

An empirical study of electronic reverse auction project outcomes



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ABSTRACT

We extend the conceptual model developed by Amelinckx et al. (2008) by relating *electronic reverse auction* (ERA) project outcomes to ERA project satisfaction. We formulate hypotheses about the relationships among organizational and project antecedents, a set of financial, operational, and strategic ERA project outcomes, and ERA project satisfaction. We empirically test the extended model with a sample of 180 buying professionals from ERA project teams at large global companies. Our results show that operational and strategic outcomes are positively related to ERA project satisfaction, while price savings are not. We also find positive relationships between financial outcomes and project team expertise; operational outcomes and organizational commitment, cross-functional project team composition, and procedural fairness; and strategic outcomes and top management support, organizational commitment, and procedural fairness.

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1. Introduction

An *electronic reverse auction* (ERA) is “an online, real-time dynamic auction between a buying organization and a group of pre-qualified suppliers who compete against each other to win the business to supply goods or services that have clearly defined specifications for design, quantity, quality, delivery, and related terms and conditions. These suppliers compete by bidding against each other online over the Internet using specialized software by submitting successively lower priced bids during a scheduled time period” (Beall et al. 2003). Over the past two decades, ERAs have been used in various industries, including aerospace, automotive, aviation, chemicals, construction, defense, electronics, machinery, packaged goods, petroleum, and retail (Beall et al. 2003, Ray et al. 2011, Wang et al. 2013). ERAs are increasingly popular among buying organizations, although their use sparks controversy and ethical concerns in the sourcing world (Charki et al. 2010). Indeed, the one-sided focus on price savings in ERAs is considered to be at odds with the benefits of long-term cooperative buyer–supplier relationships (Beall et al. 2003, Hunt et al. 2006). However, several researchers have declared that ERAs are here to stay, as they are relatively easy to install and use and have resulted in positive outcomes across a range of offerings and contexts (Beall et al. 2003, Hur et al. 2006).

In prior research work on ERAs, Amelinckx et al. (2008) developed a conceptual model based on an extensive review of the electronic sourcing literature and exploratory research involving multiple case studies. The authors identified operational and strategic outcomes that buying organizations can obtain in ERAs, in addition to financial gains. Furthermore, the authors asserted that the different outcomes can be obtained jointly, through the implementation of important organizational and project antecedents, and as such alleviate the traditional trade-offs between price savings and quality outcomes.

The current article extends electronic sourcing theory with two contributions: (1) it integrates satisfaction of the buying organization’s project team with the ERA project in the conceptual model of Amelinckx et al. (2008), and (2) it empirically tests this model in a large field study. While prior electronic sourcing studies have explored satisfaction of the buyer with the price savings resulting from an ERA, the buyer–supplier relationships, and the ERA tools and processes (Hartley et al. 2005, Jap 2002), there is a dearth of research that examines the relationship between multiple ERA project outcomes and ERA project satisfaction. ERA project satisfaction involves a comparison of the actual ERA project outcomes with the expectations of the buying organization’s project team prior to the ERA project (Hawkins et al. 2010, Oliver 1980). It is important to understand how ERA project satisfaction relates to a broad set of ERA project outcomes, as the main expectations of project teams at buying organizations from ERAs may well go beyond price savings, and may alter when conducting ERAs at a more mature stage (e.g., from a focus on price savings to a focus on cycle

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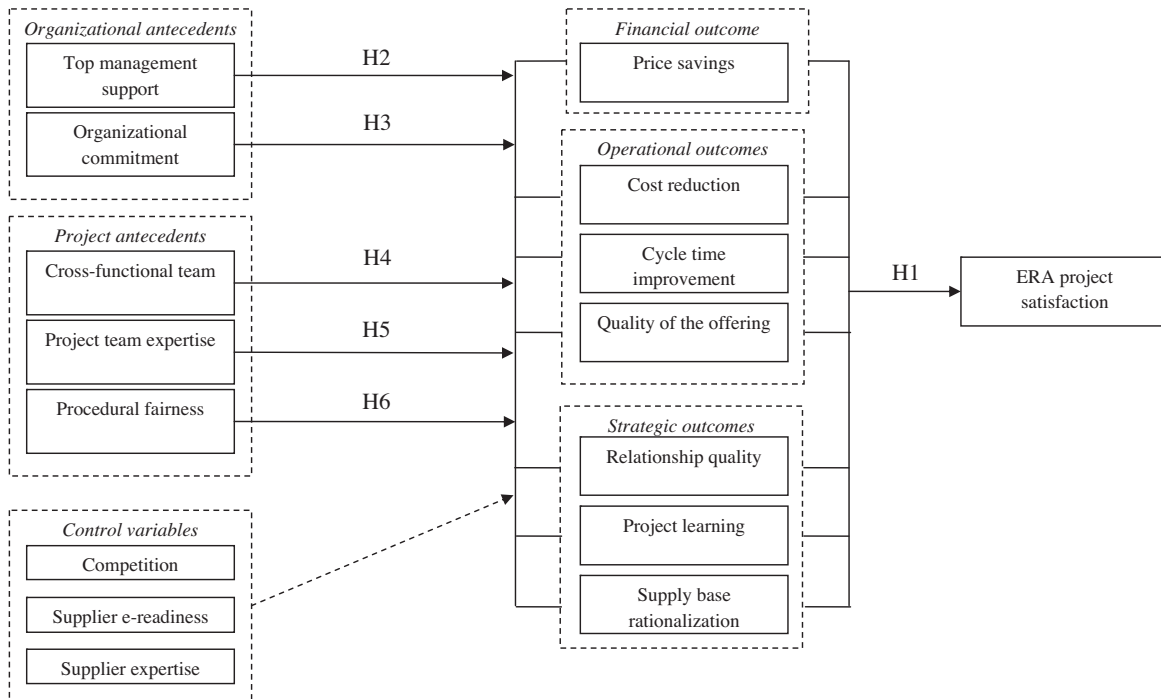


Fig. 1. Model and hypotheses.

time improvement) (Jap 2002). Hence, we formulate hypotheses that relate multiple ERA project outcomes to ERA project satisfaction. In addition, we develop hypotheses for the antecedent–outcome relationships, and empirically test the conceptual model, based on input from 180 buying professionals around the world.

The balance of this article is laid out as follows. In the next section, we present the model and develop the hypotheses, drawing from the electronic sourcing literature on ERAs. In Section 3, we describe our research method, and we present our results in Section 4. We discuss findings, implications, and limitations of our study in Section 5.

2. Model and hypotheses

We will extend the conceptual model developed by Amelinckx et al. (2008), as shown in Fig. 1. The model is extended with ERA project satisfaction, and a set of hypotheses is developed. Based on a review of studies of the relationships between ERA outcomes and antecedents, which is presented in Appendix 1, we first discuss ERA project satisfaction and hypothesize a positive relationship between ERA project outcomes and ERA project satisfaction (H1). We then formulate hypotheses relating the antecedent factors to these outcomes (H2–H6). For reasons of clarity, the hypothesized relationships between ERA project outcomes and ERA project satisfaction, and between ERA project outcomes and antecedents, are visually combined in Fig. 1.

2.1. ERA project satisfaction and ERA project outcomes

ERA project satisfaction is the extent to which the expectations of the project team, in terms of the ERA project outcomes, are met (Hawkins et al. 2010, Oliver 1980). Although buyer satisfaction with an ERA project is considered key in a buyer's evaluation of an ERA (Jap 2002), there is a dearth of research that has investigated this. Notable exceptions include Jap (2002), Hartley et al. (2005), and Hawkins et al. (2010).

Jap (2002) reviewed when, how, and why ERAs are used and explored satisfaction of the buyer with the auction tool and with

the suppliers. Based on an exploratory survey completed by 38 sourcing managers from four buying organizations, Jap (2002) found no significant difference among satisfaction of the buyer with the winning supplier across open- and sealed-bid auctions.¹ However, buyer's satisfaction with the losing suppliers was higher for sealed auctions than for open auctions. In addition, a correlational analysis indicated that buyer's satisfaction with the auction tool was negatively associated with the number of invited suppliers, and positively with the extent to which there is competition due to new international entrants in the supply base.

While Jap (2002) explored buyer satisfaction with the supplier and the auction tool, the author did not study satisfaction with a broader set of ERA outcomes and ERA project satisfaction in general. Likewise, Hartley et al. (2005) explored three areas of buyer satisfaction with ERAs: satisfaction with the purchase price, satisfaction with the supplier relationship, and satisfaction with the purchasing process (i.e., the planning and bidding process stages). Based on an inquiry of 47 purchasing managers, the authors stated that buyers are more satisfied with the purchase price than with the supplier relationship and the process. Unlike Jap (2002) and Hartley et al. (2005), Hawkins et al. (2010) considered satisfaction in general. In particular, the authors identify, based on case study research, prior ERA sourcing satisfaction as a determinant of the decision to source via ERAs.

While the exploratory work of Jap (2002), Hartley et al. (2005), and Hawkins et al. (2010) offer initial insights on buyer satisfaction with the ERA tool, purchasing process, supplier relationships, and purchase price, they do not consider a broader set of ERA project outcomes, and do not investigate how these outcomes are related to ERA project satisfaction.

The above definition of ERA project satisfaction is consistent with the expectation–confirmation theory, which considers satisfaction with an information system to be formed by a comparison between what is expected or desired before use and the actual outcomes after

¹ In open bid ERAs, all participating suppliers, as well as the buyer, see each bid at the same time. In sealed-bid auctions, only the bidding supplier and the buyer have access to the details of the supplier's specific bid (Jap 2002).

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