulated), and within each type three forms of knowledge (cognitive, skill, embodied)
- Four levels of carrier (individuals, small groups, organizations, and the inter-organizational domain)
- The dynamics of knowledge transfer and transformation, which are articulated by the following processes.

Knowledge transfer, storage and transformation are presented as a set of processes whose interactions, across the different types and levels of knowledge, privilege knowledge creation and, in turn, argue for the N-Form organizational design. The articulation of tacit knowledge, and the internalization of articulated knowledge, may occur at any level of carrier and the interaction, termed reflection, is held to be a primary source of knowledge creation. The acquisition of tacit or articulated knowledge by lower agency levels, termed appropriation, and the dissemination of tacit or articulated knowledge to higher agency levels, termed extension, signal the movement of knowledge through different levels of carrier.

Knowing and Knowledge (Earl)

Earl and Scott proposes that an organization may usefully concern itself with the creation, protection and leveraging of its knowledge assets by attending to four functions [9]:

- Inventorising: mapping individual and organizational knowledge,
- Auditing: assessing the nature and extent of planned ignorance and then developing knowledge through learning activities,

- Socializing: creating events which enable people to share tacit knowledge,
- Experiencing: addressing the problem of unknown ignorance by learning from experience, action and handling unusual situations.

Three Pillars of Knowledge Managment

Karl Wiig is one of the pioneers in the field of Knowledge Management [10] and was among the first to publish a series of texts that assembled management-relevant concepts focusing squarely on the topic. His overarching framework is based on three pillars and a foundation [11]. Wiig proposes that the foundation of Knowledge Management is comprised of the way knowledge is created, used in problem solving and decision making, and manifested cognitively as well as in culture, technology and procedures. On this foundation he situates three pillars which categorize the exploration of knowledge, its value assessment and its active management [12].

The frameworks outlined in this section are mainly based on organizations with views of making profit and to have competitive advantage over others among other things. These frameworks cover main components of knowledge management. We argue that these frameworks do not take into account realities of diverse communities. Simply put, knowledge sharing is mainly practiced by those who are socially included. We argue that there are knowledge units in indigenous communities which when brought to the main stream can contribute to economic growth. Indigenous communities have the potential to contribute to the main stream of knowledge acquisition and usage thereby positively impacting the economic growth. However, effective knowledge sharing in such environments requires modification to the existing KM frameworks. Different societies come with different cultures and languages, hence knowledge transfer in such a set up needs to take this into account. In this paper we are proposing a framework that deals with these issues and extends the existing frameworks. Our framework is discussed in next section.

PROPOSED FRAMEWORK

The proposed model is presented in the Figure 1. As illustrated in the diagram, the components that form the backbone of our concept of knowledge sharing are Communities, Informediaries, Localized Knowledge base, Knowledge translation, Globalized knowledge base, and Research centres.

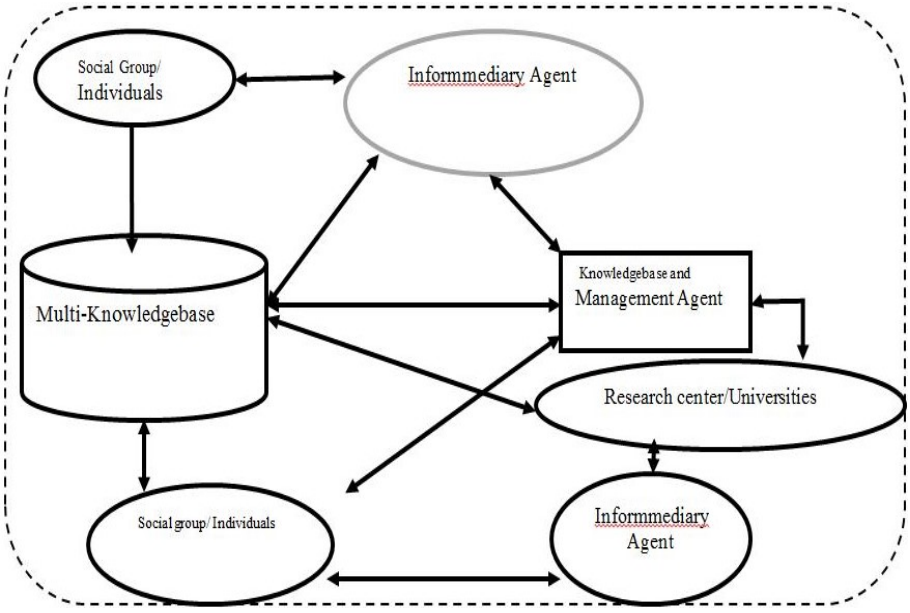


Fig. 1 . Basic ICT based knowledge management model

The different social groups or individuals must be willing to share their Knowledge Units (KU). These social groups may exhibit differences in social and cultural values. The idea is to have their stories about their knowledge claims be acquired. The social groups therefore represent a set of people willing to share their knowledge. They supply their KUs to the Knowledge Management Agent (KMA) which will be described later. What is supplied to the KMA is different representation of KUs. Such representations can take a variety of forms such as textual and videos.

Communities interact with the knowledge base (i.e. contribute and retrieve knowledge units) via informediaries. This is necessary due to possible language and literacy limitations amongst potential users. Informediaries will also be responsible for translating the knowledge units between the local languages and the languages which are used in the knowledge base.

The KMA is the middleman in the whole process of knowledge sharing and verification. Some of the duties of the KMA are as follows:

- Gather the KUs
- Interpret the KUs
- Codify the KUs
- Determine whether there are already similar knowledge units; if different then codification is carried out
- Represent knowledge units formally
- Naturalize the knowledge units
- Assess the economic value of the perceived knowledge claim

Research centres do accumulate some knowledge claims from the community, especially in the areas of localized indigenous knowledge management. The importance of their role in a heterogeneous social interaction is verification of the knowledge claim. Once received from the KMA, the KU is tested for its validity. If the results are positive, then the KU is then certified to be used by other social groups via the agents. Further probing may be necessary if the KU fails the test.

It can be seen from this framework that knowledge claims need to undergo through some processes for them to be rated valid and sustainable and therefore determine its actionability and whether it does contribute to economic growth. Our main focus is on social interactions that result in exchange of tacit or explicit knowledge that bears economic value. It is with the argument that some ideas on many tasks that need to be done exist in some communities. Through social interactions such ideas can be passed within and across social groups. Exchange of ideas within related social groups requires less effort in codification. The ideas across cultural groups require rigorous analysis to yield the intended meaning as specified by the source. We are not saying intra-social knowledge units do not need critical analysis but rather the effort required may be somewhat less.

The components that have been mentioned above do exist in one form or another. For example, all communities do communicate and pass ideas in a social network either via blogs or at grassroots level. The informediaries are used, for example, by research councils of South Africa to acquire indigenous knowledge claims. The facebook and other social networks are based on vast databases to store the messages. The research centers provide validation of knowledge claims and also discover new ideas.

Language translation concepts are in use by many websites. The language translation services are currently limited in scope in that the minority languages are not included and there is also the problem of metaphoric interpretation which may not be supported by these products. There is therefore need to reengineer the concept of language translation to include metaphorism at a community level. We argue that the use of informediaries rooted in the communities can aid in the effective translation of knowledge units.

We argue therefore that the components that we are talking about are in use and need to be reengineered to embrace the diversity of culture and language barriers among other things.

CHALLENGES IN KNOWLEDGE SHARING AND EVALUATION

There is the need to assess the economic value of such knowledge claims. The ideas of patents can be included but do present other problems. Some of the questions that can be asked are as follows:

- How do such communities get remunerated?
- Should the remuneration be limited to the rate at which the knowledge unit is being retrieved?
- Who is responsible for the remuneration?
- How do we assign economic value of the Knowledge Units (KUs)?
- A knowledge claim that is not in use for the near future, is it valueless?
- How do we recognize the individuals or communities for their knowledge contribution?

We do not intend to provide solutions to all of these questions. What we are simply providing is a conceptual framework that can form the basis for further research although it can be argued that incentive-based approach and other non-monetary recognition can motivate communities to come forward with KUs.

In this paper KUs are discussed as being relevant if and only if they possess some sustainable economic values. The agent can have in its team, members who determine the relevance of knowledge units. The agent may put the ideas to public scrutiny. Once the ideas have been accepted as relevant then other processes follow.

The knowledge claim can then be represented in different forms and accessed by sub-agents who deal with localization or naturalization of KUs. The idea is that even if there is a valid KU, for it to be consumable by other social groups, the idea must have the representation that is understandable and therefore localized with the context of the end users.

KU CLASSIFICATION AND VERIFICATION

The class of a KU is identified if it already exists otherwise a universally acceptable class is created. The idea is simple but very important in knowledge management. Classification of KUs allows the agents/ researchers to generate or accumulate KUs from different social groups and put the result in a particular class. The classification can be further extended to subclasses and so on. The idea is to have a high cohesion of related knowledge pieces.

Verification of KU is defined in this paper as a method of seeking a better understanding of knowledge claim and checking for consistence of the different forms of knowledge representation. This can be done through observing the social groups that supplied the KU and / or supplemented by laboratory test done at universities, and other research organization. Once the process of verification is completed, the results are sent to agents either for use or further probing.

KU Codification

The agents are faced with a challenge of codifying the knowledge unit and translating it into actionable piece of knowledge that can be refereed by the public. Ideally, the best approach will be to codify formally by representing the KUs as a set of mathematical expressions that will have the same interpretation. The challenge however is that not all knowledge claims can be represented formally and it requires a lot of technical expertise equipped with a lot of mathematical jargons.

KU Economic Dimension

Knowledge unit once approved to have relevance and economic value then it can be exported for use by other interested social groups. The challenge can be how to investigate intensity of knowledge unit usage and the value thereof. Basic approach is to discover the number of KU_s being referenced in a given period.

For example under a period of N_t we can determine the frequency of the KU_s by using the formula:

- $\sum_0^n \frac{KU_S}{N_t}$ where KU_s is a named Knowledge unit and N_t is the time period

If we assign a monetary value to the KU downloaded then we can estimate the economic value of the KU as follows:

- $\sum_0^n \frac{KU_S * M}{N_t}$ where M is the monetary value associated with the particular value of KU

We can then compute the overall expected benefit of the accessed KU by summing to the nth term:

Social groups accessing the KUs can participate in the estimation of the economic value of the KU by supplying to the agents the net profit earned per period. If this is feasible, then we can compute a better estimation of summative economic values of used KUs.

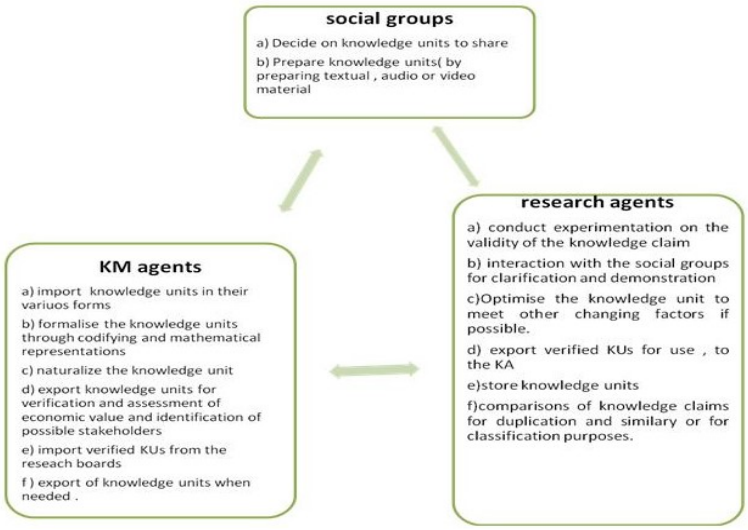


Fig. 2 . Elaborated ICT based knowledge management model

The model shows that all the agents interlink in the whole process of knowledge management. The KM agent includes both the human and software and forms the central role in knowledge management. Social groups or individuals provide their knowledge claims and upload them to the KM agent. The research agent does the validation of knowledge claim. The process may involve interaction with the social groups which supplied the KUs. The Research agent can also present the modified optimal KUs for use by the KM agent.

LIMITATIONS OF THE PROPOSED FRAMEWORK

The ownership of the knowledge base presents one of the challenges in our proposed framework. The informediaries may practice knowledge filtering whereby they selectively eliminate the knowledge claims from community. The problem of metaphorism can never be totally eliminated even though informediaries are rooted in the communities in which they acquire the knowledge units. Modification of knowledge units by the research agents may also present another problem of evaluating and profit sharing between the community and the research group.

The model shows that all the agents interlink in the whole process of knowledge management. The KM agent includes both the human and software and forms the central role in knowledge management. Social groups or individuals provide their knowledge claims and upload them to the KM agent. The research agent does the validation of knowledge claim. The process may involve interaction with the social groups which supplied the KUs. The Research agent can also present the modified optimal KUs for use by the KM agent.

CONCLUSION AND RECOMMENDATIONS

ICT can be used to enhance social inclusion for economic benefits. Knowledge gathering from willing societies or individual forms the basis of knowledge sharing. We also presented the knowledge management models that are in current use. The usage of such models has been limited to "closed organizations" with a view to outsmart others and to boost competitiveness. The notion of social inclusion, though multidimensional, presents ideas of equal opportunity to all members in all aspects of live. In this study we focused on economic benefit of social inclusion and the role of ICT. Knowledge base (an agent), human agents and research centres can corroborate effectively by using ICT. Knowledge management though important to organizations, can be applied to communities.

Declaration of Conflicting Interests

The authors confirm that this study has no conflicts of interest.

REFERENCES

[1] M. Ebbertz. (2002). *Internet Statistics: Distribution of languages on the Internet* [Online]. Available: www.netz-tipp.de/sprachen.html

[2] D. Constant, S. Kiesler and L. Sproull, "What's mine is ours, or is it? A study of attitudes about information sharing," *Information Systems Research*, vol. 5, no. 4, pp. 400-421, 1994.

[3] A. Lam, Tacit Knowledge, *Organizational Learning and Innovation: A Societal Perspective*. Nottingham, UK: British Academy of Management, 1998.

[4] I. Nonaka, R. Toyama and N. Konno, "SECI, Ba and leadership: A unified model of dynamic knowledge creation," *Long Range Planning*, vol. 33, no. 1, pp. 5-34, 2000.

[5] I. Nonaka, "The knowledge-creating company," *Harvard Business Review*, vol. 69, no. 6, pp. 96-104, 1991.

[6] I. Nonaka and N. Konno, "The concept of 'Ba': Building a foundation for knowledge creation," *California Management Review*, vol. 40, no. 3, pp. 40-54, 1998.

[7] I. Nonaka and H. Takeuchi, *Knowledge Creating Company*. Oxford: UK, Oxford University Press, 1995.

[8] G. Hedlund, "A model of knowledge management and the N-Form corporation," *Strategic Management Journal*, vol. 15, no. 1994, pp. 73-90, 2000.

[9] M. Earl and I. Scott, *What on Earth is a CKO? Survey IBM*. London: UK, London Business School.

[10] J. Antonette Asumptha, and C. Mathan. "Succession planning and knowledge management with knowledge sharing perspective in business families," *International Journal of Management (IJM)* Vol. 7, no. 7, pp. 1-8, 2016.

[11] A. S. Supriyanto. "Knowledge management implementation, strategic human resource practices and organizational performance mediated by strategic planning," *Business and Management Research,* vol. 4, no. 1, pp.90-98, 2015.

[12] K. Wiig, *Knowledge Management Foundations*. Arlington, TX: Schema Press.

— This article does not have any appendix. —