Project Knowledge Retention in Social Messaging Application

Shahrinaz Ismail
Universiti Kuala Lumpur, Malaysia, {shahrinaz@unikl.edu.my}

ABSTRACT

Project knowledge is as important as organisational knowledge since it is at the operational level of an organisation. The common ways of retaining knowledge from key employees are merely performed when the people intend to leave the organisation, whereas the retention of knowledge should be done on-goingly during the implementation of projects and tasks. It is also to mitigate knowledge loss during the process of project implementation. With the current technology of social messaging applications being taken for granted as communication tool alone, little did we realise the potential of the tool to be knowledge repository as well. Hence, this research analyses the commonly used social messaging application to understand the personal knowledge management processes within the conversation, in which the signs of knowledge retention happens. Qualitative data gathered from the conversation scripts is analysed to produce quantitative results. The outcome of this research is a proposed measurement technique for project knowledge retention in social messaging application, in which the mapped weightage of personal knowledge management processes is recommended to be used in project knowledge retention scoring model.

Keywords: Project knowledge retention, personal knowledge management, GUSC Model, social messaging application, communication pattern.

I INTRODUCTION

One usually hears knowledge retention and knowledge loss when losing or about to lose key employees from an organisation, hence the techniques like exit interviews are conducted to capture their knowledge with the hope that it could be retained and reused by others in the organisation. Yet, how much of this knowledge is retained and reused?

Knowledge retention is important to mitigate knowledge loss not only in an overall organisational level but also at project level, especially for an organisation that often organises events or projects at almost all functional units and management levels. The recurring of the same event may or may not happen, hence the need for knowledge retention is often disregarded.

Although it is often being related to organisational memory, by defining knowledge repositories, i.e. individuals, culture, transformations, structures, and external activities (Walsh & Ungson, 1991), with the advancement of Internet technologies, it is believed that the knowledge repositories should include technology as well. This paper suggests that social messaging applications are the emerging tools or technology that could play a role as knowledge repositories for knowledge retention too.

The purpose of this research is to put forward the possibility of measuring project knowledge retention to mitigate knowledge loss, by answering the main research question: "How to measure project knowledge retention in social messaging application?" In achieving this, the research objectives are as follows:

- To analyse the processes of retaining project knowledge in social messaging application
- To propose a measurement technique for project knowledge retention in emerging technology.

II RELATED WORK

The scope of this research is applying the concept of project knowledge retention by looking into personal knowledge management (PKM) processes over social messaging application. Therefore, this section is divided into two major parts: Project Knowledge Retention; and Social Messaging Applications.

A. Project Knowledge Retention

A strategy for knowledge retention speaks of identifying the "knowledge resources that are at risk and must be retained, and then implement specific initiatives so as to keep these resources in the firm" (Frost, 2013). In doing so, organisations should identify the knowledge that is at risk of loss, the effect it will have, and how it can be retained (Doan et al., 2011).

Despite the well-planned strategy, it still faces the same challenge as the other knowledge management (KM) related processes and strategies. The success of knowledge retention strategy "depends upon successful knowledge sharing and having knowledge sharing and learning organisational culture" (Frost, 2013) embedded in the system. Since not much references were found on knowledge retention, this quote by Frost (2013) on

knowledge sharing is taken as a key indicator for this research.

With the advancement of technology, emerging tools came into picture as the come in handy to facilitate the effort of retaining knowledge within an organisation as well as in projects. Tools and technologies have been the drivers that enable KM efforts, especially in knowledge sharing and retrieval. Among the tools that support formal and informal knowledge networks for knowledge sharing include social media, web conferencing, expertise locator, and such (Frost 2013; Smith, 2007; Liebowitz, 2009; Liebowitz, 2011).

Among the list of knowledge loss risk factors includes "little informal communication in the organisation" (Liebowitz, 2011). Since then (i.e. year 2011), the advancement of Internet technology has enabled employees to create informal groups within the palm of their hands, at the same time provided the solution to this knowledge loss risk factor. Such mobility comes in handy, with the emerging social messaging applications, such as WhatsApp™, Telegram™, WeChat™, and Viber™. However, this trend receives less attention from the research side, especially in relating the usage of the applications with knowledge retention.

Recent study on personal knowledge management (PKM) has embarked into the world of social messaging applications. Being under the domain of knowledge management, PKM focuses on how employees manage knowledge at individual level, as well as managing knowledge over the Internet technologies (Grundspenkis, 2007; Jarche, 2010; Martin, 2000; Avery et al., 2001; Pettenati et al., 2007; Razmerita et al., 2009; Ismail & Ahmad, 2012a). This domain of study could be used to analyse knowledge retention further, especially in the usage of social messaging applications, which also use the Internet technologies.

Out of various models in PKM, GUSC Model (Ismail & Ahmad, 2012a) is found suitable to be adopted to understand the processes of retaining knowledge within a social messaging group, based on the previous works done in recent years. GUSC comes from the word Get-Understand-Share-Connect, which basically defines the PKM processes found existing in the technology usage (Ismail & Ahmad, 2012a). Recent research has proven that PKM processes exist through the pattern of sharing and managing knowledge among employees, especially in managing a team at different levels of management (Ismail & Ahmad, 2015). GUSC Model (Ismail & Ahmad, 2012a) is found suitable for this research due to its justification across other PKM models (Ismail & Ahmad, 2012b) and the renowned SECI Model by Nonaka and Takeuchi (1995) (Ismail & Ahmad, 2012a). Figure 1 shows the comparison across the PKM models, as mapped to the GUSC Model.

	PKM Processes by Ismail & Ahmad (2012)			
	Get / Retrieve	Understand / Analyse	Share	Connect
McFarlane (2011)	• Acquired • Readily Retrieved • Stored	• Internalised • Categorised • Classified		• Readily Accessed
Jarche (2010)	• Aggregate	• Understand		• Connect
Razmerita, Kirchner & Sudzina (2009)	• Create	• Codify • Organise	• Share • Collaborate	
Verma (2009)	• Find	• Learn • Explore		• Connect
Grundspenkis (2007)	• Gather • Search • Retrieve • Store	• Classify		
Pettenati, et al. (2007)	• Create	• Organise	• Share	
Avery, et al. (2001)	• Retrieve	• Evaluate • Organise • Analyse	• Collaborate • Present	• Secure

Figure 1. Comparison of PKM Processes Across Models.

As shown in Figure 1, the PKM processes postulated in GUSC Model (and adapted for this research domain) are as follows (Ismail & Jamaludin, 2016):

- ***Get knowledge (G)***: Group members get or retrieve explicit knowledge in various forms from others in the social messaging application group;
- ***Understand knowledge (U)***: Group members understand or analyse, as well as make sense of the knowledge they get, by verifying, confirming, getting assurance, and commenting in the social messaging application group, in which this knowledge becomes tacit to them;
- ***Share knowledge (U)***: Group members share explicit knowledge in various forms, that are converted from their own tacit knowledge; and
- ***Connect to knowledge source (C)***: Group members connect to others by accepting or responding to the messages posted, and connect to other knowledge sources as well (e.g. links to data, information, people, etc.) that others share in the social messaging application group.

Project knowledge management could be measured using the GUSC Model (Ismail & Jamaludin, 2016), especially in analysing the link between Share (i.e. a user's willingness to share knowledge) and Understand (i.e. ability to understand the knowledge better) knowledge (Ismail, Othman & Ahmad, 2014). One way to do this is by using measurement scoresheet and formulas on GUSC weightage calculations (Ismail & Jamaludin, 2017). GUSC weightage would lead to GUSC percentages on the elements under research (e.g. project knowledge

retention) and on the overall project (Ismail & Shaikh Ali, 2017).

The possible final outcome could be the project knowledge health, which is common in project management status report with common criteria of time, cost, resources, scope, quality and actions (Turbit, 2005). Ismail and Shaikh Ali (2017) recommended that "project knowledge could be included as one of the criteria, to gauge the project health as well". This would ensure that the knowledge is retained within the project and organsiation, and further mitigates knowledge loss when any of the project members leaves the group.

B. **Social Messaging Application**

Potential communication conflict in an organisation could be avoided by practicing openness and transparency in communication, especially when the communication channel is used to let the employees be more aware of the company's direction, the business strategies and the decision that has been made (Budd & Velasquez, 2014). On top of that, trustfulness and active communication from the members of the organisation is a must to acquire knowledge from people involved in knowledge generation, knowing that knowledge is the most valuable resource (Mazzei, 2010).

In a situation where employees are categorised by organisational variables, such as level of involvement and specific knowledge in specific area (Mazzei, 2010), the need for a strategy to retain knowledge is critical and ease of communication is one of the keys to mitigate knowledge loss. With the need for knowledge sharing among the different sets of employees with different knowledge capabilities, it is important to promote active communication behaviour through appropriate interactive communication tools (Mazzei, 2010). With the current trend of social messaging application usage and organisational support on its usage, there is a change in communication pattern among the knowledge workers. Among the positive change is the willingness to communicate more that leads to improvement in willingness to share knowledge, making it easier to report and update on project progress (Ismail & Ahmad, 2015).

As one of the popular social messaging applications, WhatsApp™ is adopted largely by people around the world due to low cost, ability to send unlimited number of messages, immediacy, the desire it makes people feel to be part of the trend since everyone known to them has adopted its use, and capacity to conduct on-going conversation with multiple people simultaneously (Church & Oliveira, 2013). The vast usage of WhatsApp™ services is due to its use that comes naturally to people of all ages, mainly adults and teenagers, in their daily lives (Bouhnik & Deshen, 2014). It is easy to use, no prior training is required since it is an upgraded version of short messaging system (SMS) that has been part of every mobile phone users in the past. Social messaging application is a hybrid of SMS functions and social networking features, which makes it a better choice for daily communication.

As revealed by Church and Oliviera (2013), WhatsApp™ enables the users to chat, do quick catch-ups, coordinate and organise, as well as share personal news and life events. The application is heavily used for planning and coordination, real-time. Issues could be solved as soon as they is discovered as well (Ismail & Ahmad, 2015), since everybody involved in the project is in the same social messaging group. Functions and features of WhatsApp™ that could enable decision-making on-the-go and instant reporting (Ismail & Ahmad, 2015) include voice messaging (i.e. audio files), text messaging (i.e. text files), multimedia sharing (i.e. image and video files), document sharing (i.e. documents in common working file formats), and also location sharing (i.e. map with longitudinal and latitudinal coordinates). These communication files can serve as proof in the events that they are needed, and the WhatsApp™ group indirectly serves as the knowledge repository.

III METHODOLOGY

As mentioned in the Introduction, the research objectives are to analyse processes of project knowledge retention in social messaging application (i.e. WhatsApp™), and to propose a measurement technique for knowledge retention. The measurement technique could be in a form of weighted score with weightage defined for each PKM process to measure whether knowledge retention eixists. The weightage of the PKM processes (i.e. GUSC processes) is expected to be different for different scenarios depending on the usage of technology. As mentioned in the beginning, WhatsApp™ is often used almost as a default social messaging application to create groups for managing project knowledge, especially at the case organisation.

In order to achieve the research objectives, this study performed a series of steps (shown in Figure 2), from sample groups selection and scenarios identification, to GUSC processes mapping and recommendation of knowledge retention measurement.

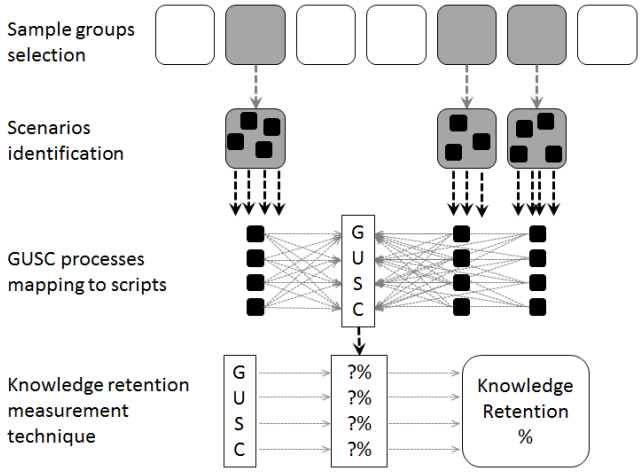

Figure 2. Research Settings and Processes.

As shown in Figure 2, three WhatsApp™ conversation scripts were randomly selected as samples. Even though it was randomly selected, each script represents the communication levels exist in an organisation, as mentioned by Ismail and Jamaludin (2016). The selected scripts (which consist of thousands of lines) were analysed to identify significant scenarios, in which knowledge was being managed within the group. Scenarios are based on certain events or situations in which knowledge is required to be shared (S), retrieved (G) and understood (U), hence the connection (C) among the group members are vital in the processes during certain period of time. There are many scenarios found existed in a group sample, hence selection had to be made on scenarios that best fit the effort shown to retain knowledge within the project group.

For each scenario, the processes of G, U, S and C were idenfitied and mapped against the scripts. Respective weightage of each GUSC processes was determined based on suggestions made by Ismail and Jamaludin (2017). From the analysis on GUSC mapping against the scripts, the knowledge retention measurement technique is derived and proposed.

IV RESULTS AND FINDINGS

From the first two steps mentioned in Figure 1, the selected three social messaging groups were given code names MGT, MMC and STF. A number of scenarios were identified for each group, and they too were given code names starting from the group codes MGT, MMC and STF. In order to ease the scenario analysis, the scenarios were categorised according to selected WhatsApp™ usages based on those proposed by Ismail and Jamaludin (2017). The number of identified scenarios for each group code are as shown in Table 1.

Table 1. Scenarios Identification by Group.

Social Messaging Group Code	WhatsApp™ Usage	Number of Scenarios
MGT	Idea sharing	2
MMC	Clarification	3
	Notification	2
	Information sharing	1
STF	Task delegation	1
	Information sharing	2
	Notification	1

From the results in Table 1, the WhatsApp™ usages were mapped against the GUSC processes. Each GUSC process was tagged on each sententce or group of sentences found in the scripts of the identified scenarios. Table 2 shows the summary of results of this mapping, with the average of each PKM process is calculated based on the number of scenarios occurred for each WhatsApp™ usage. For example, three scenarios identified from the MMC script that represent the WhatsApp™ usage for 'Clarification' (as in Table 1), and the average of each G, U, S and C mapping from these three scenarios give a result of 14.24 percent for both Get and Understand knowledge, 100 percent for Share knowledge, and 18.16 percent for Connect to knowledge source (as in Table 2). These average values are then calculated into a general average value for each G, U, S and C, followed by rounding them into 100 percent value to be proposed as weightage for knowledge retention, giving the result of 12 percent for G and U, 58 percent for S, and 18 percent for C.

Table 2. GUSC Mapping and Proposed Weightage.

Scenario Code	WhatsApp™ Usage	PKM Processes (%)			
		G	U	S	C
MGT	Idea Sharing	16.16	16.16	100	31.82
MMC	Clarification	14.24	14.24	100	18.16
MMC	Notification	18.24	18.24	95.99	35.33
STF	Information Sharing	21.52	21.52	96.97	30.61
STF	Task Delegation	33.33	33.33	100	33.33
Average		20.70	20.70	98.59	29.85
Average (%)		12.19	12.19	58.05	17.58
Proposed Weightage for Knowledge Retention		12.00	12.00	58.00	18.00

Derived from Table 2, Figure 3 shows the graphical representation of the GUSC weightage found

existed in the identified scenarios in the three selected scripts (as mentioned in Figure 2 and Table 1). From the GUSC mapping, the knowledge retention is expected to be high during 'Task Delegation', in which knowledge retained during this scenario or activity could contribute to the way to delegate tasks with the details of the tasks to assign. Based on this example, it does not mean that 'Clarification' scenario does not contribute to knowledge retention, but the weight of each GUSC process may not be as high as the former one.

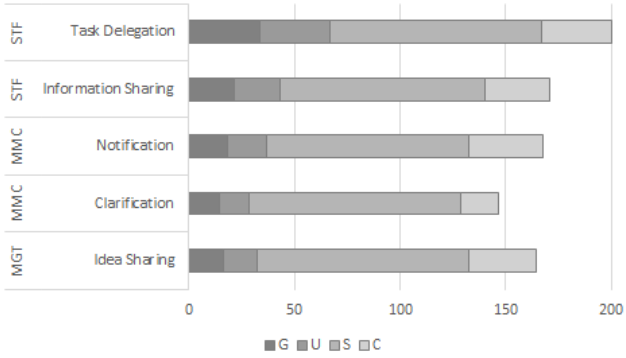

Figure 3. GUSC Weightage Derived from WhatsApp™ Usages.

As mentioned above, Table 2 shows the average values of the GUSC processes, and the proposed weightage of GUSC for project knowledge retention. The idea is to gauge whether efforts to retain project knowledge is in place within the social messaging application, based on these values that can be used as weighted score. Hence, this proposed weightage can be used as a guide to gauge them.

V DISCUSSIONS

As discussed in the Results and Findings, this research has gone through a series of steps to get to the GUSC average to be proposed as the guide on whether knowledge retention happens within a project group. In general, the percentage of Share (S) is the highest among the four PKM processes, with the weightage of 58 percent. This is followed by the Connect (C) process, with the weightage of 18 percent.

Although the optimum weightage of Understand (U) should be as high as Share (S), it receives a low percentage in this research, which is 12 percent. However, it is at the same percentage as Get (G), which is also acceptable because the proof from the social messaging application would show the Get (G) process as also proof for Understand (U) process. In other words, a project member would only respond stating that he or she has received the information clearly (G) as another way to say that he/she has understood (U). Unless the project member further clarifies or reiterates the knowledge he/she has learnt from the message he/she receives, then the percentage of Understand (U) would be higher. Yet, for overall conversation patterns, or WhatsApp™ usages, the average percentage of Understand (U) becomes equal to Get (G) knowledge again.

Reflecting on the graphical information shown in Figure 3, it is quite a surprised to find that 'Information Sharing' and 'Idea Sharing' activities contribute weights that are not as high as 'Task Delegation'. This could be due to the sharing process that was found less occurred in the messaging groups It could be because of lack of trust among the project members, or negative perception of having the idea or information not required or good enough to be shared in the group. This could be an area to be further investigated in future research, in which the habit of private messaging certain members outside of the formed group is observed to happen very often.

Nevertheless, the main question on project knowledge retention is whether or not knowledge is shared enough in the project group. With the number of information and knowledge shared (both explicit and tacit) in the group, the WhatsApp™ group (or any other social messaging application with similar functions and features) could qualify as knowledge repository for knowledge retention.

VI CONCLUSION

This research has brought up the idea of having social messaging application as a tool to mitigate knowledge loss by retaining knowledge and using it as knowledge repository. It is based on a series of studies and methodologies, combining different areas of research, such as personal knowledge management, communication patterns (or social messaging application usages), and social messaging application usage. It is recommended that the future work performs a quantitative survey to further validate the proposed scoring weightage for project knowledge retention over social messaging application. Since this study only covers one social messaging application due to the significance of the WhatsApp™ over-usage for project knowledge retention in current situation, it is also suggested that the quantitative survey covers all social messaging applications as well.

REFERENCES

Alan, F. (2013). Knowledge Retention, KM from A to Z: Knowledge Management Tools. Retrieved from: http://www.knowledge-management-tools.net/kr.html

Avery, S., Brooks, R., Brown, J., Dorsey, P., & O'Connor, M. (2001). *Personal knowledge management: framework for integration and partnerships*. Proceedings of the Association of Small Computer Users in Education Conference, 29-39.

Bouhnik, D., & Denshen. M. (2014). WhatsApp goes to school: Mobile instant messaging between teachers and student. *Journal of Information Technology Education: Research, 13*, 217-231.

Budd, J.M., & Velasquez, D.L. (2014). Phenomenology and organizational communication. *New Library World*, *115*(7/8), 394-404.

Church, K., & Oliveira, R.d.. (2013). What's Up with WhatsApp? Comparing Mobile Instant Messaging Behaviours with Traditional SMS. *Proceedings of the 15th international conference on Human-Computer Interaction with Mobile Devices and Services (MobileHCI '13)*, 352-361.

Grundspenkis, J. (2007). Agent based approach for organization and personal knowledge modelling: Knowledge management perspective. *Journal of Intelligent Manufacturing*, *18*, 451-457.

Ismail, S., & Ahmad, M.S. (2012a). Effective Personal Knowledge Management: A Proposed Online Framework. *International Journal of Social, Management, Economics and Business Engineering*, *6*, 723-731.

Ismail, S and Ahmad, M.S. (2012b). *Emergence of Personal Knowledge Management Processes within Multi-agent Roles*. In D. Richards and B.H. Kang (Eds.): PKAW 2012, LNAI 7457, Springer-Verlag, Berlin Heidelberg, 221–228.

Ismail, S., & Ahmad, M.S. (2015). Personal Knowledge Management among Managers: Mobile Apps for Collective Decision Making. *Journal of Information Systems Research and Innovation*, *9*(1), 42-49.

Ismail, S., & Jamaludin, N. (2016). Managing Knowledge over Social Messaging Application: The Case of an Event Management Project Group. *Proceedings of the ESTCON International Conference on Computer & Information Sciences (ICCOINS 2016)*.

Ismail, S., Othman, A., & Ahmad, M.S. (2014). Knowledge Management in Learning Environment: A Case Study of Students' Coursework Coordination. *Proceedings of the Knowledge Management International Conference (KMICe 2014)*, 766-772.

Ismail, S., & Jamaludin, N. (2017). Measuring Expected Participation in Project Knowledge Management on Social Messaging Application using GUSC Model. *Proceedings of the 3rd International Conference on Human Capital and Knowledge Management (ICHCKM 2017)*.

Ismail, S., & Shaikh Ali, S.H. (2017). Measuring Project Knowledge using GUSC Model in Understanding the User Requirement Issues. *Journal of Information Systems Research and Innovation*, *11*(1), 1-6.

Jarche, H. (2010). PKM in 2010. *Life in Perpetual Beta*.

Martin, J. (2000). Personal Knowledge Management. Managing Knowledge: Case Studies in Innovation. Spotted Cow Press, Edmonton, Canada.

Mazzei, A. (2010). Promoting active communication behaviours through internal communication. *Corporate Communications: An International Journal*, *15*(3), 221–234.

McFarlane, D.A. (2011). Personal Knowledge Management (PKM): Are We Really Ready? *Journal of Knowledge Management Practice*, *12*(3). Retrieved from: http://www.tlainc.com/articl270.htm

Pettenati, M.C., Cigognini, E., Mangione, J., & Guerin, E. (2007). Using social software for personal knowledge management in formal online learning. *Turkish Online Journal of Distance Education*, *8*, 52-65.

Razmerita, L., Kirchner, K., & Sudzina, F. (2009). Personal knowledge management: The role of Web 2.0 tools for managing knowledge at individual and organisational levels. *Online Information Review*, *33*, 1021-1039.

Turbit, N. (2005). Measuring Project Health. *The Project Perfect White Paper Collection*. Project Perfect, Sydney, Australia.

Verma, S. (2009). Personal Knowledge Management: A Tool to Expand Knowledge about Human Cognitive Capabilities. *IACSIT International Journal of Engineering and Technology*, *1*(5), 435–438.

Walsh, J.P. & Ungson, G.R. (1991). Organizational Memory. *The Academy of Management Review*, *16*(1), 57-91.