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Using Microblogging for Lessons Learned in Information Systems Projects

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ABSTRACT

According to the Standish Group (2011), 66% of projects fail, while 75% of the successful ones are managed by experienced project managers (PM). These PMs document their experience in the form of stories to facilitate knowledge capture (Jonassen and Hernandez-Serrano, 2002); however, while 62.4% of the organizations have formal procedures for documenting lessons learned (LL), 89.3% of the organizations are not doing so (Williams, 2008). The problem, therefore, is how to facilitate the capture of project knowledge from the experienced PMs and transfer it to the novice PMs. A new information and communication technology (ICT) called microblogging is an effective tool for capturing and disseminating usage practices (Zhang, Qu, Cody and Wu, 2010); however, it has not been studied yet for the purpose of capturing and transferring project knowledge in organizations. This paper proposes research to validate whether microblogging is a useful platform for knowledge creation of LL in projects.

Keywords

lessons learned, microblogging, knowledge capture, knowledge reuse, project learning

INTRODUCTION

Information systems (IS) projects are characterized by limited resources, definable costs, and specific time frames to complete their mission. They are led by project managers, who have the duties to identify the project mission, acquire executive support, find and form the project teams, communicate with all stakeholders, and plan and execute the project's mission. Projects are regarded as separate organizational entities where skilled employees work together to complete innovative tasks within a specified period. During their execution, experienced project managers rely on past knowledge to avoid potential risks in completing the mission (Petter and Vaishnavi, 2008). They apply effective techniques to give the organization a competitive advantage by optimizing resources to deliver the objectives and facilitate knowledge-based decision-making and an collaboration between organizational departments. Effective project management contributes to improvement in organization's operations, reduction of intraorganizational conflicts through communication, and achievement of organizational agility.

The temporal nature of the project work yields frequent and numerous lessons that can be captured, studied, deconstructed, and used by others as models. This temporality generates a dynamic, transferable, easy-to-share knowledge that can be reapplied over and over again in other project assignments, by other teams and in other departments, leading to the increase of enterprise wide organizational learning (OL). Yet, IS projects do not survive in a vacuum. They are part of a large number of organizational interrelated systems where history plays an integral role. They foster learning and create change in organizational groups as a result of accumulated experience. Project teams learn from this experience and can become conduits of knowledge for other groups (Nazari, Mortaheb and Aghalou, 2012). Without an appropriate knowledge system and supporting culture during the project's execution, knowledge assets are lost when resources disperse. This results in knowledge destruction and loss of OL (Jugdev, 2012). While organizations can rely on established routines to create knowledge, projects lack these transfer mechanisms and organizational memory due to their temporal nature (Ajmal, 2009). Therefore, LL must be captured during project execution to improve learning among the inexperienced PMs. Despite this obvious need, 89% of organizations do not follow their internal processes to document such lessons primarily due to lack of time, loss of resources, or project amnesia (Schindler and Eppler, 2003; Williams, 2008).

As a result, this paper proposes a study to examine whether microblogging can be used as a way to capture IS project lessons at the time of their occurrence. It contributes to the project management body of knowledge as it is the first to examine the use of a microblogging platform for instantaneous project knowledge capturing.

The rest of the paper is organized as follows: first, an overview of learning in projects is performed with particular focus on lessons learned as a tool for knowledge creation. This is followed by an analysis of microblogging as an ICT tool for the purposes of knowledge capturing. Next, the study's research questions are proposed followed by a discussion on how the study would be conducted and what constructs would be measured. The paper concludes with limitations and recommendations for future research.

LESSONS LEARNED

Learning is a critical factor for change and innovation (Bakker, Cambre, Korlaar and Raab, 2011). Lewis, Lange, and Gillis (2005) showed that knowledge learned in prior tasks and embedded through transactive memory systems (TMS) can be applied by project members in new projects. This occurs through the creation of abstract comprehension of the domain in which the teams operate. Their study showed that teams' knowledge from prior projects (TMS in this case) were more likely to develop an abstract procedural understanding of the domain, which becomes critical for learning transfer to occur. Teams sustained successful performance based on knowledge developed through another project. This result demonstrates that TMS developed during project execution retains benefits even after the initial project, as the documented knowledge can be successfully reapplied to other projects. As a result, TMS in projects can facilitate learning and learning transfer. When group members accumulate experience, they create knowledge that didn't exist for any of them at the beginning of the project (Goldman, Plack, Roche, Smith and Turley, 2009). Learning from the procedural experiences of others has been demonstrated to facilitate knowledge transfer among project teams (Newell, 2004).

According to the Project Management Institute (2008), a useful tool for project learning is documenting lessons learned. These have been shown to serve as a positive impact on the project's knowledge management effectiveness (Lindner and Wald, 2010) and are considered transferable from the individual to the project team (Williams, 2008). In practice, lessons are usually documented at the completion of each phase or the end of a project during a postmortem review meeting. Unfortunately, the majority of projects do not keep archives of accumulated experience that details successes and failures. Williams demonstrated that while 62.4% of the organizations have formal procedures for documenting lessons, 89.3% of the organizations are not doing so. A number of factors impede the process of knowledge transfer. These include pressure to complete a project, inadequate desire to learn from prior mistakes by the team members, undocumented team project experiences, insufficient knowledge on methods of debriefing, ignored use of past codified experiences, and inability to host debriefing sessions due to loss of project resources (Schindler and Eppler, 2003). These factors are further supported by Williams who found that 67% of PMs lack sufficient time to document LL. Creating post-project review documentation is seen as a ritualistic, bureaucratic procedure that frequently neglects to capture important lessons and requires an extensive amount of time to conduct (Basri and O'Connor, 2011; Fuller, Dainty and Thorpe, 2010; Goffin and Koners, 2011; Mainga, Yan, Hamde and Blomquist, 2011; Swan, Scarbrough and Newell, 2010; von Zedtwitz, 2002). When lessons are not documented, PMs assigned to new projects, or troubled projects, have no way to determine what pitfalls to avoid, or what decisions didn't work in the past. If PMs do not learn from the past, they could end up committing similar mistakes. As a result, there is a need for a continuous capturing and sharing of 'fresh' lessons between experienced and novice PMs during the course of project lifecycles.

83% of surveyed project managers prefer stories as a method for capturing lessons learned (Williams, 2008). Stories are narratives that provide a timeline of what occurred, means for a storyteller to express identity, strengthen the bond in a community of practice, assist with decision making, and solve project problems by applying past experiences to solve new problems (Amoah, 2012; Briody, Pester and Trotter, 2012; Caminotti and Gray, 2012; Hawkins and Saleem, 2012; Jonassen and Hernandez-Serrano, 2002; Parada and Viladas, 2010). However, traditional stories are lengthy and require time to compose. Since time is a constraint, shortening their length and increasing their frequency can address this problem.

Proper ICT infrastructure has been shown to facilitate knowledge creation and enhance organizational learning (Lopez-Nicolas and Soto-Acosta, 2010). A new ICT called microblogging has emerged in recent years and already has proven to be an effective tool for capturing and disseminating usage practices by allowing users to post short stories via small but frequent posts (Duh, Hirao, Kimura, Ishiguro, Iwata, and Yeung, 2012). While composing microblogging posts demands less time than a traditional story, there is considerable lack of research on whether it can be used for the purpose of capturing and transferring project knowledge in organizations.

MICROBLOGGING

Willke (1998) proposed the use of micro-articles to document project experiences. This process involved documentation of the project experiences via the use of small articles (usually half a page). The method of writing was done in an informal way that incorporates reflection. Willke suggested the articles have topics, short introductions and a keyword for the purpose of indexing. He also recommended a database to store the articles and a company's intranet site to transfer them to others. The goal of the micro-articles was to demonstrate that lessons learned during the project execution were recorded in an entertaining manner. Petter and Vaishnavi (2008) developed an artifact to test Willke's model and discovered that 64% of participants learned from the narratives; however, only 9% were willing to contribute stories due to time and degree of effort required.

Typical microblogging platforms, such as Twitter, limit the character length of each post; however, despite this limit, Yang and Chang (2011) demonstrated that short microblogs are sufficient to allow the development of meaningful, reflective stories that can help foster a sharing culture. Additionally, Ebner and Maurer (2008) showed that microblogging leads users to deeper cognitive engagement and dialogue, which supports process-oriented learning through rapid feedback. Microblogging has been shown to facilitate the transfer of learning between formal and informal learning contexts (Ebner et al., 2010). It fosters a metadiscursive practice, as each new user adds responses to a particular post (Mills and Chandra, 2011). This supports the idea of reflective contributions of readers toward lessons-learned stories as posts associated to a single feed.

To illustrate how microblogging can assist PMs with capturing lessons, the work of two human resources generalists at an HR department are compared. The first one, human resources generalist (HRG), is involved with the general operations and duties of the HR department (e.g. hiring personnel, retirement training, etc.). The second HR generalist, human resource generalist PM (HRGPM), is assigned as a new PM to implement a new hiring process at the department in order to improve retention. HRG will capture lessons related to the day-to-day operations of the HR department, such as: how to complete termination reports; how to engage employees during training, and common issues and lessons associated with the hiring of personnel. Since HRG's general duties are not schedule dependent, they are not temporal in nature (e.g. HRG may hire three employees this week, terminate two, and perform two training sessions). HRG may engage in capturing lessons learned during the completion of the duties, but these lessons would be specific to the HR domain and in most cases will not be useful to other employees from different departments (e.g. a financial analyst in the Finance department). HRG's lessons may not lend themselves for capturing via microblogging because they may be longer, or procedural in nature. These lessons may need to be captured via lengthier descriptions that lead to changes in procedural documents, or updates to the employee handbook. In this case, knowledge transfer will not be facilitated via a microblogging KMS.

In contrast, time driven tasks belong to a temporal domain where HRGPM will be engaged in negotiations with other department heads to obtain the necessary employees for his team, or be concerned with task durations, and task costs. In this scenario, HRGPM's knowledge capture will include lessons on how to form teams with minimal effort, how to create project schedules, how to estimate task costs, or how to find team members with the right skills. Each of these lessons lends itself to short, quick microblogging notes that could spark a reminder, or an online discussion for further reflection after the project is completed and can be easily filed in the microblogging KMS. In addition, each lesson is applicable and transferable to PMs in other departments (e.g. an analyst assigned as PM in the financial department on a two-month assignment to develop a more efficient way of tracking expenditures). The same lessons captured by HRGPM can transcend the domain of HR and can be applied to the sales department where another sales PM is looking to develop a new sales strategy with a 10-person team for a market territory.

Figure 1 shows a sample approach to capturing lessons. The spiral represents lessons captured at specific time frames. In the first project, HRGPM forms project team 1 (PT1) and works on the 4-week assignment (t0), capturing lessons via microblogging. A second project begins, and a new team (PT2) starts work. This team reuses lessons learned from PT1 and captures new lessons. At the same time (t1), another project begins that involves PT3. This team is reusing lessons from both PT1 and PT2 and is also sharing lessons that now PT2 can reuse. Each team is communicating via microblogging and is capturing lessons. This spiral process continues at various times (t2 through tn) for various other project teams (PT4 through PTN). The lessons from the projects captured at the HR department can be simultaneously used by other project teams from other departments.

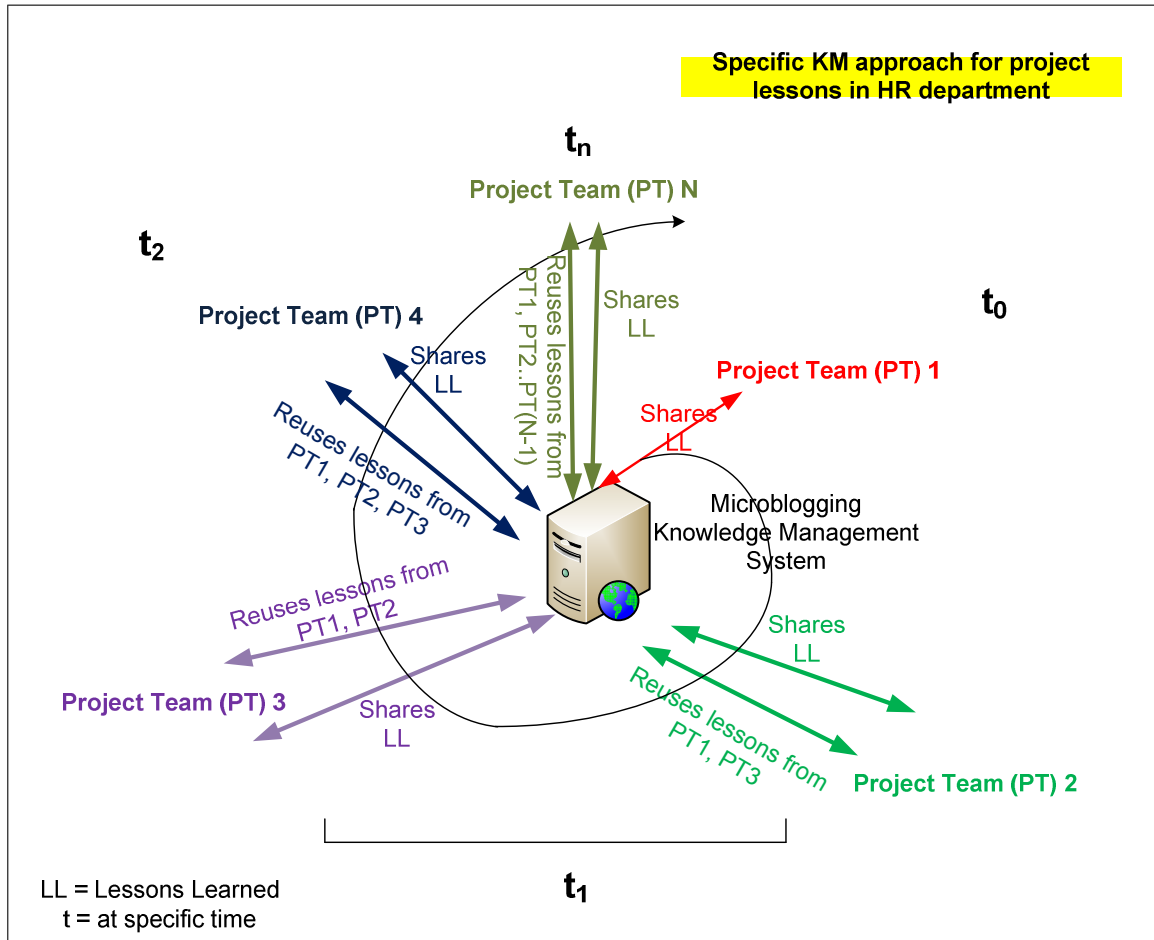


Figure 1: Specific KM approach for project lessons in the Human Resources department

RESEARCH QUESTIONS

Based on the argument that microblogging can facilitate simultaneous capturing and reuse of lessons in projects, this paper proposes a study to examine the extent to which PMs will use it for documenting lessons. The study seeks to address three research questions:

RQ1: To what extent will microblogging be accepted and used for capturing LL in projects?

RQ2: To what extent microblogging lessons result in knowledge reuse?

RQ3: How significant are the time savings for capturing microblogging lessons when compared to lessons captured via the traditional post-project review method?

DISCUSSION

To perform the proposed study, an enterprise microblogging platform called Yammer will be used as the ICT tool. Yammer allows longer posts than Twitter's 140 character-limit. It also allows attachments, forum discussions, and posts to be associated to a single feed and to combine multiple feedbacks by different users related to a similar theme or event (Zhang et al., 2010). Since the primary constraint for documenting LL is time, the use of microblogging can address that problem by not only shortening the length of the stories (and therefore the time to create them), but also by broadening the content of stories as a result of contribution by numerous different users.

To address RQ 1, a qualitative study is proposed with a survey as the instrument to collect data. The goal of the survey will be to determine the usability of microblogging as a tool to capture knowledge. The questions in the survey will be structured to measure the constructs of the Unified Theory of Acceptance and Use of Technology (UTAUT) developed by Venkatesh, Morris, Davis and Davis (2003). These include:

- Perceived Usefulness (whether users see the microblogging tool as enhancing to the process of capturing lessons learned);
- Job-fit (whether the microblogging tool can decrease the time it takes to complete the lessons learned capturing process);
- Relative Advantage (whether the microblogging tool is seen as an improved way to capture lessons compared to the existing post-project review process);
- Outcome Expectations (whether there is an expectation that the tool will increase effectiveness, decrease time, increase quality, and increase quantity of output of the capturing lessons learned);
- Perceived Ease of Use (believing that microblogging lessons will be free of effort);
- Complexity (how difficult the microblogging tool is understand and use for lessons capturing);
- Ease of Use (perception of whether microblogging can be used for lessons capturing);
- Perceived Behavioral Control (perceptions of constraints on behavior to use the microblogging tool as lessons learned, including self-efficacy, resource facilitating conditions, and technology facilitating conditions);
- Compatibility (degree to which microblogging tool for capturing lessons is perceived as in harmony with values, needs, and experiences of users);
- Attitude Toward Behavior (the user's positive or negative feelings about using the microblogging tool for capturing lessons);
- Intrinsic Motivation (whether users want to engage in capturing lessons learned for no apparent reason);
- Affect Toward Use (whether the tool can make users' work more fun or interesting to capture lessons);
- Affect (the users' liking of using microblogging for capturing lessons learned), and
- Behavioral Intention.

These constructs are of particular interest because they were tested by Venkatesh et al. (2003) and proven to be the best determinants of user behavior. It is argued in this paper that the results of the survey will be able to answer RQ1.

To test RQ2 and RQ3, a quasi-experimental pretest-posttest design study is proposed with a non-probability purposive sample of PMs (Sekaran and Bougie, 2009). In particular, the sample will be purposive and homogeneous in nature (in which sampled people share the same occupation, in this case PMs). As demonstrated by the literature review, lessons learned in project management are key assets and input into the many knowledge areas of the project lifecycle. Project managers who use the Project Management Institute's Body of Knowledge (PMBOK) as a guide to manage their projects are encouraged to document lessons learned. The fact that nearly 90% are not doing this in their organizations represents a problem for the project management community (Williams, 2008). Using a purposive sampling from members of the project management community will help determine whether microblogging can be an acceptable method and platform to use for the capture of knowledge.

Two prior studies will be considered as models for the proposed approach. The first one is the TMS study conducted by Lewis et al. (2005), where participants were split into groups and asked to assemble different products followed by the structured interviews. The second study was conducted by Petter and Vaishnavi (2008) who sought to determine conversion of software project tacit knowledge between project managers via wikis and online forums. In it, the treatment group was interviewed (pretested) by exposing the participants to a hypothetical project scenario and asked to provide feedback on how they'd react. Next, participants were exposed to wikis with specific project knowledge. Finally, the participants were interviewed (posttested) on the same scenario to determine whether they changed their reaction (i.e. whether knowledge transfer had occurred).

Similarly, participants in the proposed study will be assigned to groups. Group A will be given one hour to work on a small project and capture LL via microblogging. Group B will be asked to complete the same assignment; however, they will be asked to compile a LL document at the end of the assignment. Group C will be allowed to monitor Group A's microblogs and engage in discussions with the group (via microblog postings). Once Group A has completed its assignment, Group C will be asked to start a similar assignment and be given one hour to complete

it. As soon as Group B has completed their assignment and captured LL in a post-project review document, they will be given to Group D, who will be given an hour to complete a similar assignment. Group D's assignment will begin the moment they receive the document.

Following the assignment, Group B will be interviewed to determine: 1) whether access to Group A's microblogs resulted in the acquisition of new knowledge; 2) the number of lessons Group B reused as a result of Group A's microblogs; 3) whether Group B saved significant time to complete their assignment by using the microblogging lessons and if they would use microblogs in the future as tool to capture LL. Group D will be interviewed to determine: 1) whether the traditional LL document from Group C transferred knowledge to Group D to complete their work, and 2) whether Group D members had enough time to complete the assignment after having to read Group C's LL document first before they started their assignment.

CONCLUSION

This paper proposes a mixed study approach in order to generate sufficient data to determine the usability of microblogging as a tool to knowledge creation and knowledge transfer among PMs. An inherent limitation of microblogging is it doesn't offer sufficient user privacy as sharing lessons about sensitive management decisions, and opinions about stakeholders could be misconstrued by some readers (Grace, Zhao and Boyd, 2010). According to a focus group study, privacy concerns were the most frequently mentioned construct for microblogging adoption in the enterprise (Gunther, Krasnova, Riehle and Schondients, 2009). Therefore, future research should focus on determining what ubiquitous privacy enhancing features can influence a user's choice to share knowledge (Cleveland, 2012).

In conclusion, the proposed study is believed to be the first to apply microblogging as a tool to address the growing knowledge creation need of the enterprise. This research will hopefully set the stage for investigating these and other important questions for more effective and efficient knowledge creation processes.

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