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Balanced Scorecard for performance measurement and strategic planning of indigenous knowledge management

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Indigenous knowledge is held locally in the memories and practices of the communities. The communities have their own processes of storage, leverage, practice, share, and developing indigenous knowledge. The form of knowledge management (KM) employed however distinctly differs from the current practices in organizations. The paper focuses on this less studied, but potentially invaluable, indigenous knowledge management (IKM) practices within these indigenous communities.

The Balanced Scorecard (BSC) is a strategic planning and performance measurement system that has already a documented history of successful implementation in several industries and enterprises knowledge management initiatives. In this paper we explore a process-oriented knowledge management model for indigenous communities. We then propose a third-generation BSC approach in the design of a holistic approach for knowledge management systems of these communities. This work serves as an extension to the past experiences of the authors in modelling K-readiness for the state of Sarawak, and in mapping and implementing of rural ICT projects.

Introduction

Indigenous knowledge (IK) refers to the knowledge, innovations and practices of indigenous and local communities around the world. It is developed from experience gained over the centuries and adapted to the local culture and environment which is transmitted orally from generation to generation (Zakaria and Haryani 2005).

Indigenous knowledge, which has generally been passed from generation to generation by word of mouth, is in danger of being lost unless it is formally documented and preserved (Ngulube 2002). The rapid change in the way of life of indigenous people has largely accounted for the loss of IK. The key indicator is language loss. Language is the most fundamental way that cultural information is communicated and preserved, especially in those that are still in tacit form and not documented properly. Of the 7000 languages spoken today, fully half are not being taught to children (Wade 2009). The deliberate and state-imposed destruction of indigenous languages has caused the loss of traditional knowledge systems (Settee 2008). Younger generations underestimate the utility of indigenous knowledge systems (IKS) because of the influence of modern technology and education (Ulluwishewa 1993). Over the last two decades there has been a great increase in interest in IK from a variety of groups including development agencies, researchers, governments and corporate world. The World Bank recognizes IK as a resource that can help to solve

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local problems, a resource to help grow more and better food, to maintain healthy lives, to share wealth, to prevent conflict, to manage local affairs, and thus contribute to global solutions (Knowledge and Learning Group 2004). So an increasing number of cultural heritage institutions in the western world are exploring digitization as a means of preservation and/or improving access and knowledge of their collections. The World Bank's 'Indigenous Knowledge for Development Program' (The World Bank Group n.d.) and UNESCO's 'Best Practices on Indigenous Knowledge' (UNESCO/MOST 1999) are some examples. These initiatives are focusing on the creation of databases of IK in the same systematic way as western knowledge. In any case, the objective of databases is typically twofold. They are intended to protect IK in the face of myriad pressures that are undermining the conditions under which indigenous people and knowledge thrive. Second, they aim to collect and analyse the available information, and identify specific features that can be generalized and applied more widely in the service of more effective development and environmental conservation (Agrawal 2002). Dr Gada Kadoda, while addressing the Unisa community during the 2010 CSET African Scholar Programme, highlighted the issue of the lack of indigenous knowledge systems theories written for research purposes. She added that: 'In creating a shift from the reliance on the Western knowledge systems to the indigenous knowledge systems, we have to start from what we do not have' (Unisa Online 2010).

As with typical knowledge management (KM) initiatives in organizations, the same approach for KM cannot be directly applied across organizations without duly considering the background and particular needs. A thorough examination of community background, culture and environment is thus important to help determine the best strategy to be adopted for each community.

We will first briefly describe indigenous knowledge management (IKM), contrasting it to typical organizational KM. We will then provide a broad overview of current works and initiatives for addressing KM in indigenous communities. Subsequently our generalized Balanced Scorecard-based framework for IKM will be presented.

Indigenous knowledge management

IK is mainly implicit, whereby it is stored and shared orally and disseminated mainly by practical use. The communities have their own ways to manage and preserve knowledge. They manage to preserve it from generation to generation transferring this knowledge on the basis of ownership and power structure of a community.

The flexible structure and relationship model of these communities provide uniqueness to IKM differentiating it from KM systems in modern institutions.

One interesting aspect of this model is that it does not rely on a persistent store such as a database typically found in organizations. Knowledge thus lives in the memory of the community as oral literature and the collective intelligence of the community is kept locked up implicitly within the community memory.

The World Oral Literature Project (University of Cambridge 2009) describes a variety of forms of oral literature which includes ritual texts, curative chants, epic poems, musical genres, songs, spells, legends, recitations, life histories and historical narratives. This literature is carried across from mouth to mouth and stored implicitly in collective memory of the community. Figure 1 also illustrates the informal modelling that has been adopted in these communities, comprising of three basic subsystems representing Social Sub-system, Cognitive Sub-system and Action Level. Mearns and du Toit (2008) describe IKM as the process of capturing a community's collective experience, whether it resides in

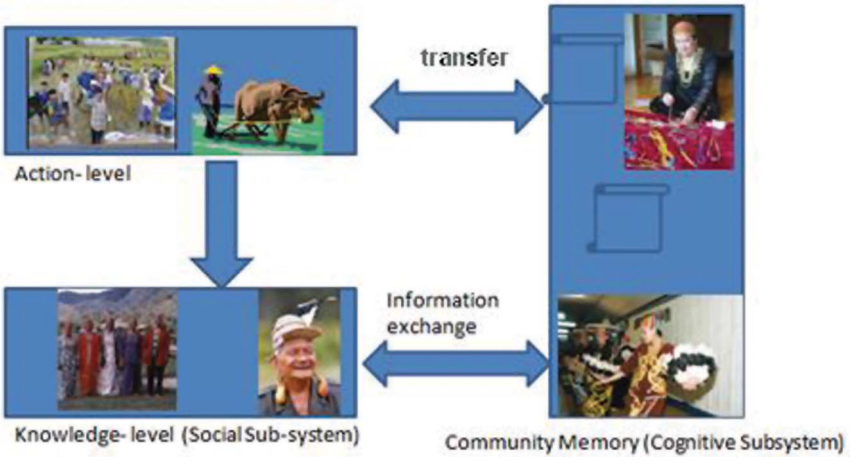

Figure 1. Indigenous knowledge management.

customs, traditions or in individual's heads, and subsequently distributing it to wherever it has the biggest pay-off for the benefit of the community and society at large. This definition focuses on the two aspects of knowledge management capturing and redistribution while undermining the creation of knowledge as knowledge management activity in indigenous communities. The scientific community and organizations focus on IKM as the management of corpus of facts rather than the management of a living dynamic and innovative system. IK as a living system has a much broader understanding of indigenous people as they place themselves in relation to the environment in which they live. They not only just remember the traditions and recall them but also by creation of new practices they update their system in a changing environment.

Process-oriented knowledge management

Bukowitz and Williams (1999) suggested a knowledge management diagnostic (KMD) tool to know the KM efforts of an ordinary business and research organization according to the knowledge management process-oriented model. The model contains seven processes: Get, Use, Learn, Contribute, Assess, Build/Sustain, and Divest (Table 1). The 'Goals of KM' in indigenous communities are not solely financial gains but also a question of their survival, so the indigenous communities more or less follow all these processes in one or another form.

Table 1. KM seven processes.

Get	Use	Learn	Contribute	Assess	Sustain	Divest
Daily gathering of information	Using knowledge to create value	Learning from value created	Making the knowledge available for others to use	Assessment of existing knowledge asset	Building and sustaining a knowledge-base	Getting rid of unnecessary knowledge

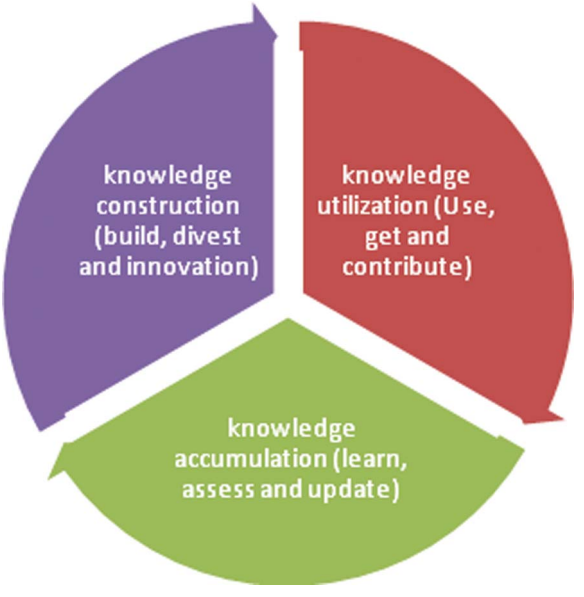

Figure 2. IKMS process model.

Sometimes the community relates the knowledgebase asset (artefacts and places) with their religious beliefs so it becomes more sacred for them and for the structure of the community. The lack of infrastructure is a major impediment but also brings some positive effects, for example in case of sharing the knowledge and experiences the indigenous communities have a powerful structure. These factors affect the KM processes in a community.

For this research we rephrase the above-stated definition (Mearns and du Toit 2008) of IKM and presented IKM system (IKMS) as a model that describes the processes of creation, accumulation and utilization of a community's collective or an individual's experiences, whether it resides in practices, customs, and traditions or in individuals' heads.

From our definition the three core processes (Figure 2) for a communitys' knowledge creation, accumulation and utilization relate closely to three components – the action, cognitive, and social level sub-systems of our model (Figure 1). These three processes will also relate closely to the human, structural and social capital development in the community. There is a need to integrate and overlap efforts among the three core processes in producing holistic consolidated outcomes for the community.

As compared to research organizations or industry, the requirement and structure of indigenous communities are completely different so the performance measurement of IKM needs also to satisfy these unique requirements. These requirements need an amended or new model for performance measurement of knowledge management systems.

Balanced Scorecard

The Balanced Scorecard (Figure 3) approach was first introduced by Robert S. Kaplan and David P. Norton in 1990 (Kaplan and Norton 1992, 1996). They carried out research with 12 organizations and came to the conclusion that the performance measurement systems are normally financial and control mechanism-centric so that ignores the other key

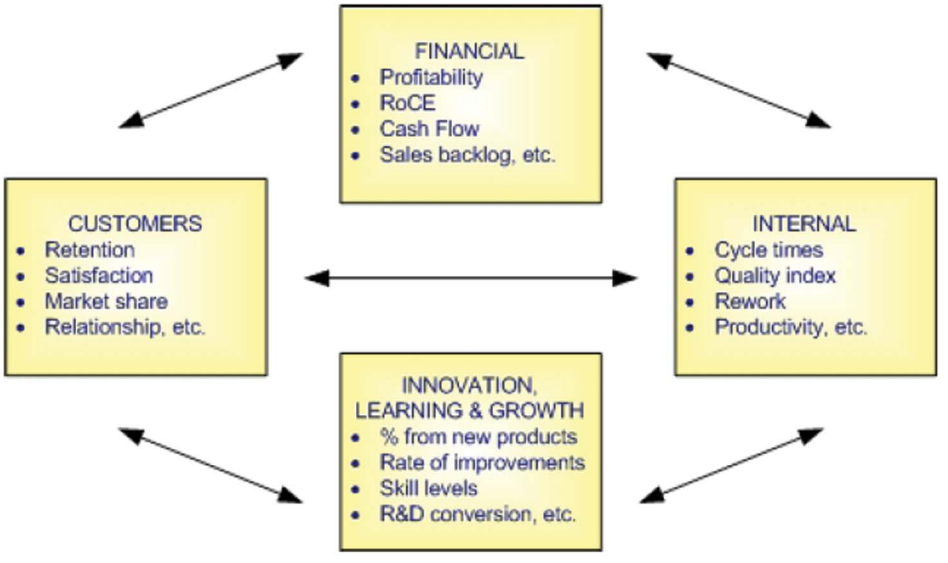

Figure 3. The Balanced Scorecard links performance measures.
Source: Kaplan and Norton 1992, p.72.

issues (i.e. customer participation, learning and growth and internal process) that can reflect on the achievement of the strategic objectives of an organization. They proposed the concept of a Balanced Scorecard as a more sophisticated approach for meeting these shortcomings.

Balanced Scorecard in performance measurement of knowledge management projects

The use of Balanced Scorecard in modern institutions and industries for knowledge management projects is very common. Dr Alea M. Fairchild proposed a knowledge management metrics via a Balanced Scorecard methodology (Fairchild 2002). She proposed a measurement model for KM metrics in reference to the current KM metrics that are in use, and examined their sustainability and soundness in assessing knowledge utilization and retention of generating revenue. She used the Balanced Scorecard approach to determine a business-oriented relationship between strategic KM usage and IT strategy and implementation.

Yan Mi (2008), based on his analysis of the relationship between an enterprise's core competency and KM, pointed out the key to improving an enterprise's core competency is to implement the KM. He introduced the theory of Balanced Scorecard and tried to evaluate the performance of enterprise knowledge management from BSC's four perspectives.

One other example is the use of Balanced Scorecard for performance measurement and strategic planning in non-profit organizations. Berler Pavlopoulos and Koutsouri (2005) and Mountain States Group (2010) proposed KM tools that enable knowledge sharing amongst various health-care stakeholders and between different health-care groups. The frameworks include proposed Key Performance Indicators (KPIs) that are forming a complete set of metrics to enable the performance management of a regional health-care system and found BSC to be an enabling framework toward a KM strategy in the health care sector.

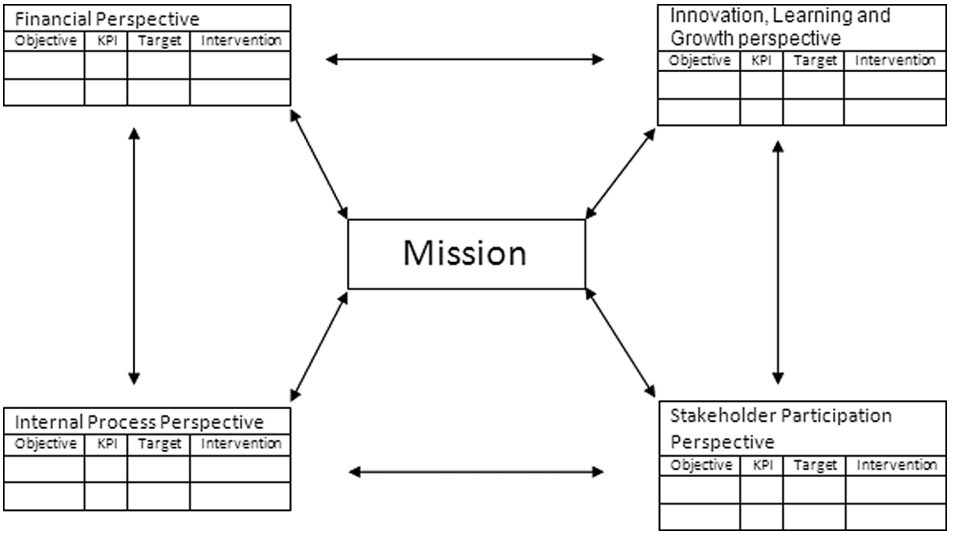

Figure 4. Model BSC for IKM.

Balance Scorecard for IKM

For performance measurement of IKM, a modified approach to Balanced Scorecard

The BSC approach is flexible enough that without specification of any hierarchical structure it describes relation between the four high-level financial and non-financial perspectives.

As stated earlier, the structure of IKMS is different in comparison to modern institutions' and industries' knowledge management systems so a modified Balanced Scorecard approach is probably necessary for performance measurement of these systems.

The modified structure of BSC (Figure 4) consists of:

- Mission of the whole research activity.
- The financial and non-financial perspective of the balanced scorecard: Innovation, Learning and Growth perspective, Internal Process perspective, Stakeholder Participation perspective, Financial perspective.
- Objective/s, KPI/s, target/s and suggested intervention/s for each perspective.

The strategic process, based on Balanced Scorecard

The complete strategic process for IKM on the basis of Balanced Scorecard is as follows:

(1) Identify mission of the whole research activity.
(2) Identifying IKM-related perspectives of Balanced Scorecard.
(3) For each perspective identify and classify KPIs that can measure the performance.
(4) Generate the questionnaire for measuring the performance according to the KPIs.
(5) On the bases of the results identify the target and suggest intervention for improving performance.

(6) Constructing BSC-based strategy maps.
(7) Designing initiatives and action plans with specified performance targets.

KPIs for IKM and Balanced Scorecard's perspectives

In this research paper we are proposing process-oriented KPIs for KM of indigenous communities (Table 2). We have built a relation between each perspective of BSC and process-oriented KPIs of IKMS (Figure 5).

Standard forms of variables do not always accurately reflect the situation of indigenous peoples, especially in cases where different groups of indigenous communities live and share the same resources and knowledge assets, so the variables can be modified on the basis of indigenous people's inherent values, traditions, languages, and traditional orders/systems, including laws, governance, lands, economies, etc. (UNPFII 2008).

Table 2. BSC perspectives, key performance indicators and variables for IKMS performance measurement.

BSC perspective	Key performance indicators	Variable
Financial perspective (four variables)	Financial gain from knowledgebase assets. Self-reliance in terms of acquiring new skills and knowledge.	Community recognition of required knowledge Have ability to outsource skills and expertise. Exercise self-reliance while testing new ideas. Attain recognition of knowledgebase as asset
Stakeholders participation perspective (four variables)	Mechanism for sharing of knowledge (use, get and contribute)	Recognise individual and collective knowledge creation. Have well-established practices for stakeholders' involvement in decision-making. Collaborate with other communities and government for development. Participate in strategic networks and partnerships.
Internal process perspective (five variables)	Mechanism for collecting, storing and updating knowledge.	Have forums for managing information. Have mechanism for sharing knowledge. Use external knowledge. Protect sensitive knowledge. Acceptance of new technologies.
Innovation, learning and growth perspective (four variables)	Promote innovation, acknowledgement and creation of knowledge.	Community supports for new technologies. Community promotes team-building and group activities for mutual learning. Acknowledgment of individual contributions. Participation in research groups for acquiring new knowledge.

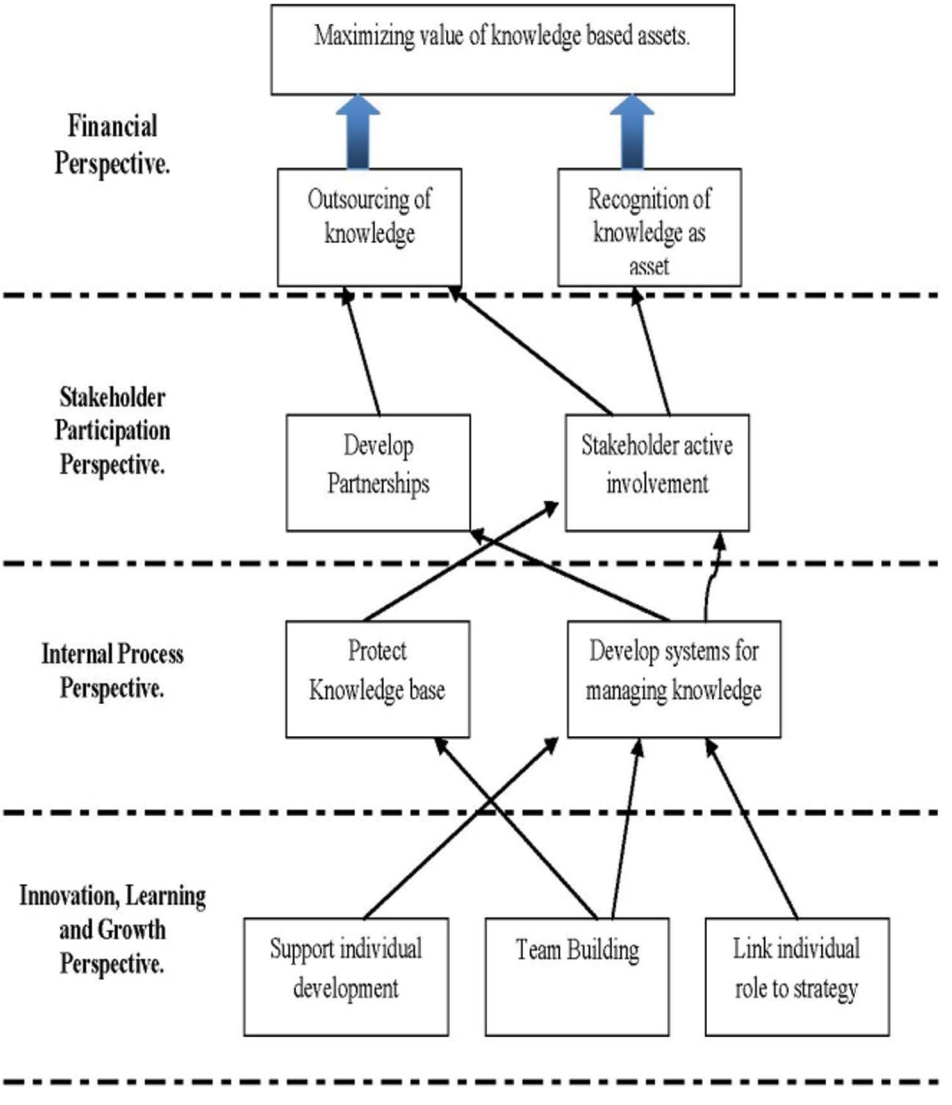

Figure 5. Prototype strategy map for IKM based on BSC.

Conclusion

The knowledge management efforts in indigenous communities are quite different from research and business organizations, where the measurement has always been seen as numbers and precisions. The Balanced Scorecard can give a qualitative analysis of knowledge management efforts in indigenous communities, which can help the researchers to realize the communities-based structure of knowledge management. Future directions of this research include the implementation of the proposed Balanced Scorecard for measuring IKM systems in indigenous communities and expanding on how this relates to the detailed designing of projects in alignment with overall strategies. Innovative applications that will support holistic indigenous KM will be explored in future.

Notes on contributors

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