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Malang, November 27, 2014

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November 27, 2014

Editors & Reviewers:

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Rudiaman, S.T, M.Kom Jozua
F. Palandi, M.Kom

Layout Editor:

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GREETINGS

Head of Committee IC-Itechs

For all delegation participants and invited guest, welcome to International Conference on Information Technology and Security (IC-Itechs) 2014 in Malang, Indonesia.

This conference is part of the framework of ICT development and security system that became one of the activities in STIKI and STTAR. this forum resulted in some references on the application of ICT. This activity is related to the movement of ICT development for Indonesia.

IC-Itechs aims to be a forum for communication between researchers, activists, system developers, industrial players and all communications ICT Indonesia and abroad.

The forum is expected to continue to be held continuously and periodically, so we hope this conference give real contribution and direct impact for ICT development.

Finally, we would like to say thanks for all participant and event organizer who involved in the held of the IC-Itechs 2014. We hope all participant and keynote speakers got benefit from this conference.

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LIST OF CONTENT

Defining Influencing Success Factors In Global Software Development (GSD) Projects

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Abstract

Context: Global Software Development (GSD) continues to experience substantial growth of trend concerning the development of software virtually distributed throughout different countries. GSD has several advantages as opposed to the collocated development, but there are also a number of challenges. As a project manager, we should know these and find ways to successfully manage the project virtual team. Objective: This paper is to delineate the study to define which factors influence the success of GSD projects. Method: Using the literature review method, 5 GSD success factors-related literature were selected and reviewed to distinguish the relevant success factors as being reported in the literature. Results: The study indicated that there are different opinions in considering which factors are most important to GSD project success. Some experts see the "people" side of the team would contribute most, but others still think that the "geographical" sides (language barriers, culture, distance, time difference) are the most dominant factors. Conclusion: The results obtained in this paper addressed two aspects; one showing that the challenges of GSD is changing, thus making the influencing factors changing too. Second, this paper can serve as a guide and insight for project managers to better understand how to manage and coordinate a virtual talented team across different countries.

Keywords *: global software development, virtual team, project management, literature review, project success factors*

INTRODUCTION

In recent years, to cope with the increasing demand of globalization of business, a number of companies have undertaken the Global Software Development (GSD) as their preferred methodology in software development practices. Team members of GSD project are located in dispersed area, making it not feasible to have them working within the same site, or so called collocation. The team will collaborate virtually instead.

The underlying reasons why many companies adopted this new methodology is for the facts that it is not just only cost effective, but also reduced time to market due to faster development, increased flexibility, access to skilled manpower from global resources, and close proximity to customers (Bird et al. 2009; Carmel and Agarwal 2001; Herbsleb and Moitra 2001) GSD (also termed distributed software development (DSD), distributed software engineering (DSE) and global software engineering (GSE)).

Working on a software development practice in the global context has benefits and also drawbacks. The benefits would be time zone effectiveness and reduced cost. While the drawbacks are poor communication, lack of trust and coordination. Therefore it is essential to determine which key factors which contribute significantly to the GSD project success. The main objective of this paper is to delineate the influencing key success factor of GSD projects by using literature review approach.

RESEARCH METHOD

Due to the high interest in GSD, a number of systematic literature reviews (SLRs) have attempted to aggregate information from a large number of papers reporting on GSD. An SLR is a way of synthesizing existing research by following a rigorous, pre-defined procedure aimed at reducing bias. They are based on aggregating the research undertaken in other studies. The aggregated studies are referred to as primary studies. Since it summarizes the research undertaken in primary studies, a SLR is referred to as a secondary study. A systematic mapping study, or mapping study, is a form of SLR that aims to address a broader set of research questions in order to provide a 'map' of a particular topic area by investigating, for example, the number of papers published on the topic per year and where the papers are most frequently published (B. Kitchenham, 2007). The search for the appropriate literature on the influencing factors of global software development project began with the various literature databases, such as Google Scholar, and Science Direct – this was carried out by using a relevant set of keywords and phrases such as global software development, virtual team, project management, literature review, project success factors.

RESULT AND DISCUSSION

The study indicated that there are different opinions in considering which factors are most important to GSD project success. Some experts see the "people" side of the team would contribute most, but others still think that the "geographical" sides (language barriers, culture, distance, time difference) are the most dominant factors. Geographical distance, different time zones, and differences of national cultures are the characteristics of global software development project teams according to Camel (1999). He also emphasized that language differences are part of the national culture.

However other studies stated that languages are as a separate aspect (Rosenkranz et al. 2013; Sosa et al. 2002). So based on the "geographical" sides, there are at least four factors identified by these studies: geographical distance, time zone, cultural and language differences. Meanwhile, recent studies indicated different results. Since the "geographical" factor-related issues have been mitigated by the presence of the more advance communication technology thus improving the process of knowledge transfer, the GSD project team is now facing new challenges, in which the initial critical issues that were related to geographical sides, were shifted to different areas of concern, more on to the "people" side, such as team member performance and skills. There are many other factors such as the learning curve (people are not familiar with new technology and tend to resist when they need to learn a new means of working), poor interoperability between tools, responsibilities and roles are not properly defined, lack of knowledge and the high cost of investment for companies (J. Eskeli, J. Maurolagoitia, 2011)

This finding was a major breakthrough, as most literatures related to GSD in the past years indicated that language, cultural differences and geographical distance as key influence factors in GSD.

CONCLUSION

The purpose of this paper was to carry out a comprehensive and systematic review of the literature of the influencing success factors to global software development project. The results obtained in this paper addressed two aspects; one showing that the challenges of GSD is changing, thus making the influencing factors changing too. Second, this paper can serve as a guide and insight for project managers to better understand how to manage and coordinate a virtual talented team across different countries. This paper is also a pioneering step to

undertake a more comprehensive literature review in order to develop conceptual model to structure and outline the influence factors for global software development success, by developing the integrated research model and using meta-analysis of existing findings.

References

[1] Bird, C., Nagappan, N., Devanbu, P., Gall, H., and Murphy, B. 2009. "Does distributed development affect software quality? An empirical case study of Windows Vista," *Communications of the ACM* (52:8), pp. 85–93.

[2] Carmel, E. 1999. *Global software teams: collaborating across borders and time zones*, Upper Saddle River, NJ: Prentice Hall.

[3] Carmel, E., and Agarwal, R. 2001. "Tactical approaches for alleviating distance in global software development," *IEEE Software* (18:2), pp. 22–29.

[4] Cooper, H. M. 2010. *Research synthesis and meta-analysis: a step-by-step approach*, (4th ed.) Los Angeles: Sage.

[5] Cooper, H. M., Hedges, L. V., and Valentine, J. C. 2009. *The handbook of research synthesis and metaanalysis*, (2nd ed.) New York: Russell Sage Foundation.

[6] Global Software Development, ICSE Edinburgh, Scotland, 2004, pp. 756–757.

[7] Development (DiSD 2005), Presented at the 13th IEEE Requirements

[8] Engineering Conference Paris, France, 2005, pp. 32–48.

[9] Zones, Prentice Hall PTR, Upper Saddle River, NJ, USA, 1999.

[10] Espinosa, J., Slaughter, S., Kraut, R., and Herbsleb, J. 2007. "Team Knowledge and Coordination in Geographically Distributed Software Development," *Journal of Management Information Systems* (24:1), pp. 135–169.

[11] Herbsleb, J. D., and Mockus, A. 2003. "An empirical study of speed and communication in globally distributed software development," *IEEE Transactions on Software Engineering* (29:6), pp. 481–494.

[12] Herbsleb, J. D., and Moitra, D. 2001. "Global software development," *IEEE Software* (18:2), pp. 16–20.

[13] Hsieh, Y. 2006. "Culture and Shared Understanding in Distributed Requirements Engineering," , October, pp. 101–108.

[14] J.D. Herbsleb, Global software engineering: the future of socio-technical

[15] coordination, Presented at the International Conference on Software

[16] Engineering: Future of Software Engineering (FOSE'07), Minneapolis, MN,

[17] USA, 2007, pp. 188–198.

[18] J. Eskeli, J. Maurolagoitia, Global software development: current challenges and solutions, in: 6th International Conference on Software and Data Technologies (ICSOFT), Seville, Spain, 2011, pp. 29–34.

[19] Jehn, K. A., Northcraft, G. B., and Neale, M. A. 1999. "Why Differences Make a Difference: A Field Study of Diversity, Conflict, and Performance in Workgroups," *Administrative Science Quarterly* (44:4), pp. 741–763.

[20] Nonaka, I., and Takeuchi, H. 1995. *The knowledge-creating company: how Japanese companies create the dynamics of innovation*, New York: Oxford University Press.

[21] Prikladnicki, R., Nicolas Audy, J. L., and Evaristo, R. 2003. "Global software development in practice lessons learned," *Software Process: Improvement and Practice* (8:4), pp. 267–281.