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Exploring the trends, characteristic antecedents, and performance consequences of crowdsourcing project risks

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Abstract

This research develops the risk dimensions of crowdsourcing projects and investigates the trends in risk dimensions and performance across crowdsourcing projects with high, medium, and low risk levels. This study also verifies the influence of critical crowdsourcing project characteristics, such as project mode, project purpose, project type, and number of participants, on crowdsourcing project risks. On the basis of the quantitative data collected from 403 crowdsourcees and crowdsourcers through an online survey in China, results of cluster and multivariate analyses of variance indicate that the mean level of each risk dimension consistently moves with the change in cluster risk levels. Technical-related risks are more critical than social-related ones in crowdsourcing projects. Task risk is the most significant risk dimension. All risk dimensions (i.e., crowdsourcer, relationship, crowdsourcee, complexity, requirement, and task) are negatively associated with crowdsourcing project performance. Each risk dimension is considerably influenced by various characteristics of crowdsourcing projects.

Keywords: Crowdsourcing project; Cluster analysis; Risk management; Performance; Socio-technical theory

1. Introduction

Crowdsourcing is evolving as a new web-based, distributed problem-solving, and peer-production model that enables individuals to earn money by completing projects and tasks (Howe, 2006; Kohler, 2015). Crowdsourcing emerges as an attractive alternative for many companies or institutions because of its low cost, high flexibility, and productivity (Jones, 2013; Ridge, 2013). Unfortunately, various unsatisfactory outcomes have been associated with crowdsourcing projects (Robertson et al., 2009; Huang and Fu, 2013). Outcomes delivered by crowdsourcees are questionable because of poor quality (Robertson et al., 2009). For example, Lee and Glass (2011) created a human intelligence project with clear requirements. Despite the given requirements, unqualified output accounts for more than 65%. These negative outcomes offer insight into the risks involved in crowdsourcing and reveal poor risk management in crowdsourcing projects.

At least three research gaps can be identified in crowdsourcing project risk. First, although several studies have investigated the types and influence of risks in various areas, such as outsourcing (Fan et al., 2012), few studies have attempted to identify and classify risks in the context of crowdsourcing. Risk allocation in crowdsourcing differs from traditional outsourcing because project duration and contract vary between the two settings (Gefen et al., 2016). Crowdsourcing project risk is poorly investigated in the existing literature. Several researchers contend that exploring crowdsourcing project risk is essential because firms may abandon crowdsourcing projects if transaction risks are salient and satisfactory outcomes are not realized (Ye and Kankanhalli, 2015). Understanding the dimensions of crowdsourcing project risk and the patterns or trends they tend to

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follow can help managers formulate specific and effective risk management strategies to enhance crowdsourcing project performance. This study elucidates the dimensions of crowdsourcing project risk and examines their trends across low, medium, and high risk levels.

Second, advocates of risk management contend that high risk levels lead to poor performance (Liu et al., 2010; Arashpour et al., 2016; Vrhovec et al., 2015; Liu, 2016; Qazi et al., 2016). Despite such claim, extant research has proposed contradictory results on the effects of risks on performance. Some researchers find that risk significantly and directly affects performance. For instance, Arashpour et al. (2016) argued that risks caused a high failure rate of projects. Liu (2016) empirically determined that user-related and project management risks negatively influenced project performance. Nevertheless, other researchers contest that the same form of risk has an insignificant and indirect effect on performance (Keil et al., 2013; Zwikael et al., 2014; Zwikael and Smyrk, 2015; Liu and Wang, 2016). Zwikael et al. (2014) found that risk acts as a negative moderator of performance. Given the inconsistent findings, further examination on the relationship between different risk dimensions and crowdsourcing project performance is essential. By exploring this issue, managers or individuals can determine the most serious risks associated with the management of crowdsourcing projects. Apart from developing and verifying the relationship between crowdsourcing project risk dimensions and performance, this study investigates the trends in crowdsourcing project performance with different risk levels.

Third, various types of crowdsourcing projects may differ in risk levels. The mechanism behind the influence of project characteristics on crowdsourcing risk has not been investigated. Crowdsourcing has unique characteristics that distinguish it from other forms of sourcing. Crowdsourcing projects are assigned to and accomplished by one person or a group of unknown individuals (Gassenheimer et al., 2013). The uncertain features of crowd workers increase the crowdsourcing project risk (Djelassi and Decoopman, 2013). Crowdsourcing projects are often sponsored in an Internet platform that involves complex social networks. The organization and management of these projects differ from those of traditional outsourcing. The complex environment of crowdsourcing projects also intensifies the risk situation. Despite these implications, the understanding of the influence of project-associated characteristics on crowdsourcing risk is insufficient. Resolving this problem enables managers to determine appropriate project management strategies for avoiding crowdsourcing project risks spontaneously. This study examines the influence of project characteristics (i.e., project mode, project purpose, project type, and number of participants) on crowdsourcing project risks.

2. Background

Crowdsourcing enables a group of unknown individuals from online communities to generate new ideas and make innovations. The crowdsourcing process involves two major roles, namely, crowdsourcer and crowdsourcee. The former sponsors and posts a project in a crowdsourcing platform by elaborating their requirements, whereas the latter accepts the project and completes it by meeting the expectations of crowdsourcers. Crowdsourcing is frequently risky because crowd workers are uncertain. The process is also difficult to control in a virtual environment. Consistent with the existing literature (Keil et al., 2002; Liu and Deng, 2015a), the present study defines risk as a severe condition that threatens a successful implementation of a crowdsourcing project. It is a combination of estimated loss magnitudes and failure probability (Lehtiranta, 2014; Van Os et al., 2015).

Risk factors have been identified and categorized in many different settings, especially in outsourcing. Nakatsu and Iacovou (2009) developed a list of 36 risk factors in outsourcing based on literature review. They categorized these risk factors into 11 dimensions on the basis of a Delphi study on a panel of 32 experts. These dimensions are technology, firm reputation/employee morale, geopolitical, security, legal/regulatory, financial, strategic, vendor–client communications, vendor capabilities, client capabilities, and contract management risks. Taylor (2007) provided a framework that categorized outsourcing risks from a vendor perspective; the six types are relationship, solution, project management, commercial environment, and technology risks. Although these findings are meaningful, research focusing on the identification and categorization of risks in the context of crowdsourcing is lacking.

Among the different risk dimensions that have been proposed, one framework is noteworthy. Wallace et al. (2004a) developed a risk profile and categorized the risks into two major dimensions, namely, social and technical subsystems risks, based on socio-technical theory. They also elaborated the two major dimensions into four sub-dimensions (i.e., organizational environment, user, requirement, and complexity). This framework has been broadly accepted and validated in the risk management literature. For example, Liu and Wang (2014a) adopted this framework in the context of both outsourced and internal projects, and investigated the influences of social and technical system risks on performance. We adopt the framework proposed by Wallace et al. (2004a) not only because it is widely used in the risk management literature but also because a crowdsourcing project is operated in dynamic and uncertain environments comprising many changeable social and technical factors (e.g., Internet platforms and user behavior). Specifically, we adopt socio-technical theory to develop the risk dimensions in crowdsourcing. On the basis of socio-technical theory and risk management literature (Trist, 1981; Wallace et al., 2004a), we conceptualize six types of crowdsourcing project risks and categorize them into social and technical dimensions. Crowdsourcee, relationship, and crowdsourcee risks are included in the social dimension, whereas complexity, requirement, and task risks belong to the technical dimension. Table 1 lists the six dimensions with detailed descriptions.

Extant literature fails to understand the various risk dimensions across different crowdsourcing projects. Although previous research has contended that high risks are involved in crowdsourcing projects and related to low project quality (Borst, 2010), crowdsourcing project risk has rarely been