Exploration of Chat Apps to Develop Group Information Communication and Sharing in Rural India

Wen Yong Chua, National University of Singapore, Singapore, wenyong@comp.nus.edu.sg
Rax Chun Lung Suen, National University of Singapore, Singapore, disscl@nus.edu.sg
Klarissa T.T Chang, National University of Singapore, Singapore, changtt@comp.nus.edu.sg
Upasna Bhandari, National University of Singapore, A0106246@u.nus.edu

Paper Category: Research-in-progress

ABSTRACT

The penetration of smartphones has been increasing in rural areas in these recent years. Private companies have seen this as a colossal opportunity to introduce chat apps to capture the market. Chat apps are effective for group communication as it allows individuals to get access to the information anywhere, anytime especially in the rural areas where individuals are far apart from one another. Companies attempted to resolve this by implementing Information Communication Technologies (ICT) kiosks. However, individuals living in the village do not feel secure to use it. Therefore, in this research in progress, we propose the usage of chat apps in smartphones for group communication to build human capital. We aim to empirically examine the effectiveness of knowledge transfer through group communication via chat apps. We would also like to examine the impact of technology affordance on the relationship between the effectiveness of knowledge transfer and group communication via chat apps.

Keywords: Chat Apps, Human Capital, Technology Affordance, Knowledge Transfer

INTRODUCTION

Knowledge Transfer is critical to transfer knowledge from city areas where people are highly educated to rural areas where people have little formal education. Knowledge transfer happens when an individual is being affected by the experiences of another individual (Argote and Ingram 2000). Group communication through Chat apps like WhatsApp is effective for sharing information (Wani et. al. 2013). For instance, Chat apps allow individuals to get timely answers to critical issues (Zhao et. al. 2010). These chat apps are created with the intention for individuals to express their opinions on specific issues or to get connected with other experts (Nysveen et. al. 2005).

Information sharing and communication through chat apps plays an important role in building human capital as it allows individuals to be educated with the required knowledge (Psacharopoulos & Woodhall 1985). This process is being denoted as knowledge transfer. Knowledge transfer through chat apps is only effective if the user perceives that the technology can benefit them. This is known as technology affordance. Technology affordance is being defined as "the properties or functions of technology that extend our learning and perceptual capabilities" (Gagne et. al. 2004). Group communication through chat apps will require individuals to have a shared technology affordance where all members of the group have similar goals. For instance, all members of the group must perform similar task (Leonardi 2013).

The rest of the paper is structured as follows. First, we will have the *Research Objectives*, which consists of the research gap as well the research questions. Next, we will have a section on *Related Works* that examines the current group communication context in rural India, how it improves human capital and the technology affordance of an individual. After which, we will have a section on *Hypotheses Development* followed by *Methodology* sections. Following that, we will have a section on *Implication* and end of the study with a *Conclusion and Future Studies* section.

RESEARCH OBJECTIVES

To close the research gap between the need for chat apps to be incorporated into group communication and the lack of literatures to improve human capital through chat apps, we aim to answer the following research questions:

1. What are the impacts of chat apps on the effectiveness of human capital knowledge transfer?
2. How does technology affordance affect the impacts of chat apps on effectiveness of human capital knowledge transfer?

RELATED WORKS

Rural India Group Communication Context

Group Communication in India is commonly done through face-to-face meet-ups in central locations. Individuals feel more secure during face-to-face meet-ups as compared to meeting through ICT services. For instance, ICT kiosks were available but individuals were reluctant to use them because they felt insecure as there were operators assisting them (Srinivasan 2007). Face-to-face meet-ups will give individuals a sense of security, however, it requires a lot of effort to coordinate and high travelling expenses might be incurred for meetings to happen. Therefore, a more cost-effective way of arrange for meetings is through the usage of chat apps for group communication.

Human Capital Theory

Group communication through chat apps is effective in building human capital as it enables learning to be done collaboratively within the group. With adherence to the collaborative learning modal, learning happens when the mental model of an individual is improved through discussion and information sharing (Leidner & Jarvenpaa 1995). The mental model is improved when the individual is able to share the newly learned knowledge with another individual (Whipple 1987). One implication of the collaborative model is that the facilitator of the group must not restrict the information that is being shared within the group. The facilitator should be providing feedbacks to the information being shared within the group (Leidner & Jarvenpaa 1995).

According to the Human Capital Theory, human capital is being defined as the devotion of time to the different kinds (formal and informal) of education and training. Education and training will increase an individual's knowledge, skills and attitude, which enhance the individual's productivity to perform within the community (Psacharopoulos & Woodhall 1985). Education can also be done via group communication using chat apps (m-learning) (Bere 2013). M-Learning allows individuals to communicate more effectively with more satisfaction (Wani et. al. 2013). Besides effective communication, an individual can also keep a history of the knowledge that is being shared within the group. This will allow the individual to refer back to it when required it. For instance, when new member joins in the group, existing members will be able to pass all the knowledge to the new member easily.

Technology Affordance

Technology affordance refers to the way in which technology is used to extend the perceived learning capability of an individual (Gagne et. al. 2004). The objective of affordance is to indicate to the user what the technology can do for them and how to achieve it (Leonardi 2011). It is the designers who produced the affordance of a technology (Norman 1999). The designers would produce the affordance with reference to on user's factors such as prior experience and age (Wijekumar et. al. 2006). Previous researchers have also defined technology affordance defined by as what is accessible to an individual by an object (Volkoff 2013). User's factors vary within group communication, as there are many users involved in it. Therefore, Leonardi (2013) has suggested for us to distinguish the concept of affordance into individualized affordance, collective affordance and shared affordance.

Individualized affordance is being related as an individual, through features of a technology, executing an affordance but this affordance is unfamiliar to other members in the group. Hence, only the individual who executes the affordance will reap the benefits while other members in the group who are not familiar with this affordance may face problems with the technology (Leonardi 2013). The individual who has executed the affordance will gain more power and become the center of attention for every group meetings due to the ability to reap the benefits, neglecting other members who are facing problems with the technology (Kane and Borgatti 2011).

A collective affordance is an aggregated affordance executed by all members of the group. This aggregated affordance allows all members to perform a task together. This task can never be done with individual effort. A collective affordance may also be known as the outcome of amalgamated individualized affordance. In this context, all members in the group are not required to have similar affordances as different tasks might require individual to execute different kind of affordance (Thompson 1967).

A shared affordance is an affordance that is communal within the group. A shared affordance is different from a collective affordance because a shared affordance replicated only one affordance while a collective affordance is a collective of multiple required affordances by members of the group. Members in this group will have to work closely on similar task together to ensure that their outcome is well aligned to the group's ultimate goal. In this context, all members will have to share similar affordances and capabilities to use the technology otherwise they will not be able to complete their task successfully (Leonardi 2013).

HYPOTHESES DEVELOPMENT

With adherence to the human capital theory, individual's knowledge will increase through education and trainings (Psacharopoulos & Woodhall 1985). Education and trainings can be performed through M-learning where chat apps such as WhatsApp on smartphones are used. Chat apps not only allows discussions to be done remotely but also allow individuals to feel more secure as no one will have control over their smartphone devices. Thus, they will be more willing to communicate more frequently and effectively with great satisfaction (Wani et. al. 2013) as compared to face-to-face meetings where lots of coordination effort and travelling cost is required. Therefore we hypothesize,

H1: Group communication through the usage of chat apps will increase the effectiveness of knowledge transfer as compared to face-to-face meetings.

Following the technology affordance theory, all members in the group will need to be equipped with the appropriate affordance for group communication to be successful. These individuals will need to have similar usage patterns (e.g. communicate frequently) so that they can reap the benefits of it (be educated) (Leonardi 2013). Therefore we hypothesize:

H2: The relationship between group communication through chat apps and effectiveness of knowledge transfer will be contingent on technology affordance.

METHODOLOGY

A controlled laboratory experiment will be conducted with a 2 x 2 factorial design using group communication through chat apps / group communication through face to face meet-ups being a within-subject factor and technology affordance (high/low) being a between subject factor. Before the start of the experiment, the participants will have to complete a pre-experiment survey to determine their technology affordance of a chat app. The participants will be assigned to either a group that is communication though chat apps or the group that is communicating through face-to-face meet-ups. Both groups have even distribution of people with high and low affordance. After the participants have completed the task, they will be asked to perform a post experiment survey.

TASK AND EXPERIMENT SURVEY

The participants will first be assigned to a group. After being assigned to a group, the participants will be given a set of instructions with a scenario of the topic to discuss about. Participants in the group with communicating through chat app will be separated far apart from each other such that they will now know each other. They will be asked to discuss the given topic, which will be agriculture related, together through chat app. After the discussion, they will be asked to write down the things that they have been asked to discuss earlier.

Participants in the group with communicating through face-to-face meeting will be asked to group together to discuss about the topic given to them. The topic will be related to agriculture. After the discussion, they will be separated far part to note down the pointers that they have been asked to discuss earlier. After the participants have completed their task, they will be asked to perform a post-experiment survey to answer questions related to knowledge transfer effectiveness.

MEASUREMENTS

Effectiveness of knowledge transfer will be measured based on the instruments proposed by ko et. al. 2005. The measurements will be based on five-point Likert scales, using "strongly agree"

and "strongly disagree" anchors. Examples of questions include: “After the discussion, my understanding towards agriculture has increased” and “After the discussion, my ability to ask penetrating questions about agriculture”.

IMPLICATIONS

This study provides several implications to the existing literatures on human capital. First, it incorporates the usage of chart apps to communicate in groups. Chat apps have been proven by previous literatures to be effective form of communication (Wani et. al. 2013). Second, it advances the theory on human capital by exploring the impacts of chat apps on group communication to transfer tacit knowledge. Third, it provides insights on the contingency of technology affordance on the relationship between communicating in groups through chat apps and the effectiveness of knowledge transfer.

Besides literatures, this study also provides guidelines for the practitioners. First, it provides community groups with the idea to incorporate chat apps to reach out to the individuals living in the rural areas. Secondly, it provides chat app developers to build plugins on top of existing chat apps to distribute information to a wider group of people.

CONCLUSION AND FURTHER RESEARCH

With the gradually increasing adoption of mobile phones, mobile technologies have proven to be a key platform to delivering new information and services to less developed areas. It is important to explore how chat applications could change the communication patterns in rural areas upon increased penetration of smartphones. Knowledge sharing and communication is a key part of building human capital especially in rural areas where information technology is not as prominent. Hence, such information can determine potential impact and also serve as reference for the design of applications targeted at rural development. In the continuation work, we would conduct a case study to observe so as to have a better understanding of the individual’s willingness to adopt chat apps for acquiring information from the experts.

ACKNOWLEDGEMENTS

This research is supported by the National Research Foundation, Prime Minister's Office, Singapore under its International Research Centres in Singapore Funding Initiative and administered by the Interactive Digital Media Programme Office.

REFERENCES

Argote, L., and Ingram, P.(2000) "Knowledge Transfer: A Basis for Competitive Advantage in Firms," Organizationai Behavior and Human Decision Processes (82:1), , pp. 150-169.

Bere, A. (2013). Using mobile instant messaging to leverage learner participation and transform pedagogy at a South African University of Technology. British Journal of Educational Technology, 44(4), 544-561.

Chua, W. Y., Chang, K. T. T., & Wan, M. P. H. (2015). Population Stereotyped Icons: A Study of Agrarian Communities in India.

Gagne, R. M., Wagner, W. W., Golas, K., & Keller, J. M. (2004). Principles of instructional design. Belmont, CA: Wadsworth Publishing

Kane, G. C., and Borgatti, S. P. (2011). "Centrality–IS Proficiency Alignment and Workgroup Performance," MIS Quarterly (35:4), pp. 1063-1078.

Katungi, E., Edmeades, S., & Smale, M. (2008). Gender, social capital and information exchange in rural Uganda. Journal of International Development,20(1), 35-52.

Ko, D. G., Kirsch, L. J., & King, W. R. (2005). Antecedents of knowledge transfer from consultants to clients in enterprise system implementations. MIS quarterly, 59-85.

Leidner, D. E., & Jarvenpaa, S. L. (1995). The use of information technology to enhance management school education: A theoretical view. MIS quarterly, 265-291.

Leonardi, P. M. (2011). When flexible routines meet flexible technologies: Affordance, constraint, and the imbrication of human and material agencies. MIS quarterly, 35(1), 147-167.

Leonardi, P. M. (2013). When does technology use enable network change in organizations? A comparative study of feature use and shared affordances. Mis Quarterly, 37(3), 749-775.

Norman, D. A. 1999. "Affordance, Conventions, and Design," Interactions (6:3), pp. 38-43.

Nysveen, H., Pedersen, P. E., & Thorbjørnsen, H. (2005). Explaining intention to use mobile chat services: moderating effects of gender. Journal of consumer Marketing, 22(5), 247-256.

Sarah Perez.(2011). Mobile App Market: $25 Billion by 2015. Retrieved September 10, 2015, from http://readwrite.com/2011/01/18/mobile-app-market-25-billion-by-2015

Thompson, J. D. 1967. Organizations in Action: Social Science Bases of Administrative Theory, New York: McGraw-Hill.

Psacharopoulos, G. and Woodhall, M. (1985) Education for Development: An Analysis of Investment Choices, Oxford: Oxford University Press.

Rao, N. H. (2007). A framework for implementing information and communication technologies in agricultural development in India. Technological Forecasting and Social Change, 74(4), 491-518.

Srinivasan, J. (2007). The role of trustworthiness in information service usage: The case of Parry information kiosks, Tamil Nadu, India. ICTD 2007: Information and Communication Technologies and Development (pp. 1 - 8). Bangalore, India: IEEE.

Volkoff, O., & Strong, D. M. (2013). Critical realism and affordances: Theorizing IT-associated organizational change processes. Mis Quarterly, 37(3), 819-834.

Wani, S. A., Rabah, S. M., AlFadil, S., Dewanjee, N., & Najmi, Y. (2013). Efficacy of communication amongst staff members at plastic and reconstructive surgery section using smartphone and mobile WhatsApp. Indian journal of plastic surgery: official publication of the Association of Plastic Surgeons of India, 46(3), 502.

Whipple, W.R. (1987). Collaborative Learning: Recognizing It When We See It. Bulletin of the American Association for Higher Education(40:2), pp. 3-7.

Wijekumar, K. J., Meyer, B. J. F., Wagoner, D., & Ferguson, L. (2006). Technology affordances: The ‘‘real story’’ in research with K-12 and undergraduate learners. British Journal of Educational Technology, 37(2), 191–209

Zhao, W., Sun, Y., & Dai, L. (2010). Improving computer basis teaching through mobile communication and cloud computing technology. In Advanced Computer Theory and Engineering (ICACTE), 2010 3rd International Conference on (Vol. 1, pp. V1-452). IEEE.