



IT outsourcing research from 1992 to 2013: A literature review based on main path analysis



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ABSTRACT

Applying main path analysis, this paper investigates the IT outsourcing (ITO) field by identifying a set of papers that have played a central role in the development of the field and the major research themes emerging from the citation patterns. We selected the top 120,000 main paths from 6.45 million main paths among 798 ITO papers, resulting in a data set of 280 papers that represent the most important nodes supporting ITO knowledge flow. Based on our analysis of the multiple main paths, twelve major research themes emerged: ITO motivations, ITO decisions, ITO risks, debate around transaction cost theory, client–vendor relationship, the vendor's perspective, psychological and formal contracts, ASP, BPO, opensourcing and crowdsourcing, offshore outsourcing, and multisourcing. Finally, we discussed future directions of ITO research based on our findings. Our study is among the few studies that have used bibliometric analysis methods to analyze and visualize the citation network characterizing the rich body of ITO literature. The main path analysis precisely identified and visualized the major knowledge flow in the evolution of ITO research and major ITO research streams, thus providing an in-depth understanding of ITO research in the last 20 years.

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1. Introduction

With more than 20 years' development, information technology outsourcing (ITO) has experienced tremendous growth and has aroused great enthusiasm among academic researchers [91]. A large body of diverse theoretical and empirical work in the ITO field demands that researchers continuously review state-of-the-art research activities so that an in-depth understanding of this growing field can be achieved.

The ITO field has become increasingly complex for several reasons. First, a variety of theoretical bases have been applied in ITO research. In initial stage of ITO, researchers have explained the ITO phenomenon from a neoclassical economic perspective [117,72]. Later, many other theories from reference disciplines were used to study ITO issues. Lacity et al. [92] reported that researchers had studied ITO from over 20 theoretical perspectives. Second, findings from ITO publications are often inconsistent and

even contradictory [91,92,45]. For example, Lacity et al. [92] found a large number of contradictory conclusions in 741 relationships extracted from 164 empirical ITO articles. Third, there are many sourcing varieties, including offshoring, business process outsourcing (BPO), application service providers (ASPs), multisourcing, back sourcing, and recent crowdsourcing. New sourcing varieties continued to emerge with the advancement of IT and dynamic changes in the business landscape. For example, economic and market globalization is the antecedent of the emergence of offshoring [51], and the economic downturn in recent years significantly changed the traditional manner of offshoring [91]. The prevalence of the Internet has increased the popularity of ASPs. With the recent development of Web 2.0, cloud computing and the Internet of Things, more novel issues related to ITO will begin to appear. In the context of new sourcing varieties, past topics such as ITO decision and client–vendor relationship may take on new meanings due to new characteristics of the sourcing environment, and novel issues that are specific to the new varieties and have not emerged in previous varieties have also stimulated research.

A comprehensive review that precisely analyzes the complex ITO literature is imperative to gaining a proper understanding of

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the constantly updating ITO field. Such a review will help researchers understand the developing path of the field so that they can judge what was important, what is important, and what will be important. This will facilitate the healthy growth of the ITO field by guiding researchers to focus on meaningful research questions. In addition, the sheer scale of the ITO literature makes it difficult to conduct a comprehensive review without quantitative methodologies. Most existing ITO reviews are descriptive and based on researchers' manual processing. These reviews may be constrained by the researchers, who had limited time and energy and who could only review papers within the limit of their cognitive capacity [142]. It is necessary to confirm the findings of these reviews with more objective methodologies. There is also the real possibility that important ITO articles may be neglected. For instance, the review by Gonzalez et al. [52] was based on 131 papers, and the review by Lacity et al. [92] included 164 papers. Although the authors of these reviews might have strived to select the most representative papers, the size of the ITO literature is much larger than what has been reviewed. A global review that more objectivity embraces and incorporates as many articles as possible is desirable.

In this article, we conduct a bibliometric study to map the field of ITO research. This approach allows us to identify the knowledge structure of ITO research and to uncover underlying knowledge diffusion patterns from different angles. The citation relationships between publications shape a network that reveals structural and knowledge flow and provide an opportunity to quantitatively evaluate the importance of specific papers. Specifically, we perform a main path analysis of the ITO field to identify major research themes that have emerged in the history of ITO research and describe how these themes evolved over time; in addition, we compare the findings of the current review with existing reviews. Our analytic approach and findings are of value to ITO researchers. The findings can help to understand the genesis and current state of the field, and meaningful and fruitful avenues for future research can hopefully be found based on this paper. In addition, to the best of our knowledge, this review is among the first to demonstrate how the main path analysis method can be employed to examine important IS areas. The review can make a methodological contribution to IS research by providing a novel approach to reviewing existing literature.

The remainder of this paper is organized as follows. The paper first provides a description of background in Section 2. Then, it explains the analysis methodology in Section 3. Data collection is discussed in Section 4, followed by detailed analysis results in Section 5. We predict future directions of ITO research based on our findings in Section 6. Section 7 concludes the paper by summarizing limitations and contributions.

2. Background

2.1. Previous reviews of ITO research

Scholars have surveyed the ITO literature and reviewed ITO development in different time periods from various angles. These reviews take three different approaches—qualitative, quantitative, and hybrid. The quantitative approach to reviewing ITO research is rather straightforward. For example, Alsudairi and Dwivedi [4] quantitatively surveyed the ITO field by employing a meta-analysis approach to profile theoretical and methodological underpinnings of ITO-related articles. Statistical analyses were performed to analyze attributes of the papers such as subject category, journal, publication year, author, author's institution, country, citation frequency, keywords, and abstract. Such reviews focus on characteristics of the publications rather than their content.

Most ITO review articles employed a qualitative/descriptive approach. Among these reviews, Dibbern et al.'s [35] global assessment of 15-year ITO research is the most noteworthy because of its depth and breadth [92]. Some papers examined the ITO literature from a historical perspective. For example, Gottschalk and Solli-Sæther [63] identified three stages for ITO relationship evolution: the cost stage, the resource stage and the partnership stage. Hätönen and Eriksson [72] recognized three phases of the history of ITO development from both practical and theoretical perspectives. Furthermore, some reviews focused on specific ITO issues. King and Torkzadeh [84] described the state of and issues concerning offshoring. Chadee and Raman's [24] review focused on empirical studies on international outsourcing of IT services and identified four main research areas during the 1992–2007 period. Lacity et al. [91] extracted practical insights on six topics relevant to ITO practitioners by reviewing 191 ITO articles.

A few recent reviews employed a hybrid approach by applying both qualitative and quantitative methods. Gonzalez et al. [52] identified major topics and the most-often applied methodologies in ITO and applied a quantitative analysis of paper attributes. Lacity et al. [92] analyzed 164 empirical ITO articles published from 1992 to the first quarter of 2010 and developed an ITO decision model and ITO outcome model based on empirical evidence of significant relationships between predictors and dependent variables. Using the same method, Lacity et al. [93] reviewed 87 empirical BPO articles published between 1996 and 2011 to develop BPO decision and BPO outcome models.

The existing reviews provide many insights into a variety of ITO issues. These reviews facilitate a rich discussion on specific topics with great depth and have deepened our understanding of the ITO literature. However, given the vast body of ITO literature, there remains much to learn. First, the previous descriptive reviews can be constrained by the knowledge structure of their authors [142], and a less subjective approach may offer an alternative approach to interpreting ITO research. Second, although some reviews adopted a quantitative approach, the statistical analyses are relatively simple and have not analyzed each paper's importance in the citation network of ITO research. Third, the reviews taking a hybrid approach often focus on empirical studies that represent a small number of ITO papers. For example, the review by Gonzalez et al. [52] was based on 131 papers published between 1992 and 2005. Our search indicates that 230 ITO papers were published during this period. A holistic review of the ITO literature that considers more publications may provide a more complete understanding of the ITO research.

In light of the limitations of previous reviews, we comprehensively survey the existing ITO literature by conducting a main path analysis. Specifically, we will create a citation network of the ITO field that considers every ITO article's influence and use bibliometric analysis techniques to analyze the evolution and structure of the ITO field.

2.2. Bibliometric analysis

The citation network among ITO papers creates a map of knowledge dissemination over time. It also provides a quantitative and objective basis for describing the development trajectory of the field. This citation network can be analyzed using bibliometric analysis, which is a quantitative approach to analyzing and visualizing emerging trends, intellectual structures, and citation patterns in scientific literature [26]. There are several ways to conduct bibliometric analysis, and the method used in this study is main path analysis. In contrast to traditional bibliometric methods such as bibliographic coupling and co-citation analysis, the main path analysis focuses on the links between the cited and citing papers instead of the citation counts of a paper. The citation

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