Building a Knowledge Management Model for Fish Quality Management

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Abstract: **This paper presented a knowledge management model for fish quality management. In practically, shared expertise is a proprietary knowledge asset that is exclusively held by knowledge workers and is shared in their work or embedded in information system technology. Knowledge management might be individuals as well as organisations who share one or more qualities. This is better to buil a network in which people or organisations believe that they are members of a group or system, developing emergent qualities. This paper focused on the This thesis focuses on farmers' knowledge on implementing new farming systems to manage fish diseases and take a needed step in assuring their disease management quality.**

Key words: **knowledge management, fish quality management, network**

I. INTRODUCTION

The concept of knowledge is a complex one. The differences between data, information and knowledge are often confusing. People use knowledge when they do not base their decisions on the available information only, but also on experiences from the past, intuition, ethic, and so on. For example: somebody knows that there are many taxis in town, but because it is a holiday many people want to travel by taxi. Based on an earlier experience the person will travel by train instead of taxi (Dalkir, 2005).

Knowledge management (KM) is a field that can be described as bipartite. The first is the knowledge sharing part (or first-generation KM) and the second is the knowledge making part. Frederick Taylor states that "the knowledge sharing side of KM (1) is all about capturing, codifying, and sharing valuable knowledge, and (2) it is all about getting the right information to the right people at the right time." The creating and sharing of knowledge has been described as the second-generation knowledge management. The mission for second generation knowledge management is the creation of new knowledge by people in organisations (McElroy, 2003).

The paper focused on the first generation of knowledge management. This is still the most applied form of knowledge management by organisations and businesses. The creation of knowledge is done by individuals in universities and research centre but knowledge is also discovered through the experimenting by local farmers (e.g., Brouwers, 1993). These institutions have to disseminate the knowledge to the individual and organization in order to keep fish quality management up to date.

II. LITERATURE REVIEW

Knowledge and knowledge management

The concept of knowledge is a complex one. The differences between data, information and knowledge are often confusing. Data is content that is directly observable, for example, a fact or listings of the times and locations of markets to buy raw materials. Information is content that represents analyzed data. For instance, the location of a market is held far away, which makes it difficult to go for a farmer, so they have to go to another market closer to the farm. Knowledge is different from either of these. It is a more subjective way of knowing, and it is typically based on experiential or individual values, experiences, and perceptions. People use knowledge when they do not base their decisions on the available information only, but also on experiences from the past, intuition, ethic, and so on. For example: somebody knows that there are many taxis in town, but because it is a holiday many people want to travel by taxi. Based on an earlier experience the person will travel by train instead of taxi (Dalkir, 2005). Nonaka and Takeuchi (1995) described the difference between tacit and explicit knowledge. The tacit aspects of knowledge are the most difficult to disseminate and these aspects are often referred to as know-how. This form of knowledge can only be passed on by training or obtained from personal experience. The understanding of language is a form of knowledge which cannot be learned from grammar rules alone and it takes more know-how to catch a fish than reading a manual only. Explicit knowledge, on the other hand, is the kind of knowledge which is or can be codified. It can be readily passed on to others and can be stored. The most common examples are procedures, manuals and documents. To conclude, knowledge is highly contextual and the result of learning, experience, adaptation, sharing information, and so on (Brouwers, 1993). Brouwers (1993) states that the knowledge in a rural peoples' group or community is the product of a long succession of experimenting to resolve agricultural, environmental, and social problems in a particular socio-culturaland agro-ecological context. Knowledge management (KM) is a field that can be described as bipartite. The first is the knowledge sharing part (or first generation KM) and the second is the knowledge making part. Frederick Taylor states that "the knowledge sharing side of KM (1) is all about capturing, codifying, and sharing valuable knowledge, and (2) it is all about getting the right information to the right people at the right time." The creating and sharing of knowledge has been described as the second generation

knowledge management. The mission for second generation knowledge management is the creation of new knowledge by people in organisations (McElroy, 2003). KM consists of three variables. These are (1) knowledge acquisition and application, (2) knowledge capture and/or creation and (3) knowledge sharing and dissemination (McElroy, 2003; Dalkir, 2005).

For individual farmers the knowledge acquisition and application is very important, while organisations like the Fishery Association (FA) and governmental institutions like the Department of Agriculture & Rural Development might have to focus more on the capturing of knowledge and the sharing of it with its members. Other possibilities of sharing are between farmers themselves. If there is a local knowledge sharing culture between farmers more farmers are able to obtain the right disease treatment and/or prevention possibilities.

The creation of knowledge is done by individuals in universities and research centers but knowledge is also discovered through the experimenting by local farmers (e.g. Brouwers, 1993). These institutions have to disseminate the knowledge to the FA and farmers in order to keep fish disease prevention and treatment up to date. In literature KM is split into two different approaches: the Humanistic approach and the Information Technology (IT) approach. The Humanistic approach believes that knowledge is the result of sharing largely tacit information and data between individuals, groups and organisations. This is done through training, workshops and the gaining of experience. The IT approach on the other hand believes that KM is more about the collection, storage, codification and the spread and application of information and data in an efficient manner (Gloet and Berrel, 2003). Both approaches are important for farmers to use because logically farmers need both practical and theoretical knowledge to effectively prevent and treat diseases.

Quality management

According to Van der Spiegel et al. (2003) quality management of primary production consists of activities and decisions that control, improve and assure the primary process, which results in a certain production quality. Khoi (2010) defined quality management as the total of activities and decisions performed in an organisation to produce and maintain a product with a desired quality level at minimal cost. The food quality management includes quality strategy and policy, quality design, quality control, quality assurance and quality improvement (Luning et al., 2006; in Khoi, 2010). The definition of Khoi (2010) is used to describe quality management. The implementation of quality management has evolved from inspection to quality control at first, and then to quality assurance. Finally, the concept of Total Quality Management was introduced (TQM) (Deming, 1982; Juran, 1989; Dale and Plunkett, 1990; Dalen 1996; Zhang, 1997; cited in Khoi, 2010). Currently food quality management is applied by different quality systems and combinations thereof. TQM is used to manage all aspects of business (Zhang, 1997). It is a way of thinking that long term success depends on a uniform and firm wide commitment to quality, which includes all activities that a firm carries out. TQM has the potential to enrich quality management through more motivational and participation-oriented approaches, but is still not widely applied in the food industry (Pfeifer, 2002; Kramer and Briel, 2002; Hendriks and Sonnemans, 2002 in Khoi, 2010). Although TQM practices are assumed to provide the best possible conditions to meet or exceed the need and expectations of customers, no success stories are yet known in the food industry (Luning et al. 2006).

III. BUILDING A KNOWLEDGE MANAGEMENT MODEL FOR FISH QUALITY MANAGEMENT

Dalkir (2005) discusses many KM models in his book (i.e. Wiig, 1993; Choo, 1998; Nonaka and Takeuchi, 1995; Boisot, 1998). Wiig`s (1993) defines three forms of knowledge. These are public knowledge, shared knowledge and personal knowledge. Public knowledge is explicit, taught and routinely shared knowledge that is generally available in the public domain. Examples are books in a library, non-interactive information on a public website, or experts and knowledge bases in an interactive manner. Shared expertise is a proprietary knowledge asset that is exclusively held by knowledge workers and is shared in their work or embedded in information system technology.

Although Wiig (1993) does not use the term, this knowledge is very common in informal networks or communities of practice of likeminded people who typically interact and share knowledge in order to improve the practice of their profession. An example for the Pangasius sector is the knowledge that is disseminated throughout the Fishery Association or throughout a group of individual farmers in the same village who are cooperating or attending training given by the local government. Personal knowledge is the least accessible but most complete form of knowledge. It is more tacit than explicit, and it is used unaware in work and daily life. These are, for example, the memory, habits, skills and procedural knowledge of individuals (in this case: farmers) which are not often codified.

To conclude, Wiig (1993) has set up a hierarchy of knowledge that consists of public, shared and personal knowledge. This hierarchy is shown in Figure 1. Although we agree with Wiig that habits and skills are hard to access, we believe that procedural knowledge can be codified to make it accessible for others. However, if the farmer has made a manual it is still unknown whether he wants to share this manual with others. Therefore the personal knowledge remains inaccessible for most stakeholders.
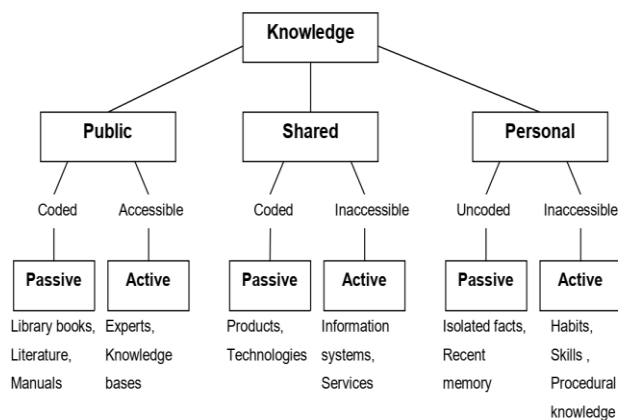
Figure 1: Knowledge management model

Source: Adapted from Wiig's hierarchy of knowledge management

In discussion, I will explain the link between (total) quality management and KM. Stewart and Waddel (2008) proposed that there is a gap in the field of KM. This is due to the different KM approaches and the differences between the tacit and explicit knowledge. Stewart and Waddel (2008) suggested that quality management systems may help to close the gap by providing structure around which knowledge will be able to captured, codified, stored and spread throughout the organisation. However, they suggested that TQM is a tool for successful KM but does not mention the use of KM to improve the quality management. Nevertheless Thang and Tong (2007) stress that a knowledge management system is important for an organisation to implement quality systems (ISO 9001 in the case of their research). They suggest that firstly, a knowledge management system has to be implemented, and secondly, that after certification, the sharing, storing and acquiring or creating of knowledge is of importance to the organisation. Such KM systems get the knowledge out of the organisation, groups and individuals, and they can be used to improve the quality system.

In the case of the smallholders, it is not very likely that a knowledge system is based on complex information technology systems, but there are other methods to derive, disseminate and store knowledge than with computers only. Examples are an adequate extension structure whic disseminates knowledge throughout the farmer organisations, and efficient feedback systems that are able to visualize the knowledge of farmers.

Through the dissemination of knowledge among Pangasius farmers the farmers are likely more able to improve the actual performance of disease prevention and treatment, because they become more aware of the quality standards (e.g. in Jalan et al., 2003). By gaining knowledge, farmers improve their ability to identify gaps between standards and actual performance. Then farmers can take action in order to close the quality gap, if they see the benefits of an improvement in quality.

IV. CONCLUSION

Application of the knowledge management model for fish quality management could be useful to to categorizing the different types of knowledge remains a powerful theoretical model of KM. The KM model is very pragmatic and can be easily integrated into any of the other KM approaches. The model enables practitioners to adopt a more detailed or refined approach to managing knowledge based on the type of knowledge but goes beyond the simple tacit/explicit dichotomy of Nonaka and Takeuchi model. Its major shortcoming is the scarcity of research and/or practical experience involving the implementation of the model (Dalkir, 2005). In conclusion, the model is applied to map as a tool to map knowledge and see how knowledge between actors can overlap and can also be independent. Knowledge from different actors can be combined to create a powerful solution to improve quality.

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