

## Association for Information Systems AIS Electronic Library (AISeL)

---

PACIS 2013 Proceedings

Pacific Asia Conference on Information Systems  
(PACIS)

---

6-18-2013

# An Empirical Study of Guarantee in Service E-Commerce

Haichao Zheng

*Southwestern University of Finance and Economics*, [haichao\\_zheng@163.com](mailto:haichao_zheng@163.com)

Jui-Long Hung

*Boise State University*, [andyhung@boisestate.edu](mailto:andyhung@boisestate.edu)

Zhangxi Lin

*Texas Tech University*, [zhangxi.lin@gmail.com](mailto:zhangxi.lin@gmail.com)

Follow this and additional works at: <http://aisel.aisnet.org/pacis2013>

---

### Recommended Citation

Zheng, Haichao; Hung, Jui-Long; and Lin, Zhangxi, "An Empirical Study of Guarantee in Service E-Commerce" (2013). *PACIS 2013 Proceedings*. 148.

<http://aisel.aisnet.org/pacis2013/148>

This material is brought to you by the Pacific Asia Conference on Information Systems (PACIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in PACIS 2013 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# AN EMPIRICAL STUDY OF GUARANTEE IN SERVICE E-COMMERCE

Haichao Zheng, School of Economic Information Engineering, Southwestern University of Finance and Economics, Chengdu, China, haichao\_zheng@163.com

Jui-Long Hung, Department of Education Technology, Boise State University, Boise, USA, andyhung@boisestate.edu

Zhangxi Lin, Rawls College of Business Administration, Texas Tech University, Lubbock, Texas, USA, zhangxi.lin@gmail.com

## Abstract

*Service e-Commerce (SeC) is emerging as a booming form of e-commerce where various services are contracted, managed, sold, and even delivered via the Internet. However, the uncertainty of service quality due to information asymmetry has been a major challenge to the development of SeC. Some SeC platforms tried to promote service business by lowering buyer's perceived risk through the service guarantee mechanism. However, the mechanism seems not very successful to lift the low participation rate. This study investigated the effects of service guarantee on service e-marketplace by examining the case of zhubajie.com, a well-known service e-marketplace in China. A total of 30,406 providers (including 406 service-guarantee and 30,000 non-service-guarantee providers) were collected and analyzed. The analyses found that there are different modes for low-reputation and high-reputation service providers to participate in the service guarantee. In addition, results also show that service guarantee only improves business performance for the service providers with high reputation. For low-reputation service providers, the service guarantee mechanism does not have significant effects. Implications and suggestions were made to guide future practice and research in similar contexts.*

*Keywords: Service e-Commerce, Service sold online, Service guarantee, Business performance.*

# 1 INTRODUCTION

With the development of information technology, various products and services can be displayed, advertised, and sold online beyond the limit of space and time (Lee & Park 2009). Specifically, service e-commerce (SeC) is becoming an emerging e-business trend in recent years, with a much faster growth rate than e-commerce with physical products (Lee & Park 2009). There are two categories of SeC, from the perspective of either seller or buyer, service sold online (SSO), and service-oriented crowdsourcing (SOC) (Schal 2012). In traditional e-commerce, physical products' specifications and pricing were usually standardized or determined by sellers. Similar to traditional e-commerce, service providers in the SSO marketplace determine standardized service items, contents, pricing, and scopes. Then buyers can search available services and purchase suitable service online. Compared with SSO, the buyers of SOC post the service requirements first, then the service providers submit proposals or solutions to earn the contract or win the service award. Basically, SeC has the following characteristics (Lee and Park 2009): first, the transaction is conducted via e-commerce; Second, it comprises some degree of intangibility; third, the service must involve service and money exchange.

Because of the inherent intangibility, simultaneity, intimacy and perishability of tangible goods, a SeC is comparatively hard to be standardized and delivered (Metters et al. 2004). Although SeC transactions are limited by their own characteristics, many providers nevertheless try to offer services through Internet channels (Lee and Park 2009). SeC is different from e-service. E-service is defined as an interactive, content-centered, and Internet-based customer service, driven by the customer and integrated with related organizational customer support processes and technologies with the goal of strengthening the customer-service provider relationship (e.g., news portals, internet broadcasting, entertainment, and online books) (Ruyter et al. 2001).

SeC can be transacted on firm-hosted websites which are developed for some specific services, such as online learning (Lee 2010) and online securities brokerage services (Yang & Fang 2004). In addition to special service provider websites, SeC transactions can also be conducted on a third-party, two-sided platform, i.e., service e-marketplace. There are two classes of players in a third-party service e-marketplace, i.e., the service provider and the service buyer, either of which may be individuals or organizations. For example, zhubajie.com is a leading online service intermediary company in China. Until October 2012, it has attracted more than 7 million service providers<sup>1</sup> with over 96,000 posted service transactions (exceeded 1.4 billion RMB dollar value<sup>2</sup>).

Information asymmetry between service providers and service buyers is critical to the development of third-party service transaction platforms in which the online service provision takes place between parties who have never transacted before (Jøsang et al. 2007). In this condition, it is harder for service buyers to distinguish a "good" service provider from "bad" provider, because the buyer has insufficient information about the service provider, and about the service itself (Jøsang et al. 2007). Information asymmetry about the service provider's capabilities, fear of opportunism and misrepresentation on the part of the service provider can significantly affect the buyer's perceived risk, which has a negative effect on the buyer's purchase decision (Pavlou et al. 2007).

In order to lower buyers' perceived risks, service guarantee was developed as a solution in some third-party, online service marketplaces, including zhubajie.com. Unlike the service-guarantee mechanism in hospitality-related services (e.g., hotels, restaurants, tour services) (Hogreve and Gremler 2009), the service guarantee for online service marketplace has the following unique designs. First, the mechanism of service guarantee was designed and implemented by the intermediate (third-party)

---

<sup>1</sup> The service providers in zhubajie.com are called Witkey which means the key to wit, indicating that they are capable to solve the business problems for the service buyers.

<sup>2</sup> The exchange rate between USD and RMB is about 6.2, i.e., one USD equals to about 6.2 RMB dollar.

company, i.e., the service e-marketplace. Second, the mechanism includes two components: (a) Guarantees include various options at multiple levels - the service level and the compensation level (Kashyap 2001), (b) individual service providers can select from these options and deposit money to the third party company (service transaction platform) during the guarantee period. Third, if transaction failure is identified as caused by the service provider, the service e-marketplace will compensate the buyer with the money deposited by the service provider.

#### Purpose of the study

This study aims to examine the effects of the service guarantee for SeC because of the following reasons: First, extensive studies in service guarantee have been conducted in the fields of hospitality (e.g., hotels, restaurants, tour services) and retail (Hogreve and Gremler 2009). Sparse studies were focused on guarantees for SeC on the third-party platform. Second, from practical standpoint, Zhubajie.com started to carry out the trust assurance system in 2011, and after one year, only 460 service providers joined the service guarantee mechanism and deposited money. It cannot be viewed as a successful practice, while considering more than 7 million service providers in zhubajie.com. Based on the above discussions regarding service guarantee's values and limitations, this paper conducted an empirical study in service guarantee for service e-marketplace. In particular, aiming to answer the following research questions:

- What kind(s) of service providers tend to join the service guarantee?
- What impacts or effects of service guarantee toward service providers' business performance can be observed in this study?

## 2 LITERATURE REVIEW: THE VALUE OF GUARANTEE IN SERVICE E-COMMERCE

Service guarantee was borrowed from the product warranty (e.g., Erevelles 1993; Hogreve and Gremler 2009), and it has been extensively applied in hospitality related services (e.g., hotels, restaurants, tour services) and retail (Hogreve and Gremler 2009). A service guarantee consists of two elements: a service promise and a compensation offer in case of service failure (Kashyap 2001).

Service guarantee design and the outcome of service guarantee are the two main research streams in this field (Hogreve and Gremler 2009). In this study, we focus on the customer related impacts of service guarantee such as perceived risk and purchase intention. Extant research confirmed that service guarantee positively affects consumer's perceived risk, perception of service quality (Wirtz et al. 2000; Wu et al. 2012), Pre-purchase evaluations of a service firm (Ostrom and Iacobucci 1998), and purchase intention (Wirtz et al. 2000; Marmorstein et al. 2001). Based on studies in principle-agent, perceived risk, and service guarantee (e.g., Kim et al. 2008; Pavlou et al. 2007; Hogreve and Gremler 2009), a framework was developed as Figure 1 to demonstrate the value of guarantees in SeC.

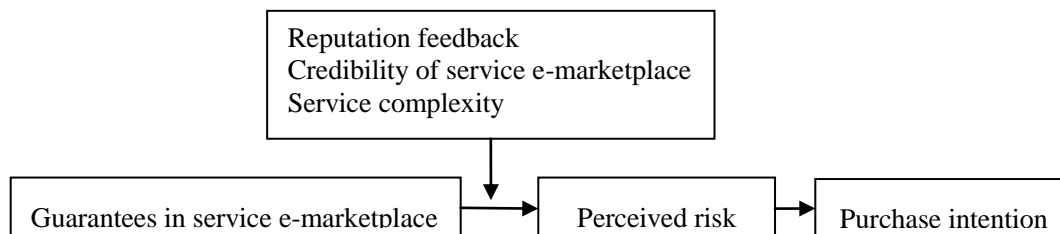


Figure 1. The value of service guarantee in service e-marketplaces

## **2.1. Perceived Risk and Purchase Intention of SeC**

The SeC transaction process consists of pre-contractual steps (purchase decision) and post-contractual processes (service process and perceived service quality). SeC purchase decision process was developed following a trust-based decision-making model, in which perceived risk is one key antecedent of purchase intention and purchase intention positively affects buyer's purchase decisions (Kim et al. 2008).

Perceived risk has been formally defined as "a combination of uncertainty plus seriousness of outcome involved" (Bauer 1967). In this paper, we define a buyer's perceived risk as his/her belief about the potential uncertain negative outcomes from a SeC transaction (Kim et al. 2008). From the consequence perspective, perceived risk can be classified as performance risk, time-loss risk, financial risk, psychological risk, personal risk, privacy risk, and source risk (Cases 2002; Lim 2003).

Uncertainty is one important factor of perceived risk based on the definition in Bauer (1967). Pavlou et al. (2007) define perceived uncertainty as "the degree by which the outcome of a transaction cannot be accurately predicted, the future states of the transaction could vary from a successful product fulfillment." There are two kinds of perceived uncertainty: seller quality uncertainty and product quality uncertainty. Seller quality uncertainty is the result of a seller hiding a product's true characteristics, making false promises, shirking, or defrauding. Product quality uncertainty results from a product's condition not being as promised, or a product's quality being compromised (Pavlou et al. 2007).

## **2.2. Effects of Service guarantee and the Moderating Factors**

The effects of service guarantee on perceived risk have been extensively verified in the field of traditional hospitality research (Ostrom and Iacobucci 1998; Wirtz et al. 2000; Wu et al. 2012). Service guarantee in service e-marketplace has the following unique characteristics: First, in addition to service guarantee, reputation feedback system is adopted to further reduce buyer's perceived risk. Second, service guarantee is usually conducted by a third-party company. Third, various types of services are transacted on the service e-marketplace, so characteristics of service (e.g., service complexity) play important roles in service guarantee.

From principle agent theory perspective, there are two problems in SeC transactions: the pre-contractual problem of adverse selection (hidden information) (Akerlof 1970), and the post-contractual problem of moral hazard (hidden action) (Rothschild and Stiglitz 1976; Pavlou et al. 2007). Hidden information refers to the fact that the true qualities of a service provider cannot be completely revealed to the service buyer. For simplicity, service provider can be classified as two types, low quality and high quality (Pavlou et al. 2007). High quality indicates that the service provider's trustworthiness is high, and the buyer's perceived risk is low. The first step for a service buyer to get satisfactory service is to identify service providers of high quality.

Examining signals from agents is one important method for service buyers to screen providers (Pavlou et al. 2007). Service guarantee in SeC can function as a signal of service provider quality, which will build the buyer's trust and reduce perceived risk. To differentiate high quality agents from low, effective signals must be visible, unambiguous, and differentially costly among agents (Rao and Ruekert 1994). The service quality from high-ability service providers (i.e., high reputation feedback) must be higher than that from low-ability providers. Thus high-ability providers should have lower compensation chances than low-ability providers from service failures.

Reputation feedback information itself is another signal of service buyer quality (Jøsang et al. 2007). Jøsang et al. (2007) found that information asymmetry can be mitigated through trust and reputation. To deal with information asymmetry issues, third-party service transaction platforms, such as zhubajie.com, have developed reputation feedback systems. These systems calculate providers' favorability ratings based on previous buyers' assessments of their buying experiences and the quality

of the services provided. In addition, these systems further divide service quality into several dimensions, such as service attitude, service efficiency and solution quality. From a theoretical perspective, reputation feedback systems can increase a buyer's trust for the service provider, and reduce the buyer's perceived risks.

To some extent, the information in the reputation feedback system can provide signals that reduce information asymmetry and, consequently, buyers' apprehension, thus mitigating their perceived uncertainty/risk (Pavlou et al. 2007). Compared with service guarantee, reputation feedback information is stable data which cannot be set by the service provider. On the contrary, the money deposit for service guarantee is the signal sent by the provider, which is one decision variable. Jarvenpaa et al. (2000) found that buyer's perceived reputation positively affect the trust of Internet stores. As a result, a service buyer evaluates the service provider's quality with both reputation feedback data and service guarantee. So, provider's reputation moderates the relationship between service guarantee and the perceived risk.

In addition to reputation feedback, we also identify two moderating factors, i.e., credibility of and service complexity. The credibility of service e-marketplace positively increases the credibility of its policies, such as the service guarantee. So we propose that credibility of service e-marketplace moderates the effects of service guarantee on perceived risk. Suwelack et al. (2011) found that types of product (search and experience goods) moderate the influence of money back guarantees (MBGs). As for the service conducted in the e-marketplace, more complex service impose the buyer's to more risk. the impact of guarantees on consumers evaluation might be stronger when the risk level increases (Ostrom and Iacobucci 1998).

### **3 RESEARCH METHOD**

#### **3.1. SeC and Service Guarantee in zhubajie.com**

##### *3.1.1. SeC in zhubajie.com*

Zhubajie.com, founded in 2006, is the largest third-party SeC platform in China with more than 7 million members. Currently, Zhubajie provides four types of service transactions<sup>3</sup>, contest, bidding, fast matching, and hiring. Contest, bidding, and fast matching are types of Service-Oriented Crowdsourcing (SOC) transaction. Hiring is a type of Service Sold Online (SSO).

The initial service transaction mechanism of zhubajie.com is *Contest*. To conduct a contest, the service buyer firstly develops a problem statement and broadcasts the problem on zhubajie.com. Then, service providers who register with zhubajie.com analyze the problem and submit solutions. At the end of a crowdsourcing contest, the service buyer evaluates the solutions and provides awards to the winner(s) (Howe 2006; Howe 2008; Terwiesch and Ulrich 2009).

Contests are more suitable to solving high creativity problems and high uncertainty problems (Boudreau et al. 2011). To increase the number of services sold online, zhubajie.com applied *Bidding* as another transaction mechanism. The service providers do not need to submit final solutions. Instead, they provide preliminary plans and set the price for completion. The service buyer receives multiple bids and selects the optimal service provider based on evaluation of the qualifications of the service provider and the price.

Biding has its own limitations, for example it requires buyers to spend a great deal of time evaluating

---

<sup>3</sup> The latest version of zhubajie.com started from February, 2013 combined contest, bidding, and fast matching as Service-Oriented Crowdsourcing (SOC).

service providers' proposals and qualifications. To quickly match service providers and buyers, zhubajie.com developed a new mechanism, called *Fast Matching*, which can be viewed as a revised version of bidding. Using *Fast Matching*, service buyers only receive one bid (proposal and price) at a time. That is to say, service providers negotiate with the buyer sequentially in the order of they bid. The fast matching task is closed when the task is contracted between the buyer and winning service provider.

The above three business models are of requirement-pulled, i.e., the service buyer moves first to publish the business problems. In 2012, zhubajie.com implemented a service provider-pushed mechanism called *Hiring* which is a type of SSO. In this kind of service transaction, the providers describe, and set a price for their service goods, and list them in their profile shops. Service buyers search the target provider/service goods, and employ the provider to complete service transactions.

### 3.1.2. Service guarantee in zhubajie.com

Service in zhubajie.com aims at reducing buyer's perceived risk with the incentive mechanism, which enables more monetary obligation between online traders. The first version of service guarantee in zhubajie.com consisted of three options. The first option is originality assurance, which stipulates that the solutions were not originally created by another service provider (e.g., copy or infringement of others' work). The second option is completion assurance which aims to ensure that the service is completed on schedule. The last option is free revision assurance, indicating that the service provider may revise solutions freely after the sale. The service provider may deposit money to buy the combination of these three assurances. The originality option is 2000 RMB dollars, the completion assurance is 1000 RMB dollars, and the free revision assurance is 500 RMB dollars. If the service provider violates the above warranties, the buyer will be compensated with the money deposited by the provider.

The latest version of service guarantee, deployed in August 2012 in zhubajie.com, has four options (<http://chengxin.zhubajie.com/security/witkey>). A comparison of the first and second generation of service guarantee is listed in Table 1. The data used in this paper is from the first version guarantees. The first option of the second version service guarantee is trust assurance, which aims to ensure that the service goods descriptions are not overstated, and that the service is completed on time. The difference between this option and completion assurance is that trust assurance is more suitable to provider-pushed service transactions, in that it requires that service goods descriptions must not be exaggerated. The second option is originality assurance which is identical to the corresponding option in the first service guarantee. In the new service guarantee, after sale service is divided into two parts, i.e., the third option, free revision assurance, and the fourth, free maintenance for three months. The free revision assurance applies to creative tasks, such as logo design, website design, etc. Free maintenance for three months is suitable for website development, software development, and mobile application development.

Service guarantee	1 <sup>st</sup> generation	2 <sup>nd</sup> generation	Brief description
completion	√		Complete service on schedule
originality	√	√	The solutions are originally created
free revision	√	√	Revise the solutions free of charge
trust assurance		√	Service goods description is not overstated, and the completion of service is on time
free maintenance for three month		√	Maintain the solutions (e.g., software) without charge for three months

Table 1. Comparisons of the two generations of service guarantee in zhubajie.com

### 3.2. Data collection

406 service providers joined the first version of Zhubajie's service guarantee system were collected for this study. The other 30,000 service providers were randomly collected from providers who did not participate in the service guarantee system for comparison purposes. In addition to the basic profiling information of the service providers, we also collected their service transaction records from zhubajie.com. Based on the transactions records and the profiling information of service providers, we got the variables for data analysis listed in Table 2. The descriptive statistics of these 406 service providers who join service guarantee are shown in Table 3.

Variable	Description
Ability_rank	Ability rank is computed with ability value. The range of rank is from integer zero to eight. For example, if the ability value is zero, then the rank is zero. If the ability value is between 300,000 and 600,000, then the rank is eight.
Ability_value	Ability value is the accumulation of the reward of the successful transactions which received good evaluations or medium evaluations from the service buyers. If a service gains good evaluation, its reward is added to ability value. If a service gains medium evaluation, half of its reward is added to ability value.
Bid_success_money	The accumulation of the reward of successful service transactions with bidding.
Bid_success_num	The times of successful service transactions with bidding.
Bidding_success_ratio	The variable is used to test the effect of service guarantee on provider's bidding performance. Bidding success ratio is calculated by dividing the successful bidding by the total bidding times.
Certificate_num	The service providers in zhubajie.com can post some certificates to signal their professional competency. This variable refers the certificates number.
Confirmed_num	The service e-marketplace operator can confirm service providers information in diverse ways, such as email, mobile phone, and ID card. This variable is the number of confirmations which pass zhubajie.com examination.
Contest_success_ratio	The variable is used to test the effect of service guarantee on provider's contest performance. Contest success ratio is calculated by dividing the successful contest times by the total contest participation times.
Contest_success_money	The accumulation of the reward of successful service contests.
Deposit money	To join service guarantee system in zhubajie.com, the service providers are required to deposit some money to deal with the service failure.
Hiring frequency	The variable is used to test the effect of service guarantee on provider's hiring performance. Hiring frequency refers how many times the service provider employed by buyers to conduct service.
Gain_money	This variable is the accumulation of the reward of the successful service transactions.
Gain_money_per_month	This variable is the derived by dividing gain_money by the membership duration in month unit.
Good_evaluation_money	This variable is the accumulation of the reward of the successful service transactions which received good evaluations.
Good_evaluation_ratio	In addition to evaluate service speed, service attitude, and service quality, service buyers can evaluate the service overall. The overall evaluations also include good, medium, and bad evaluation. The good evaluation ratio is calculated by dividing good evaluations times by the total evaluations.
Matching_success_ratio	The variable is used to test the effect of service guarantee on provider's matching performance. Matching success ratio is computed by dividing



Variable	Description
	the successful matching times by the participation times.
Member_duration	This variable refers how long the service provider have registered in zhubajie.com measured in month unit.
Money_per_task	It refers the average reward size of the service transactions.
Notended_task_num	Although the service providers and the buyers come into initial transaction intention, they often failed to approached to the final transaction contract.
Service_average_attitude	Service attitude is scored by service buyers to evaluate the service providers. Attitue evaluations include good, medium, and bad which are received from service buyers after the completion of service transaction. Zhubajie.com codes good evaluation is code as 2, medium evaluation as 1, and bad evaluation as 0. Average attitude is computed by dividing the sum of attitude by the evaluations times.
Service_average_attitude_best_ratio	This variable is computed by dividing the good evaluations times of service attitude by the total attitude evaluation times.
Service_average_quality	Quality evaluations include good, medium, and bad which are received from service buyers after the completion of service transaction. Zhubajie.com codes good evaluation is code as 2, medium evaluation as 1, and bad evaluation as 0. Average quality is computed by dividing the sum of quality by the evaluations times.
Service_average_speed	Service speed refers how soon the service is completed. Similar to service quality, service Speed evaluations include good, medium, and bad which are received from service buyers after the completion of service transaction.
Service_average_speed_best_ratio	This variable is computed by dividing the good evaluations times of service speed by the total evaluation times.
Service_sold_num	Each service provider can sold many service in zhubajie.com.
Skill_num	Each service provider can show multiple skills labels online.
Success_task_num	This variables refers the total number of the service transactions which come into the final contract or not come into the final contract.

Table 2. Variables list collected from Zhubajie.com for data analysis

Variables	Mean	SD	Min	Max
Membership duration (month)	15.07	14.96	0	66
Gain money (¥)	21,600.00	54,666.80	1.0	526689.6
Successful transaction number	32.07	105.809	0	1081
Good evaluation ratio	0.99	0.06	0	1
Deposit money	1,865.23	1,102.57	1000	6500
Ability rank	2.20	2.03	0	8
	Frequency	Percentage(%)		
Individual or firm			0	1
Individual	327	80.50		
Firm	78	19.20		
Missing	1	0.20		

Table 3. Descriptive statistics of the 406 service providers

### 3.3. Results

#### 3.3.1. Service Provider Profiling

Clustering analysis was conducted to depict profiles of 406 providers who enrolled in service guarantee. Two clusters were generated by clustering analysis in Table 4. Based on the results, cluster 1 represents low-reputation service providers with less successful completed transactions, and shorter membership durations. On average, providers in Cluster 1 have been as a member in Zhubajie.com for 7.09 months. However, these providers almost haven't made any money from the platform. On the other hand, Cluster 2 represents high-reputation service providers who have been highly successful in Zhubarjie.com. These providers have aggregated significantly higher transaction records and averagely have been Zhubajie's members for 19.94 months. The same clustering algorithm was applied to classify 30,000 providers into two Clusters, Cluster 3 and Cluster 4, which represent low-reputation non-service-guarantee and high-reputation non-service-guarantee providers respectively.

Variable	Cluster1	Cluster2	Total
Number of Provides	154	252	406
Average of money_per_task	2.60	647.03	402.59
Average of gain_money	2.60	21,766.94	13,511.50
Average of ability_value	2.60	21,720.63	13,482.76
Average of service_average_quality	0.00	4.89	3.04
Average of ability_rank	0.02	3.54	2.20
Average of success_task_num	0.01	51.65	32.07
Average of member_duration	7.09	19.94	15.07

Table 4. Results of Clustering Analysis

Examining results of clustering analysis allows identifying what types of service providers tended to join service guarantee. Table 5 shows profiles of low-reputation service providers who chose to participate or not participate in service guarantee. Based on the results, low-reputation providers who participated in the service guarantee have shorter membership duration, higher skill level and more transactions than low-reputation non-service-guarantee providers. However, the low-reputation service-guarantee providers' have more uncompleted (failed) transactions. Based on above results, these skilled, low-reputation providers might utilize service guarantee as a means to attract more transactions.

Variable	Low-reputation service-guarantee providers	Low-reputation non-service-guarantee providers
Average of confirmed_num	2.7597	0.1848
Average of service_sold_num	0.8831	0.0110
Average of skill_num	3.3636	0.2872
Average of member_duration	7.0909	23.8078
Average of service_average_attitude	0.5519	0.0121
Average of service_average_attitude_best_ratio	0.1104	0.0024
Average of service_average_speed	0.5519	0.0121
Average of service_average_speed_best_ratio	0.1104	0.0024
Average of certificate_num	0.0455	0.0029

Average of not_ended_task_num	0.1883	0.0409
-------------------------------	--------	--------

Table 5. Comparisons of low-reputation service providers who participated or not participated in service guarantee

Table 6 compares profiles of high-reputation service providers who participated or not participated in service guarantee. The results show high-reputation providers who participated in service guarantee have much more successful transaction records than non-service-guarantees providers. The results imply these service-guarantee providers have been highly successful in the service e-marketplace. They joined service guarantee because they want to maintain their high profiles.

Variable	High-reputation service-guarantee providers	High-reputation non-service-guarantee providers
Average of servicesold_num	4.738	0.454
Average of ability_value	21,720.629	1,633.970
Average of gain_money_per_month	1,125.991	121.737
Average of contest_success_money	16,346.588	381.712
Average of ability_rank	3.536	1.774
Average of gain_money	21,766.943	1,635.470
Average of goode_valuation_money	21,690.894	1,633.454
Average of bid_success_num	2.524	0.052
Average of bid_success_money	3,356.920	40.780
Average of service_average_quality	4.893	3.778

Table 6. Comparisons of high-reputation service providers who participated or not participated in service guarantee

### 3.3.2. The effects of guarantees on service provider's business performance

Previous sections introduced four major types of transactions (hiring, matching, bidding, and contest) on Zhubajie. Table 7 shows how service guarantee influenced low-reputation and high-reputation providers on numbers of various transactions.

Service-Oriented Crowdsourcing (SOC) transactions (contest, bidding, and fast matching) require service providers' competitions by offering the best solution, the lowest price, or the most appropriate provider. The success ratio (total number of successful projects/ total number of participated projects) was used as a performance indicator of these types of transactions. On the other hand, Service Sold Online transactions (hiring) allow buyers to select providers directly without going through competition. The frequency of hiring was used as a performance indicator for hiring transactions.

To identify effects of service guarantee, service providers' performance on above four types of transactions were compared between before and after joining service guarantee Paired samples t-tests. Table 7 shows the comparison results Based on the results, joining service guarantee cannot improve the successful rate of bidding transactions. Except for that, joining service guarantee did increase successful rate of Cluster 2 (high-reputation) service providers. However, similar effects cannot be found in Cluster 1 (low-reputation) service providers. Service guarantee only significantly increased the successful rate of contest transactions for low-reputation providers at marginal level.

Business performance	low-reputation providers	high-reputation providers
Contest success ratio	.073 ※	.089 ※

Bidding success ratio	.237 <sup>ns</sup>	0.126 <sup>ns</sup>
Matching success ratio	.347 <sup>ns</sup>	.000***
Hiring frequency	.319 <sup>ns</sup>	.013*

Table 7. The effects of service guarantee on service providers' business performance

Note: significant ※ 0.1 level, \* 0.05 level, \*\* 0.01 level, \*\*\* 0.001 level, ns not significant.

## 4 DISCUSSION AND FUTURE RESEARCH

This study empirically studied the application of guarantee in SeC which is one booming e-business area. This study makes three theoretical contributions. Firstly, based on literature review, a framework was developed to illustrate the effects of service guarantee in SeC marketplace. Although extensive studies have investigated the influence of service guarantee on buyer's perceived risk (e.g., Wirtz et al. 2000; Wu et al. 2012), these studies did not consider unique characteristics of SeC e-marketplace including moderating factors like reputation feedback, credibility of service, task complexity.

Second, with the data collected from zhubajie.com, this study identified what kind of service providers tended to join service guarantee. Results show that both of high-reputation and low-reputation service providers might participate in the service guarantee system. However, their profiles are different. The low-reputation service providers had shorter membership durations, higher accumulated transaction amounts (comparing with providers with similar reputation levels), and higher failure rate. These providers regarded service guarantee as a means to improve their success ratio by increasing their perceived credibility. On the other hand, high reputation providers have accumulated high reputations to reduce the buyers' perceived risk (Pavlou et al. 2007; Pavlou and Gefen 2004), these providers participated in service guarantee to block low-reputation competitors' chances.

Third, Effects of service guarantee on the service provider's performance was also examined. Previous research in service guarantee paid more attentions to the influence of service guarantee from service provider's perspectives, such as the employee motivation, service quality improvement, and service innovation (Hogreve and Gremler 2009). In this study, we focused on service provider's performance. The results indicated different effects of service guarantee for low-reputation providers and high-reputation providers. Although low-service providers aim to improve their success by joining service guarantee, the action didn't have significant positive effects. On the other hand, service guarantee increased high reputation providers' transactions in types of matching, performance, and hiring. This finding is consistent with Wu et al. (2012) which found that corporate reputation has a moderating effect on the relationship between service guarantee type, perceived quality, and perceived risk, which result in the different effects of service guarantee for low-reputation providers and high-reputation service providers.

The results show service guarantee is not an effective approach for low-reputation providers because the mechanism doesn't mitigate uncertainty and information asymmetry. Therefore, SeC needs more mechanisms (such as social community and strict qualification/certificate check) traditional e-commerce because of its unique characteristics.

## Acknowledgements

We gratefully acknowledge the Chinese Ministry of Education Humanities and Social Sciences Young Scholar Fund (12YJCZH306), and China National Social Sciences Fund (11AZD077), and Southwestern University of Finance and Economics "211 projects" Fund (211QN2011047), and Fundamental Research Funds for the Central Universities (JBK120505). We also thank program charis Jae-Nam Lee, Ji-Ye Mao, James Thong, and two anonymous referees for suggestions to improve the paper.

## References

- Akerlof, G. (1970). The Market for Lemons: Quality Uncertainty and the Market Mechanism. *Quarterly Journal of Economics*, 84(3), 488-500.
- Bauer, R. (1967). Consumer behavior as risk taking. In: Cox, D. (Ed.), *Risk Taking and Information Handling in Consumer Behavior*. Harvard University Press, Cambridge, MA.
- Boudreau, K. J., N. Lacetera, et al. (2011). Incentives and Problem Uncertainty in Innovation Contests: An Empirical Analysis. *Management Science*, 57(5), 843-863.
- Cases, A.-S. (2002). Perceived risk and risk reduction strategies in Internet shopping. *The International Review of Retail, Distribution and Consumer Research*, 12(4), 375-394.
- Erevelles, S. (1993). The price-warranty contract and product attitudes. *Journal of Business Research*, 27(2), 171-81.
- Hogreve, J. and D. D. Gremler (2009). Twenty Years of Service Guarantee Research: A Synthesis. *Journal of Service Research*, 11(4), 322-343.
- Howe, J. (2006). Crowdsourcing: A Definition. [http://crowdsourcing.typepad.com/cs/2006/06/crowdsourcing\\_a.html](http://crowdsourcing.typepad.com/cs/2006/06/crowdsourcing_a.html).
- Howe, J. (2008). *Crowdsourcing: Why the Power of the Crowd Is Driving the Future of Business*. Crown Business, New York.
- Jarvenpaa, S. L., N. Tractinsky, et al. (2000). Consumer trust in an Internet store. *Information Technology and Management*, 1(1), 45-71.
- Jøssang, A., R. Ismail, et al. (2007). A survey of trust and reputation systems for online service provision. *Decision Support Systems* 43(2), 618- 644.
- Kashyap, R. (2001). The effects of service guarantees on external and internal markets. *Academy of Marketing Science Review*, 1(10), 45-71.
- Kim, D. J., D. L. Ferrin, et al. (2008). A trust-based consumer decision-making model in electronic commerce: The role of trust, perceived risk, and their antecedents. *Decision Support Systems*, 44(2), 544-564.
- Lee, J.-W. (2010). Online support service quality, online learning acceptance, and student satisfaction. *Internet and Higher Education*, 13(4), 277-283.
- Lee, S. and Y. Park (2009). The classification and strategic management of services in e-commerce: Development of service taxonomy based on customer perception. *Expert Systems with Applications*, 36(6), 9618-9624.
- Lim, N. (2003). Consumers' perceived risk: sources versus consequences. *Electronic Commerce Research and Applications*, 2(3), 216-222.
- Marmorstein, H., D. Sarel, et al. (2001). Increasing the persuasiveness of a service guarantee: the role of service process evidence. *Journal of Services Marketing*, 15(2), 147-159.
- Metters, R., K. King-Metter, et al. (2004). *Successful service operations management*. Thomson, Seoul.
- Ostrom, A. L. and D. Iacobucci (1998). The effect of guarantees on consumers' evaluation of services. *Journal of Services Marketing*, 12(5), 362-378.
- Pavlou, P. A. and D. Gefen (2004). Building Effective Online Marketplaces with Institution-Based Trust. *Information Systems Research*, 15(1), 37-59.
- Pavlou, P. A., H. Liang, et al. (2007). Understanding And Mitigating Uncertainty In Online Exchange Relationships: A Principal Agent Perspective. *MIS Quarterly* 31(1), 105-136.
- Rao, A. R. and R. W. Ruekert (1994). Brand Alliances as Signals of Product Quality. *Sloan Management Review*, 36, 87-97.
- Rothschild, M. and J. E. Stiglitz (1976). Equilibrium in Competitive Insurance Markets: An Essay on the Economics of Imperfect Information. *Quarterly Journal of Economics*, 90(4), 629-649.
- Ruyter, K. d., M. Wetzels, et al. (2001). Customer adoption of e-service: an experimental study. *International Journal of Service Industry Management*, 12(2), 184-207.
- Schal, D. (2012). *Service-Oriented Crowdsourcing: Architecture, Protocols and Algorithms*. Springer.
- Suwelack, T., J. Hogreve, et al. (2011). Understanding Money-Back Guarantees: Cognitive, Affective, and Behavioral Outcomes. *Journal of Retailing*, 87(4), 462-478.

- Terwiesch, C., Ulrich, K. T., 2009. Innovation tournaments. Harvard Business School Press, Cambridge, MA.
- Wirtz, J., D. Kum, et al. (2000). Should a firm with a reputation for outstanding service quality offer a service guarantee? *Journal of Services Marketing*, 14 (6): 502 - 512.
- Wu, C. H.-J., H.-C. Liao, et al. (2012). Service guarantees in the hotel industry: Their effects on consumer risk and service quality perceptions. *International Journal of Hospitality Management*, 31(3), 757- 763.
- Yang, Z. and X. Fang (2004). Online service quality dimensions and their relationships with satisfaction: A content analysis of customer reviews of securities brokerage services. *International Journal of Service Industry Management*, 15(3), 302 - 326.