

# IMPROVING CO-PRODUCTION BEHAVIOR AND CITIZENSHIP BEHAVIOR OF CLIENT IN ENTERPRISE SYSTEM SERVICE: A VIEW BASED ON SIGNALING THEORY

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## Abstract

*In knowledge-intensive business service, the participation of clients is important to service providers to successfully deliver high-quality service. Our research discusses this topic in enterprise system (ES) service, where clients' co-production behavior and citizenship behavior are critical because they need to provide specific business knowledge to vendors to develop a satisfactory ES. However, because clients are unaware of vendor's competence and goodwill, the potential risk impedes them from performing such behaviors. As information asymmetry exists between vendors and clients, we adopt signaling theory to investigate how to improve clients' co-production behavior and citizenship behavior. According to this theory, we consider vendor's in-role and extra-role performance as the signal sent to clients, which influence clients' trust in vendor's competence and goodwill. This trust leads to co-production behavior and citizenship behavior as a consequence. The current study intends to conduct questionnaire survey among clients of a focal ES vendor. Expected contributions are specified at the end of this paper.*

*Keywords: co-production behavior, citizenship behavior, inter-organizational trust, enterprise system service, signaling theory.*

# 1 INTRODUCTION

Enterprise system (ES) market is one of the most prosperous industry with the size of 24.4 billion dollars in 2013 according to Gartner's report<sup>1</sup>. However, due to the intensive competition, ES vendors are still suffering the high risk of failure. Factors such as unsuccessful ES implementation (Hong & Kim 2002), inappropriate system development direction (Pollock & Hyysalo 2014), and limited marketing skills (Sarker et al. 2012) can lead to the loss of market share. Thus, it is necessary for ES vendors to leverage all the resources to explore new approach to better implement ES, develop new functional modules, and build marketing tactics.

As a valuable resource, clients are able to provide significant help to vendors. On the one hand, the co-production behavior of client, such as transferring business knowledge to technical consultant (Dong-Gil et al. 2005), is necessary for vendors to successfully conduct ES service (Bettencourt et al. 2002). On the other hand, some clients voluntarily conduct citizenship behavior, aiming to help vendors overall (Groth 2005). For example, they are willing to help vendors to construct a generic comparability to promote the potential reach of ES. Also, they provide assistance to vendors' other clients, guiding them to better implement ES (Pollock & Hyysalo 2014).

ES service, as a knowledge-intensive business service, requires a strong interaction between service provider (i.e., ES vendor) and client (Katz 1964). Thus, co-production behavior is not only a necessity for completing the delivery of service, but also a determinant of service success. Although ES vendors have the technical specialty of developing information systems, they need to rely on the resources and capabilities owned by their clients to modify and adjust ES which meets clients' specific demand (Dong-Gil et al. 2005). As Bettencourt et al. (2002) point out, service providers "should take steps to proactively manage their clients' co-production behaviors" (p.101). However, client's co-production behavior in knowledge-intensive business services does not attract enough attentions comparing to its importance. Existing literature concerning this topic provides insightful opinions about how to manage and assess co-production behavior (Bettencourt et al. 2002), and how to understand it through a dyadic problem solving process (Piercy et al. 2006). These studies omit the fact that it is not compulsory for clients to perform a high level of co-production behavior. Specifically, clients may provide detailed business information and deeply involve into the project during ES service. Alternatively, it is feasible for them to merely provide basic information and put minimum effort. The criterion for clients to conduct co-production behavior is the tradeoff between the benefit from a successful ES and the sacrifice such as time and effort. Thus, how to motivate clients engaging in effective co-production remains an intriguing question need to be investigated (Auh et al. 2007).

Recent studies point out citizenship behavior of clients generates benefits for firms (Groth 2005; Yi et al. 2011). However, encouraging their citizenship behavior remains challenging because of its voluntary nature (Bove et al. 2009). When clients are individuals, some factors have been identified to be favorable to, or deleterious to citizenship behavior (Bartikowski & Walsh 2011; Bove et al. 2009; Yi & Gong 2008). Unfortunately, empirical results regarding antecedents of citizenship behavior of individual clients have not been consistently strong and robust, prompting a call for additional research attentions (Bove et al. 2009). Further, in knowledge-intensive business service, developing these

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<sup>1</sup> Source: <https://www.gartner.com/doc/2729518/market-share-analysis-erp-software>

understandings is especially difficult because it is quite different from environments in which the theories usually have been developed and tested. When clients are firms, they care more about risks by performing citizenship behavior. For example, there is a concern of “free ride” of competitors when clients participate the development of a new function which is potentially valuable to others (Pollock & Hyysalo 2014).

In essence, it is a decision making process for clients to conduct co-production and citizenship behavior. To figure out whether the vendor deserves those behaviors, clients need sufficient information. However, neither competence nor goodwill of the vendor is known by clients, which leads to a situation called information asymmetry. As signaling theory concerns how to reduce information asymmetry between two parties, we draw on this theory to explain how clients’ perception of the vendor affects their trust, in turn influencing the willingness to perform co-production and citizenship behavior.

## **2 THEORETICAL BACKGROUND AND PROPOSITIONS**

### **2.1 Signaling theory**

Signaling theory explains the effort to reduce information asymmetry between two parties. According to the review of Connelly et al. (2011), a single dyadic signaling model contains three elements: signaler, receiver, and signal. Signalers are insiders who obtain the information which is unavailable to outsiders. Receivers are outsiders who are lack of information. Signalers send signals in order to prove their unobservable abilities to receivers. Those abilities indicated by signals normally fulfills the need of receivers. From receivers’ view, signals help them to obtain information which is conducive to decision making. A classic example exists in labor market, where employers seek to find appropriate employees for their firms (Spence 1973). Employers (i.e., the receiver) refer to signals (e.g., education background, work experience, and certificate of qualification) which indicate the competency of potential employees (i.e., the signaler) to figure out whether they are suitable to the vacant position.

ES service is a long process containing multiple phases such as model selection, requirement analysis, system implementation, operation, and maintenance. At preliminary stage, clients are still uncertain about vendor’s competence and goodwill even though they begin working together. Because of the risk brought by co-production and citizenship behavior, clients need to seek for signals to make such decision. We consider vendor’s behavior as signal for several reasons. Firstly, vendor’s behavior is easily observed by clients with a high frequency. During ES project, vendor and clients need to collaborate to complete tasks, which gives clients a chance to observe vendor’s behavior all the time. High observability and frequency allow clients to continuous receive and interpret most recent signals to compare with signals received before. Clients are able to make appropriate decision after building a comprehensive perception to the vendor. Secondly, vendor’s behavior has a high correlation with their competence and goodwill, which suggests a good fit between signal and unobserved information. Thirdly, vendor’s behavior is a reliable signal to clients. As signalers may reap benefits from sending unauthentic signals, the honesty of signalers attracts the concern from scholars (Durcikova & Gray 2009). For ES vendors, it is costly and unrealistic to conduct mendacious behavior in order to show the competence and goodwill they do not have. As mentioned before, vendor’s behavior has a high level of observability and frequency. Although signalers are able to send dishonest signal occasionally, constantly performing behavior beyond capacity or against willingness is impossible for them.

In general, information asymmetry about quality and information asymmetry about intention receive most attractions (Stiglitz 2000). The former one refers to one party's unawareness of the other party's real characteristics; the later one is about the uncertainty to behavior intentions of the other party in the future (Ndofor & Levitas 2004). In ES service, clients have insufficient information about vendor's competence of providing ES service. Also, they cannot predict vendor's goodwill which ensures the client's benefits will not be harmed by the vendor (Hui et al. 1999). As a result, they refer to vendor's behavior as the signal which helps them to make decisions. We categorize vendor's behavior as in-role and extra-role, investigating their different roles in indicating vendor's competence and goodwill. As signals are able to alter the belief of receivers, clients' trust to the vendor will be influenced after observing and interpreting signals sent by the vendor (Ndofor & Levitas 2004). It in turn affects their willingness to conduct co-production and citizenship behavior. Based on above, we propose the following research model.

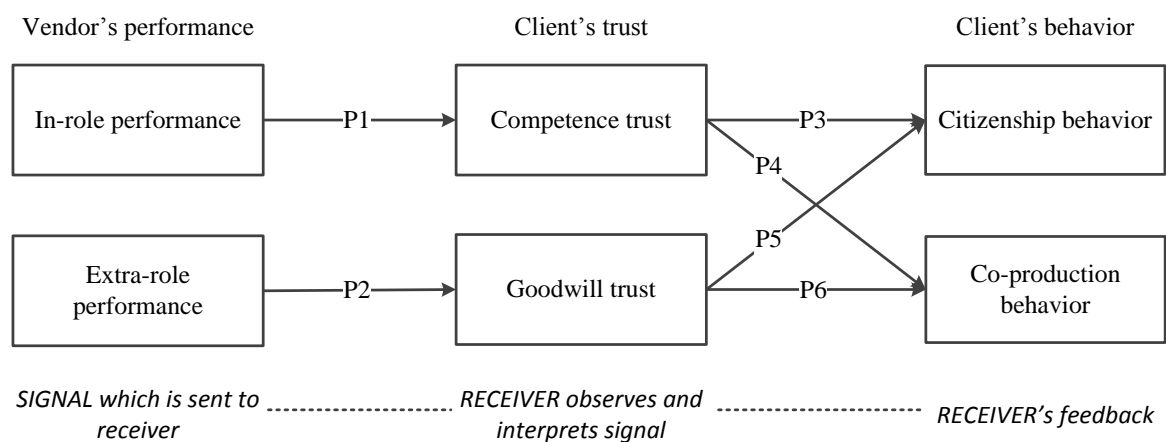


Figure 1. Conceptual Model.

## 2.2 In-role and extra-role behavior

The distinction between in-role and extra-role behavior can be traced back to the seminal work of Katz (1964). Scholars contributed a lot of efforts in terms of conceptualization (Kim & Mauborgne 1996), measurement (Williams & Anderson 1991), and dimensionality (Van Dyne & LePine 1998) of in-role and extra-role behavior performed by individuals inside an organization. According to this stream of research, in-role behavior is required or expected behavior prescribed in contract. It is the basis of regular and ongoing job performance. The failure to perform in-role behavior leads to the decrease of rewards received from the organization (Kim & Mauborgne 1996). Extra-role behavior, on the contrary, is discretionary behavior which is not specified in advance by role prescriptions. An individual will not receive punitive consequences (e.g., decreased rewards) without performing extra-role behavior (Van Dyne & LePine 1998).

Afterwards, this distinction is introduced into marketing field to distinguish the behavior of buyers and sellers. The terms of "in-role performance" and "extra-role performance" are used to represent in-role and extra-role behavior of salesperson (MacKenzie et al. 1998; Piercy et al. 2006). As to customers, their in-role and extra-role behavior are identified as co-production behavior and citizenship behavior respectively (Groth 2005).

Existing literature investigates behavior of buyers and sellers at individual level. Our research concerns knowledge-intensive business service, where vendors and clients are organizations. So the behavioral

mode of both vendor and client is different from what have been explored at individual level. We follow Bock et al. (2005) to identify client's behavior, considering co-production behavior as in-role behavior which aims to ensure the delivery of ES service. Client's citizenship behavior is extra-role behavior with the purpose to help the vendor overall. As a vendor is the party to provide service, we follow the terminology of salesperson research (MacKenzie et al. 1998; Piercy et al. 2006), taking in-role performance to describe its in-role behavior which is prescribed in formal contracts, such as installing hardware and software. Extra-role performance reflects vendor's extra-role behavior which is beyond the formal contract, such as providing constructive managerial advices.

### **2.3 Vendor's performance and client's trust**

Trust is defined as "the willingness of a party to be vulnerable to the actions of another party" (Malhotra & Lumineau 2011 p.982). When engaged in a relationship with trust, partners are more willing to exchange resources regardless of the potential risk of opportunism. Trust is developed through interactions between two parties. As Liu et al. (2008) point out, inter-organizational trust arises after several transactions in which behaviors of two parties are perceived as fair by each other.

Nooteboom (1996) categorizes trust as competence trust and goodwill trust. Competence trust refers to the extent to which one party believes that the partner possesses enough resources and capabilities to meet the agreements of the contract (Patzelt & Shepherd 2008). In-role performance of the vendor shows its professional expertise to effectively perform the job regulated in contract, which leads clients to believe in the vendor's competence (Liu et al. 2008). To build competence trust, clients need to proactively collect information about various aspects of the vendor. In-role performance observed by clients conveys the information which supports the development of competence trust (Das & Teng 2001b).

Goodwill trust refers to the belief to the intention of another party to behave in a trustworthy manner (Malhotra & Lumineau 2011). It is about the good faith, good intentions, and integrity of one party (Das & Teng 2001b). Extra-role performance concerns the behavior beyond contracts, which shows the willingness of the vendor to help clients to improve their business (Van Dyne & LePine 1998). As this behaviors are voluntary and generate no revenue, extra-role performance is considered as the reflection of vendor's goodwill. Therefore, goodwill trust is built after observing a high level of extra-role performance.

**Proposition 1.** Vendor's in-role performance perceived by client has a positive impact on the client's competence trust to the vendor.

**Proposition 2.** Vendor's extra-role performance perceived by client has a positive impact on the client's goodwill trust to the vendor.

### **2.4 Client's trust and behavior**

The most important factor which impedes clients from conducting co-production and citizenship behavior is the risk perceived by them. On the one hand, they are uncertain of whether the vendor has sufficient resources and expertise to successfully complete ES service. They are afraid that their input of co-production and citizenship behavior in this ES project cannot receive a satisfying output in return. Performance risk reflects this concern, which refers to the probability and consequences of not achieving the goals in a relationship, given good intentions and efforts of the partner (Das & Teng

2004). On the other hand, as they share sensitive information and knowledge with the vendor through co-production and citizenship behavior, clients are worried about vendor's potential opportunistic behavior. It is depicted in relational risk which reflects the probability and consequences of a partner not fully committing to a relationship and not acting in the manner expected (Das & Teng 2004). It is investigated that competence trust reduces perceived performance risk (Das & Teng 2001a). As clients believe that the vendor is able to provide successful ES service, they are willing to put effort to cooperate and help the vendor to reap the benefits from this project. Existing literature point out goodwill trust decreases relational risk (Liu et al. 2008; Lui & Ngo 2004). With the confidence of vendor's integrity, clients feel safe to share resources to vendor when working together. Based on above, competence trust and goodwill trust are conducive to reducing the risk perceived by clients, enhancing their willingness to perform co-production and citizenship behavior.

In addition, the expectation of long-term cooperation improves the willingness to perform co-production and citizenship behavior. By conducting those behavior, clients will build close relationship with the vendor, which will benefit them in long term. For example, clients will impact the direction of ES development to suit better with their own business if they work closely with the vendor (Pollock & Hyysalo 2014). Competence trust is a major precondition to form a long-term relationship (Patzelt & Shepherd 2008). Clients seek for long-term cooperation with the vendor who possesses enough resources and capabilities to fulfill their requirements on ES. Goodwill trust ensures vendor's competence is appropriately used to serve clients. It also plays a role of social glue which keeps partners together (Faems et al. 2008). Thus, both competence trust and goodwill trust contribute to the orientation to maintain long-term relationship between vendor and clients, which improves co-production and citizenship behavior conducted by clients.

**Proposition 3.** Client's competence trust to the vendor has a positive impact on client's co-production behavior.

**Proposition 4.** Client's competence trust to the vendor has a positive impact on client's citizenship behavior.

**Proposition 5.** Client's goodwill trust to the vendor has a positive impact on client's co-production behavior.

**Proposition 6.** Client's goodwill trust to the vendor has a positive impact on client's citizenship behavior.

### **3 RESEARCH PLAN AND METHODOLOGY**

We planned to collect large-scale survey data to test our propositions. We collaborated with a focal ES vendor which was one of the leading ES service companies in China. With the help of this vendor, we got a sample pool consisted of its client firms which were currently in the process of ES service. This vendor agreed to assign its client representatives to help us contact to the client firms, which was conducive to improve the response rate and quality due to the personal bonds between them. We intended to visit client firms accompanied by the client representative and distribute the questionnaire to them. By face-to-face communication, we were able to explain the purpose of this study and answer questions raised by respondents. Survey items regarding vendor's performance, client's trust was designed to be responded by client firms. In order to minimize the bias caused by self-evaluation, we

tried to invite the project managers in the vendor firm to rate client's co-production and citizenship behavior when implementing ES. Likert's five-point scale was adopted to measure the judgment of clients from "strongly disagree" to "strongly agree".

After finishing data collection, we intended to check the non-response bias and potential common method bias of the data source at first. Then the reliability and validity of the constructs were supposed to be tested to ensure the measurement model reaches the criteria. Afterwards, we intended to adopt partial least square (PLS) regression to test the hypotheses. This method was selected because this approach was suitable for predictive and exploratory research (Fang et al. 2014). In addition, as the anticipated sample size was not very large, PLS was an ideal method due to its relatively low requirement of sample size.

## **4 EXPECTED CONTRIBUTIONS**

By conducting this research, we attempt to contribute to extant literature in following aspects.

Firstly, we empirically investigate how to encourage co-production and citizenship behavior of client, extending service science research. After Bettencourt et al. (2002) put forward the topic of client's co-production behavior in knowledge-intensive business service, relevant quantitative study is sparse in the following years. Our study addresses this gap and attempts to provide empirical evidence about how to improve client's co-production and citizenship behavior. Further, most extant studies discuss co-production and citizenship behavior of individuals such as employees (Podsakoff et al. 2000) and customers (Groth 2005). We try to explore the influencing factors of those behaviors when both parties are firms. Our research highlights the impact of one party's behavior on the other party's perception and behavior in an exchange relationship. Specifically, the satisfying behavior of the vendor brings about client's trust which consequently increases client's co-production and citizenship behavior. Our effort echoes the call of more studies concerning how to improve co-production and citizenship behavior (Bettencourt et al. 2002; Bove et al. 2009).

Secondly, we adopt signaling theory to identify the antecedents and explain the influencing mechanism, which is the first trial in research of co-production and citizenship behavior. In previous research, social exchange theory is the dominant perspective to interpret this phenomena (Cropanzano & Mitchell 2005; Konovsky & Pugh 1994; Yi & Gong 2008). However, in knowledge-intensive business service, information asymmetry between two parties becomes salient. At the beginning of business service, client has little information about the competence and goodwill of the vendor. They need to rely on their observations during the service process to decide the extent to the time and effort they invest in the future. Therefore, we use signaling theory to understand this issue. Vendor's behavior is considered as signal in relevant literature, because it has high observability, frequency, fit, and reliability. As to signaling theory, our research takes the behavior conducted by one party as the signal to the other party, which extends the scope of this theory.

Thirdly, we categorize two kinds of trust (i.e., trust in competence and trust in goodwill) which mediate the relationship between vendor's performance and client's behavior, intending to explore their different roles in this mechanism. Vendor's in-role performance addresses the proficiency of doing business; whereas extra-role performance indicates their willing to help the client. Thus, they are supposed to impact client's trust in different aspects. Similarly, trust in competence and goodwill may

improve co-production and citizenship behavior differently. Basically, existing understanding is still limited about how trust emerges and is managed (Ireland & Webb 2007). As Patzelt & Shepherd (2008) point out, future research “may profit from distinguishing between different types of trust” (p.1239). Our research attempts to reap this benefit from exploring different roles of trust in competence and trust in goodwill.

Through this study, we attempt to contribute to practitioners not only in ES industry, but also in knowledge-intensive business service industry. Clients are considered as an important external resource to a firm. As Groth (2005) indicates, when appropriated encouraged, clients can play the role of “soldier” to help the vendor to develop and sell products. Our research shows the approach to improve the willingness of clients to conduct co-production behavior and citizenship behavior. We suggest practitioners in knowledge-intensive business service industry to display a professional and helpful status at the beginning of the collaboration with clients. After highly evaluated by clients in the process of interaction, trust is built between parties. As a consequence, clients perform co-production behavior and citizenship behavior which helps the vendor to provide a better service and improve themselves.

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