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Capturing and Sharing Product Development Knowledge using Storytelling and Video Sharing

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Abstract

In today's global marketplace employee knowledge is seen as a crucial asset for organisations, which enables them to gain a sustainable competitive edge over competitors. Much of the knowledge generated during New Product Development (NPD) and NPD testing can be categorised as tacit knowledge, developed from employees' personal experiences and perceptions during Product Development (PD) projects; this makes it more difficult to capture and document for future sharing. This research explores whether storytelling and video sharing tools are capable of facilitating the capture and sharing of employee knowledge during the PD cycle. It also considers the creation of a knowledge framework that is directly driven by the knowledge user, providing both knowledge direction and content.

Keywords: Collaboration; Knowledge Management; Product Validation and Testing; Social Media; Video Sharing

1. Introduction

During NPD, employee knowledge is critical for innovation [1] – to remain competitive in today's global marketplace, knowledge is seen as a crucial asset for organisations which enables them to gain a sustainable competitive edge over competitors through the creation of new innovative products [2]. Knowledge Management (KM) can be defined as "the ability to harness and build upon an organisation's intellectual capital" [3]. Companies need to identify and record what they know and to use this knowledge effectively. The size and dispersion of global organisations make it especially difficult to locate existing knowledge and deliver it to where it is needed [4].

The creation of new methods of capturing and sharing knowledge amongst PD teams, both local and dispersed, assists companies to capitalise on pre-existing valuable resources; the ability to quickly browse and acquire knowledge or to identify knowledge experts within a business can provide competitive advantage.

The aim of this paper is to report on ongoing research which explores the use of social media and video sharing tools to facilitate the capture and sharing of employee knowledge during the PD lifecycle. This research is being conducted in collaboration with a globally-dispersed industrial partner operating in the manufacturing sector. During the project, we explore the development and trialling of a knowledge capture and sharing framework which is directly driven by the knowledge user, who provides both knowledge content and direction.

This paper is organised as follows: section 2 introduces background information related to knowledge management, social media and video sharing. Section 3 provides the requirements and basis of the developed knowledge framework. Section 4 describes the approach adopted for implementation work to date. Section 5 provides a summary of initial user feedback and future work, while section 6 presents research conclusions.

2. Background

Knowledge can be classified as either Explicit or Tacit. Explicit knowledge can be expressed in formal methods or natural languages and can be easily shared and exchanged; Tacit knowledge, on the other hand, cannot normally be easily expressed due to its content, which is constructed from personal skills, experiences and understanding, making it difficult to share and exchange by formal and systematic methods [5]. Much of the knowledge generated during NPD and NPD testing can be considered tacit knowledge, which is connected to problem solving and is dependent on interactions between colleagues within PD teams [6]. This type of knowledge is highly abstract and closely related to 'know-how' [7]. Thus, one may acquire tacit knowledge in one context and apply and stimulate this knowledge in another context [8, 9].

Nonaka and Takeuchi [10] argued that tacit knowledge is difficult to capture and share due to a person's personal understanding of the subject matter. They stated that only tacit knowledge which can eventually be transformed into explicit knowledge may be successfully shared with others. But Hislop [11] suggested that tacit knowledge can be shared through "direct communication amongst individuals" and provided three examples of how this may be achieved: 1) stories, 2) observing others and 3) learning by doing within a Community. However, in today's marketplace, accelerated PD timelines to deliver new products in the shortest possible time are critical for success. This generally means that experienced staff have limited opportunities and time to share their own knowledge with younger and less experienced staff [12].

There have been several attempts by researchers to develop new methods to capture and share tacit knowledge. Several universities have tried and tested web-based solutions, including eLearning, group forums, blogs and video sharing as tools to create a student-centric learning environment, where students themselves create the critical and cognitive skills that higher education aims to develop [13, 14]. All of these technologies have been used extensively in academic settings to capture and share knowledge more effectively. Academic staff, who may be considered as experts of in their fields of study, have used eLearning and social media technologies to capture, prepare and share knowledge content within clearly defined groups [15].

This research project aims to use the same principles of eLearning and social media to capture and share knowledge; the key difference, however, is that industrial experts will be employed as opposed to academics. It may be argued that an industrial expert might not have the same level of expertise as an academic and, therefore, might not be able to develop suitable structures within knowledge contributions for effective knowledge transfer; similarly, they may not be able to use eLearning and social media technologies as effectively.

Nevertheless, these industrial experts are already transferring knowledge to their peers using traditional direct communication and face-to-face methods; therefore, they are already transferring knowledge effectively in an informal manner. As for eLearning and social media tools, most of these are already being used by industrial experts on a daily basis when, for example, they are browsing the internet and using smart phones. Accordingly, it is the researchers' opinion that these industrial experts are the ideal people to capture knowledge, as 1) they are the experts in their fields and 2) if user friendly tools are developed, these knowledge experts will find it difficult to capture required knowledge in a structured electronic format.

2.1. Social Media, Storytelling and Video Sharing tools for Learning and Knowledge Transfer

Web 2.0 and social media tools are widely used today in our daily lives, providing opportunities for people to communicate, learn together and share their experiences [16], with software applications such as Facebook, YouTube and Twitter being readily available. These applications have emerged as main steam communication channels for people to communicate, collaborate and share daily experiences all over the world like never before. They have, however, changed the way our planet communicates.

Macaskill and Owen [17] defined Web 2.0 as a web-based platform which allows users to gain access, contribute, describe, harvest, tag, annotate and bookmark Web-mediated contents in various formats, such as text, video, audio, picture and graphs. Anybody with minimal ICT skills can contribute and share their information [18]. According to Moron-Garcia [14], the use of web-based technologies can facilitate the creation of student-centered learning environments. Learning environments, designed with reference to constructivist theories of learning, will embed in students the critical and cognitive skills that higher education aims to develop [13, 14].

Reamy [19] suggested that storytelling is the best way to transfer tacit knowledge, conveying information and context in a form that is easy for other people to understand. According to LeBlanc and Hogg [20], stories make information more meaningful, making tacit knowledge more explicit and allowing information to be organised into learnable chunks. This method was also suggested by Martin-Niemi and Greatbanks [21] who proposed using storytelling with new generation Web 2.0 technologies, providing individualised and customisable user experiences which included virtual social interactions, shared collaborative portals and communication tools; however, it was not implemented during their research.

An ideal medium to capture and share storytelling is video sharing. Balcikanli [22] concluded that YouTube, a video sharing website, can be integrated as an effective tool for learning due to its ease of use and its connection to an abundance of video clips that not only teach, but also demonstrate the cultural context in which the material can be properly applied to.

3. Industrial Requirements and Created Knowledge Framework

An extensive industrial investigation was carried out with a global OEM company with design and manufacturing plants in the UK. The main outcomes of this investigation