Evaluation of a Knowledge Management Dashboard for Manufacturing SMEs in Resource Constrained Areas

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Abstract: Decision support dashboards increase the quality, effectiveness and efficiency of decision making. Studies reveal that existing dashboards require heavy investment in network infrastructure and hence an increase in system costs which typically SMEs find difficult to invest in and more so for SMEs in resource constrained areas. The article presents the evaluation of the performance of a Knowledge Management (KM) Dashboard that was designed and a prototype implemented to support production and operational efficiency monitoring in a Manufacturing SME in a resource constrained setting. The evaluation of the performance of the Dashboard was carried out in 2(Two) Small-Medium Dairy Processing plants in South Western Uganda and we utilized data for 6(Six) months. An observational study and a survey with Eight(8) purposively selected participants as key informants for the interviews were conducted. The survey focused on the usefulness, usability and usage of the Dashboard. Usefulness is the value that the dashboard adds to decision making; usability is the extent to which the dashboard may be used; Usage is the actual application of the dashboard from the user's perspective. All the participants (100%) believed that the dashboard was very useful. The majority of the participants (88%) reported that the dashboard performed its usage and all the participants found the dashboard usable. The Dashboard uses visualizations to show a quick overview of performance metrics and a complete picture of strategic information necessary to support managers to get the whole picture of what is happening in the enterprise quickly and making decisions. However, usage of the dashboard depends upon structuring procedures and processes within the enterprise which was largely lacking. Furthermore, the dashboard requires the users to be computer literate and to have a network connection for shared usage. Implementation of the dashboard with a combination of both knowledge repositories and knowledge manipulation has the potential to enhance decision making in SMEs. The data visualization techniques help to extract insights from knowledge repositories and generate real time production management information which has been evaluated as excellent modules of the dashboard. Human computer interaction principles when efficiently incorporated into user interface designs significantly increase the usability of a dashboard.

Keywords: Knowledge Management, Decision Support, Dashboards

1. Introduction

Small and Medium Enterprises (SMEs) are important to economies everywhere in the world and even more so in economies in resource constrained countries for their contribution as a prime source of new jobs and their crucial role in income generation as well as in industrialization processes (Ng and Kee, 2012; Aspinwall and Wong, 2005). Research reveals that to improve SMEs competitive advantage in resource constrained areas, in addition to lack of capital issues, a lack of information about the know how in many areas needs to be addressed and improved. For example, such as quality standards, efficient production process, effective marketing, sales and distribution, accounting, resourcing, and so on. There are tremendous business opportunities SMEs can derive from knowledge management (KM) specifically for example; Cost-reduction, operational efficiency, innovation enabling them to be ready for market opportunities and overall business growth or commercialization of their enterprises. Knowledge management (KM) in SMEs is still a relatively new topic and more so for SMEs in resource constrained areas, and hence research continues to understand its unique characteristics. Due to continuous advancements in ICTs and the fast-paced nature of the business environment today, organizations generate and deal with increasingly more data. Managers are often overwhelmed with reports and information churned out from a multitude of organizational information systems such as Enterprise Resource Planning (ERP), performance scorecards, and business intelligence (BI) software that compete for managers' attention.

Knowledge in SMEs is diverse and its proportions are immense and growing. Owners, managers and staff that work for these organizations have problems keeping track of where this knowledge is, and who has it. According to Alavi and Leidner, (2001), in SMEs individual competences usually represent the cornerstone of a firm's knowledge and is a key determinant of organizational performance. Increasingly fierce competition deriving from globalization and ICT has challenged this approach calling for new ways to develop, diffuse and retain knowledge in SMEs. Introducing knowledge management systems into an SME presents a particular challenge because they have the reputation for too much implicit knowledge, limited resources, insufficiently