



Challenges of project management in global software development: A client-vendor analysis



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ABSTRACT

Context: Global Software Development (GSD) is the process whereby software is developed by different teams located in various parts of the globe. One of the major reasons for GSD project failure is that a number of organizations endorse global development prior to understanding project management challenges for the global activity.

Objective: The objective of this paper is to identify the challenges, from the client and vendor perspectives, which can undermine the successful management of GSD projects.

Method: We followed a two-phase approach: we first identified the challenges via a Systematic Literature Review (SLR) and then the identified challenges were validated using a questionnaire-based survey.

Results: Through both approaches, we identified 19 challenges important to the success of GSD project management. A comparison of the challenges identified in client and vendor organizations indicates that there are more similarities than differences between the challenges. Our results show a positive correlation between the ranks obtained from the SLR and the questionnaire ($(r_s(19) = 0.102)$, $p = 0.679$). The results of t -test (i.e., $t = 0.299$, $p = 0.768 > 0.05$) show that there is no significant difference between the findings of SLR and questionnaire.

Conclusions: GSD organizations should try to address the identified challenges when managing their global software development activities to increase the probability of project success.

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1. Introduction

Global Software Development (GSD) is carried out by teams located in various parts of the globe, developing commercially viable software for a company [8]. Lately, many firms across the globe have started adopting GSD in order to decrease software development cost. GSD helps companies to leverage the benefits of multi-site development with respect to time, cost and access to skillful resources. There is an increasing interest in developed countries to benefit from outsourcing and GSD due to its economic benefits. The majority of organizations have adopted GSD to decrease software development cost and increase product quality.

Client organizations (who are outsourcing) benefit from GSD because vendors (who are receiving work) in developing countries significantly cost less than in-house operations [14,49]. Furthermore, organizations can also gain access to skillful resources and take advantage of the 24-hour development model [34].

In addition to the benefits of GSD, numerous problems have been reported in GSD initiatives [15,20,21,25,29,55]. GSD poses certain strategic challenges with respect to cultural, temporal, leadership and communication issues [21,25,30,39]. This is because GSD is a complex process where a number of geographically distributed teams need to communicate frequently with the intent to produce working software deliverables [6,23]. One of the main issues is that many organizations engage in global development without pre-testing their project management readiness for the global activity [30]. GSD literature suggests that many software organizations which have adopted GSD failed to realize its potential benefits thus resulting in project delays [1,7,22,46]. Despite the importance of this problem, little research has been con-

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