

# Identifying the Concept of Modularity in IS/IT Outsourcing Cases: Some Empirical Evidence



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## INTRODUCTION

Globalization of the world economy and digitalization has accelerated the advancements of information systems and information technology (IS/IT). IS/IT services are often outsourced to external partners for multiple reasons, but the main drivers are savings in cost, access to specialized expertise and technology, and focus on core competences. Outsourcing of IS/IT projects became a common practice among contemporary organizations in developed and in emerging economies. Literature suggests over 94% of 'Fortune 500' companies are outsourcing at least one major business function (Modarress, Ansari, & Thies, 2014). Despite the prevalence and long experiences of CIO's in IS/IT project outsourcing, the failure of such projects is very common. The literature suggests that at least one in three projects was considered a failure and many projects were delayed, ran over budget, and were not able to meet their pre-defined targets (Delens, Peters, Verhoef, & Van Vlijmen, 2016; Jabangwe, Smite, & Hesbo, 2016; Schmidt, Zoller, & Rosenkranz, 2016; Wojewoda & Hastie, 2015). A pertinent question deals with how IS/IT project outsourcing failure may be addressed. So far, the literature includes many suggestions offered by both scholars and practitioners. Peterson and Carco (1998) suggested to streamline operations and 'fix the problem' before outsourcing IS/IT services. Various suggestions were introduced: the interested reader is referred to (1) Lambert, Emmelhainz, and Gardner (1999) who introduced their '*Partnership Model*'; (2) Greaver (1999) who formulated '*seven steps to successful outsourcing*'; (3) Logan (2000) who proposed two solutions in order to avoid failure in IS/IT project outsourcing. She suggests firstly, diagnosing the relationship from both sides of the contract and secondly, engaging agency theory to help design the types of contracts and relationships necessary to provide and support an environment of trust; (4) Lee (2001) who suggested knowledge sharing; (5) Rottman (2008) who elaborates on the importance of 'knowledge transfer'; (6) Harris, Herron and Iwanicki (2008) who stressed the importance of a high quality 'service level agreement' (SLA); (7) Karimi-Alaghehband and Rivard (2012) who proposed a model of IS/IT outsourcing success grounded in dynamic capabilities perspective; (8) Ishizaka & Blakiston, (2012) who proposed the "*18 C's model*" for a successful long-term outsourcing arrangement; and (9) Zheng and Abbott (2013) who argued that reconfiguration of organizational resources is vital to be successful in outsourcing. Despite the introduction of such remedies, the empirical

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research referred to above continue to attest to the high failure rate of IS/IT project outsourcing. It seems that these remedies, if used, turned out to be partially successful at best. The remainder of this paper is structured as follows. The second section will describe in brief the literature review and the third section will describe the theoretical lens considered for this study, and at the end of this section, research questions are formulated. Afterwards, in the fourth section the adopted methodology will be discussed. In section five, case analysis, findings, and the reflections from the authors will be presented. In the sixth section, conclusions and in the seventh section future research directions will be discussed. The eighth section will present a glossary of the terminologies and concepts used in this chapter. The ninth section will suggest the readers some additional literature for further reading.

## LITERATURE REVIEW

In the following some of the findings from a very extensive literature review on IS/IT outsourcing are described. Literature suggests that IS/IT project outsourcing is a complex maneuver (e.g., Aron, Clemons, & Reddi, 2005; Beulen & Ribbers, 2003; Cohen & Young, 2006; Hecker & Kohleick, 2006; Jacques, 2006; Nauman, Aziz, & Ishaq, 2009). Discussion in the introduction section highlights the high failure rate issue in IS/IT project outsourcing and remedies proposed in literature. The practitioners are also trying to address this issue by applying trial-and-error approach on a case to case basis. Interestingly, in the proposed remedies, none of them considered ‘complexity’ as a factor that might require attention in order to control the high failure rate. As literature suggests that the ‘complexity’ in IS/IT project outsourcing is a factor which requires due attention, hence digging further in literature is warranted to find out how the complexity issue is dealt with in other fields. Simon’s article “*The Architecture of Complexity*” (1962) describes how one of the two watchmakers (Hora and Tampus) was dealing with a complex system consisting of about one thousand parts (i.e., assembling watches). Literature also describes how a huge complex system, such as Boeing 787 ‘Dreamliner’, is manufactured in modules by more than hundred global suppliers (Tang & Zimmerman, 2009). Further insights gained from the literature about how Daimler-Benz managed complexity by decomposing the ‘smart car’ in seven modules assembled onsite by seven different suppliers (Van Hoek & Harrison, 2003). But compared to an automobile, Boeing ‘787 Dreamliner’ was a much more complex product. On average, an automobile consists of 15-20 thousand parts whereas the ‘787 Dreamliner’ consists of about 2.3 million parts.

Due to the volatile business environment, contemporary organizations are under immense pressure to achieve greater agility and flexibility in order to adapt to the ever-changing business environment. In this emerging volatile and ever-changing situation, contemporary organizations are splitting up their IS/IT systems, outsourcing agreements, and organizational structures into modules. When IS/IT systems are split into many modules, it offers greater agility and flexibility to customer organizations to decide which module/s will remain in-house and which module/s can be outsourced. Moreover, the customer organizations get the options to decide to outsource all the modules to a single vendor or to multiple vendors. Hence, the modular structure of IS/IT systems, on one hand, offers flexibility to outsource IS/IT services to multiple vendors at a competitive price, and on the other hand, if necessary, it offers flexibility to replace vendors or even back-source (reversibility) the IS/IT services because the theory suggests that in a truly modular system, modules can be used as ‘*black-box*’ or in a ‘*plug & play*’-way (Sako, 2005). In a modular environment, a customer organization may use the software as service (SaaS) or on-demand software. For instance, a study which analyzed 22,031 IS/IT contracts signed during a period of 20 years (1989 to 2009), found that highly modularized projects are more likely to be multi-

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