

Chapter 66

Co-Diffusion Effects in Software Sourcing Arrangements

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ABSTRACT

This study analyzes the temporal diffusion of software sourcing arrangements by applying innovation diffusion theories. The study tests the co-diffusion effects 1) between onshoring and offshoring and 2) between insourcing and outsourcing. The results from the analysis indicate the existence of one-way complementary co-diffusion effects between on-shoring and offshoring and between outsourcing and in-housing. Positive, significant effects of innovation were found for in-housed, on-shored, and offshored software projects. Furthermore, a negative, significant effect of imitation was found for outsourced software projects. Indications were co-diffusion effects are stronger than diffusion effects.

INTRODUCTION

Software sourcing is a multi-faceted phenomenon that enables enterprises to obtain software solutions in a cost-effective manner (Naik, 2016). Software sourcing has evolved from developing software within a country and a within a firm through insourcing and onshoring to innovative sourcing models such as

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outsourcing and offshoring (Dayyala, et al., 2017). These sourcing models can be broadly classified based on geography: onshoring and offshoring and based on the extent of externalization: insource and outsource (Tate & Bals, 2017). Onshoring is when software development activity is performed in a domestic country and offshoring is when software development activity is performed in a foreign country. While the insourcing can be conceptualized as the allocation or reallocation of resources internally within an organization to develop software, outsourcing can be defined as allocating or reallocating the software development activities internal to an organization, to an external source (Schniederjans, et al., 2015). Several other sourcing options have emerged based on the combination of geography and externalization of software development activities as shown in Figure 1 (Contractor, et al., 2010; Foerstl, et al., 2016). Each software sourcing strategy has its own adoption pattern over time depending on the benefits and drawbacks as perceived by the adopters. Angst, et al. (2017) note that very little is known about software sourcing trends and the rationale for pursuing one sourcing strategy over the other. Inconsistencies in adoption trends can be better understood with diffusion studies that incorporate temporal effects (Manning, et al., 2018). Specifically, diffusion studies explain the channels through which an innovation spreads over time (Rogers, 2010). Bucklin and Sengupta (2003) note that the introduction and adoption of innovations may not only deliver the envisioned benefits but might affect the diffusion of other existing or potential innovation adoptions due to interactions between them. The authors called this phenomenon “the co-diffusion effect”. Given the co-existence of several sourcing phenomena we expect that the innovative sourcing strategies may exert co-diffusive interactions on the adoption patterns of traditional sourcing strategies impacting the adoption pattern over time. This study analyzes the diffusion and co-diffusion effects between 1) onshoring and offshoring and 2) insourcing and outsourcing.

Figure 1. Software sourcing models

		Geographical distance increases →	
Externalization increases ↑		ONSHORE	OFFSHORE
	OUTSOURCE	Onshore Outsourcing (outsourced within the country)	Offshore Outsourcing (Outsourced to a foreign country)
	INSOURCE	Onshore Insourcing (Within the organization within the country)	Offshore Insourcing (Within the organization but in a foreign country)

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