Formulating Strategic Directions for Indigenous Knowledge Management Systems.

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Abstract. In modern organisational structures knowledge management practices consist of knowledge generation, capture, sharing and application. The organisations emphasize on codification and documentation of implicit knowledge and transform it to explicit form. Indigenous communities however have much less codified knowledge relying mainly on oral and tacit form. The communities have their own processes of storage, leveraging, sharing and applying knowledge which is different from knowledge management processes of corporations and research organizations due to the oral and tacit structures of these processes.

In this paper we present a model for formulating strategic directions for an indigenous knowledge management system. We have designed a knowledge management assessment tool for Indigenous Knowledge Management Systems (IKMS) which has been tested in remote community in Bario, Sarawak. On the bases of our assessment of IKMS, community capacity and resources, we have developed a strategic map for IKMS in Bario. This work serves as an extension to the previous literature on designing the Balanced Scorecard for IKMS.

Keywords: Indigenous Knowledge, Balanced Scorecard, Indigenous Knowledge Management System, Traditional Knowledge.

1 Introduction.

In existing literature, the term indigenous knowledge, traditional knowledge, traditional ecological knowledge, local knowledge and indigenous technical knowledge are used interchangeably. In addition, some of the commonly asserted characteristics of indigenous knowledge include the following: it is generated within communities; it is location and cultural specific; it is a basis for decision making and survival strategies; [generally] it is not systematically documented, it covers critical [issues: such as] primary production, human and animal life, natural resources management[;] it is dynamic and based on innovation, adaptation and experimentation, and it is oral and rural in nature [1]. 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 [2]. The rapid change in the way of life of indigenous people has largely accounted for the loss of Indigenous Knowledge (IK). Younger generations underestimate the utility of

indigenous knowledge systems (IKS) because of the influence of modern technology and education [3]. Over the last two decades there has been a great increase in interest in Indigenous Knowledge (IK) from a variety of groups including development agencies, researchers, governments and corporate world. An increasing number of cultural heritage institutions in the western world are exploring digitisation as a means of preservation and/or improving access and knowledge of their collections. The World Bank's 'Indigenous Knowledge for Development Program' [4] and UNESCO's 'Best practices on Indigenous Knowledge' [5] are the examples. These initiatives are focusing on creation of databases of indigenous knowledge in the same systematic way as western knowledge. In any case, the objective of databases is typically twofold. They are intended to protect indigenous knowledge 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 generalised and applied more widely in the service of more effective development and environmental conservation [6]. So these organisations focused on IK as a corpus of facts rather than IK as a system. IK as a system has a much broader understanding of Indigenous people as they place themselves in relation to the environment in which they live. 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" [7].

On the basis of the current debate between IK as corpus of fact and IK as a system our main research questions are, Is there any existing IKMS in indigenous communities? And if 'yes'; How the IKMS deal with the community knowledge assets? This research is limited to the first question. We developed the assessment tool for IKMS and proposed methods for assessment of community capacities, resources and skill. The strategic direction and strategic map is based on the results of the assessments using these tools.

2 From Assessment of IKMS towards Strategic Direction: The proposed model.

2.1 Assessment of indigenous knowledge management system.

Bukowitz and Williams suggested a knowledge management diagnostic (KMD) tool to gauge the KM efforts of an ordinary business and research organisation according to the knowledge management process oriented model [8]. It is based on the "KM Process Framework", which consists of seven KM activities get, use, learn, contribute, assess, build/sustain, and divest (see Fig.1). The four activities "get, use, learn and contribute" designate the daily routine in dealing with knowledge. The other three activities "assess, build/sustain and divest" are attributed to the strategic planning of the organisations' knowledge management. KMD tool is used in many studies to learn about the KM efforts of an organisation, also when these efforts were

not called "KM" [9]. This is one of the attractions for selecting this tool in our research. The indigenous communities don't refer their activities as knowledge management practices but they have a very strong system of transferring knowledge from one generation to another. Ruddle (1993) examined the traditional ecological knowledge for sites in Venezuela and Polynesia. He examined that by the age of 14, children were competent in household tasks, cultivation (plant identification, harvesting), seed selection, weeding, animal husbandry, fishing and hunting [10]. The original KMD contains 140 questions, 20 questions for each of the seven knowledge management processes. The respondents are expected to choose from three options of whether the statement is strongly, moderately or weakly descriptive of the organisation. The more strongly the statements in the section are descriptive of the organisation, the higher is the score. For calculating the score, the following formula is used as described by Bukowitz and Williams for knowledge management diagnostic (KMD);

Number of S responses which stands for strong: S x 3=A (A represent the result after multiplication)

Number of M responses which stands for Medium: M x 2=B (B represent the result after multiplication)

Number of W responses which stands for weak: W x 1=C (C represent the result after multiplication)

Number of Ms: M x 2=B (B represent the result after multiplication, M for Moderate)

Number of Ws: W x 1=C (C represent the result after multiplication, W for Weak)

Accumulated Point Score=Z (Z represents the result of A+B+C)

Maximum total point score=12

Percentage score= $(\frac{Z}{12})$ % of each section

When this tool is applied in researches conducted in developing countries, the researchers found that the KMD was based on several assumptions that might not necessarily be relevant due to the nature of their organisations and structures. Many questions were left unanswered, especially in the strategic processes of assess, build and sustain, and divest. As a result of this finding, the researchers decided to modify the original KMD using the response rates to each of the questions and whether the question could be considered relevant to research organisations [9]. The indigenous communities also faced the problem of lack of proper structure in terms of knowledge management. No single person or group was explicitly assigned to be responsible for enhancing and supporting knowledge management activities within the community. On top of that large numbers of knowledge assets are in tacit and implicit form. So we also modified the standard KMD and combined the seven KM processes in three categories knowledge utilization (Use, get and contribute), knowledge accumulation

(learn, assess and update), knowledge construction (build, divest and innovation) (Fig.2).

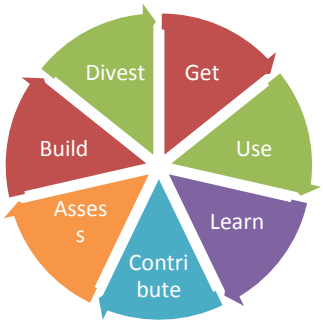

Fig. 1. Bukowitz & Williams KM process model.

Fig. 2. Proposed IKMS process model.

2.1.1 Research Method.

We carried out our study in Bario in a remote rural community, located on the island of Borneo, close to the border between Kalimantan and Sarawak, Malaysia. Flying to Bario, is the only practical way to get there. The road to Bario has been recently completed and it is 14 hour bone shaking ride by all accounts to the nearest town Miri. Bario comprises of 12 longhouses with a population of around 1,000 people. The majority of people are Kelabits, one of the smallest ethnic groups in Sarawak, and are mainly farmers. Bario was selected because of its geographical isolation and the progressive nature of the community. The Kelabits of Bario generate income from fragrant Bario rice, tourism and Homestay programs.

For assessment of each of the KM processes, we selected a set of variables. Standard forms of variables do not always accurately reflect the situation of indigenous communities, particularly as resources and intellectual property are shared commodity. So the variables [need to] be modified on the base of indigenous peoples' inherent values, traditions, languages, and traditional orders/systems, including laws, governance, lands, economies etc [11].

From KMD tool we selected the questions relating to our variables and where necessary, modifying the tool accordingly. In response of each question the community shared their experience of managing their collective knowledge. Snowball sampling was used to recruit subjects for this study.

Fifteen respondents from Bario were selected from different indigenous communities of Bario. The respondents include farmers, religious leaders, school teachers, tourist guides, members of community council (JKK), and women entrepreneurs our results (Table 1.) are based on the responses of our subjects/respondents.

Table 1. The results of IKMS assesment from Bario

No.	Variable.	Strong/Moderate/Weak

Section 1- knowledge utilization (Use, get and contribute)		
1	Community recognition of required knowledge.	Weak
2	Have recognition to individual and collective knowledge.	Moderate
3	Have well established practices of stakeholders' involvement in decision making.	Weak
4	Collaborate with other communities and government for development.	Weak
5	Participate in strategic networks and partnerships.	Strong
Section 2- knowledge accumulation (learn, assess and update)		
6	Have mechanism for sharing knowledge.	Weak
7	Use external knowledge.	Strong
8	Protection of knowledge assets.	Weak
9	Acceptance to new technologies	Strong
10	Have recognition of knowledgebase as asset	Strong
Section 3- knowledge construction (build, divest and innovation)		
11	Community supports new technologies.	Strong
12	Community Promote s team building and group activities for mutual learning.	Strong
13	Acknowledgment to individual contributions.	Weak
14	Have ability to outsource skills and expertise.	Weak
15	Participation in research groups for acquiring new knowledge.	Weak

From the survey results (table 1), the gaps were identified in sub domains of indigenous knowledge management processes for the Bario community. The results show that the Bario community has systems for the knowledge management although some of the features were found to be weak and needed improvements. So instead of looking only at indigenous knowledge as corpus of fact we evaluated the existing systems of knowledge management in these communities and subsequently explored interventions and strategic directions for strengthening the weak components.

2.2 Exploring community capacity and resources.

While formulating the strategic direction for a community, the focus should not be limited to the assessment of IKMS. The other factors that need to be taken into consideration include the capacity of the community and available resources. The community capacity [represents] the combined influence of a community's commitment, resources and skills that can be deployed to build on community strengths and address community problems and opportunities [12]. Capacity building in this respect is not limited to economic development but also offers a foundation for making good decisions about the stewardship of a region's natural, human and cultural resources, indicating the way of life can be maintained and improved over time. In addition, the indigenous communities have a close relationship with the

environment, where they live in harmony with the natural resources. So in case of formulating the strategic directions for indigenous knowledge management it is very much important to explore the currently available resources and consequently measure capacity of the community. We adopted the assessment method developed by International Institute of Rural Reconstruction for exploring the resources and measuring the capacity of the community in relation to IK. Their manual outlines more than 30 different recording and assessment methods drawn from participatory appraisal, anthropological, sociological and community organizing approaches [13].

2.3 Formulating the strategic directions for IKM in Bario.

While formulating the strategic direction (Table 2) for IKMS in indigenous community, we considered the KM processes identified to be weak together with the capacity of the community and resources. In the case of Bario, we have already assessed the IKMS situation with the help of KMD tool where the results showed that the knowledge utilization process needed more focus then followed by a focus on the knowledge construction and knowledge accumulation processes. Fig. 3 contains the strategy map for IKMS in Bario. When we formulated the strategic direction we noted that the processes tend to be supporting each other to achieve the overall goal "maximizing the benefits from indigenous knowledge assets".

Table 2. Strategic Direction for IKMS in Bario

IKMS Processes	**Strategic Directions.**
Knowledge utilization (Use, get and contribute)	• Identify knowledge gaps and address. • Develop collaborative decision making process. • Setting of common goals and objectives.
Knowledge accumulation (learn, assess and update)	• Focus on sustainable transfer of knowledge; strengthen CoPs etc. • Improve situational understanding.
Knowledge construction (build, divest and innovation)	• Recognition of individual role in IKMS. • Develop partnerships. • Leadership development.

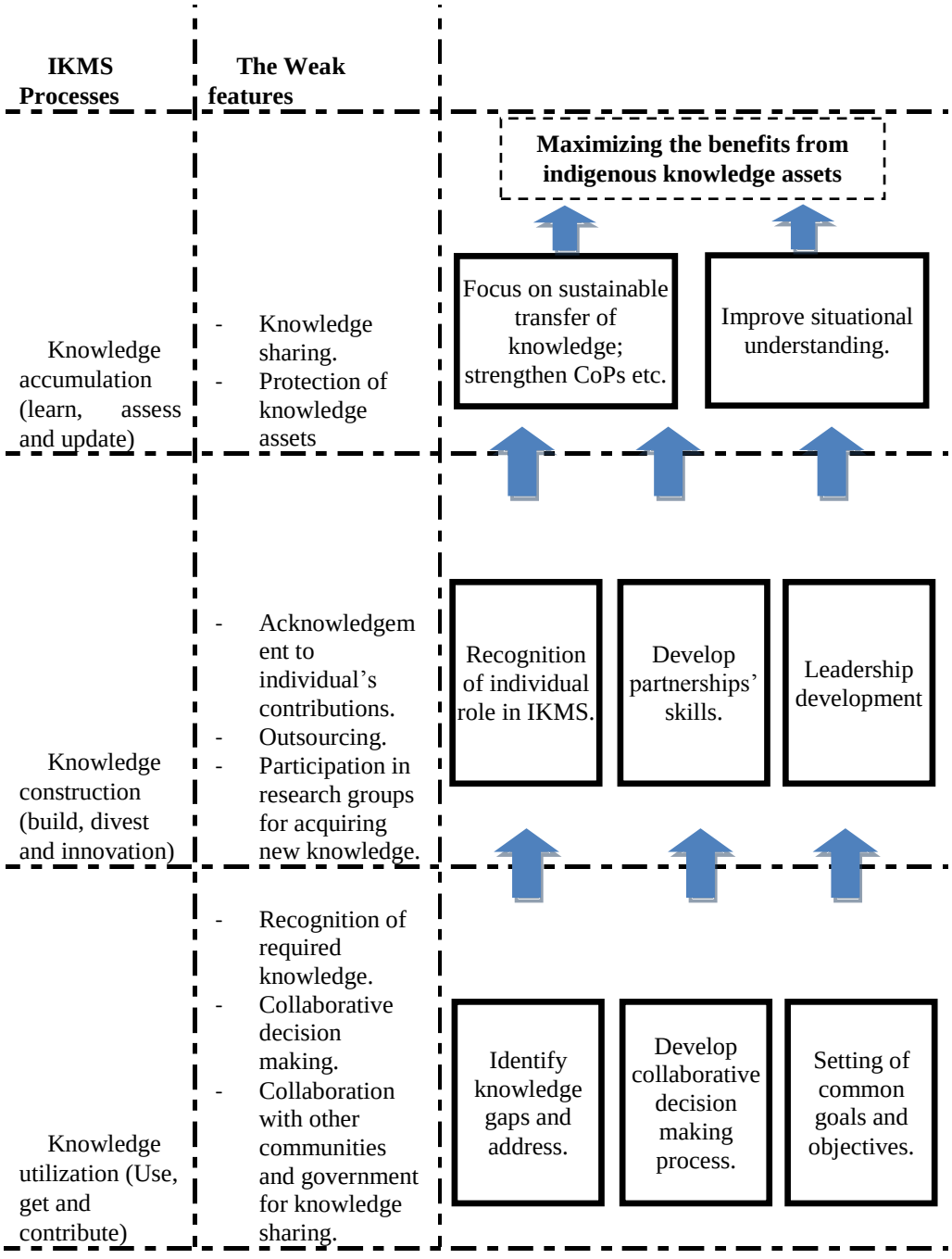

Fig 3. Strategy map for IKMS in Bario

3 Conclusion.

It is an irrefutable fact that with the passage of time we are rapidly losing indigenous knowledge, so while designing the development intervention we also need to focus on indigenous system of managing the community's knowledge. Thus far, as we are successful in analysing the situation of IKMS in one indigenous community. Our future research includes the comparative study of the proposed tool and in carrying out the interventions.

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