Profile Information and Business Outcomes of Providers in Electronic Service Marketplaces: An Empirical Investigation

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Abstract

Electronic service marketplaces (ESMs) have become major exchange platforms for the online outsourcing of different services – especially software development – to providers. Provider profiles on ESMs encompass extensive information regarding the activities and transactions of providers and they are a main source of information for customers. Such profile information significantly facilitates the relationship development between customers and providers. The existing literature has focused on the impact of the ratings of providers, but so far has not investigated the impact of the other available profile information. Building on the integrated information response model, this study investigates how information presented by providers as well as information provided by the ESM influences the business outcomes of the providers. Based on data collected from one of the major ESMs, we found that profile information indeed has a significant impact on the business outcomes of providers.

Keywords

Electronic service marketplace, ESM profile, information, integrated information response model

INTRODUCTION

Electronic service marketplaces (ESMs) emerged in the early 2000s. They soon became reliable exchange platforms for outsourcing small and medium-sized projects (Radkevitch et al. 2006). The rise of ESMs can be attributed to the economic efficiency of such marketplaces (Kim 2009; Lu and Hirschheim 2011). ESM outsourcing projects often include, but are not limited to, software development projects. An ESM can be defined as an online exchange environment in which customers outsource their service requirements to providers around the world (Kim and Wulf 2009; 2010). The price negotiation is often based on open auctions or private negotiations with a limited number of providers (Radkevitch et al. 2009). Customers and providers in ESMs are typically small to medium-sized enterprises or individuals (Kim and Wulf 2010). As of 2012, the statistics published by four well-known ESMs, Freelancer.com, Elance.com, Guru.com and oDesk.com indicate that over eight million customers and providers are registered and more than 1.25 billion dollars of services have been transacted in these four marketplaces during almost a decade since their establishment (Elance.com 2012b; Freelancer.com 2012; Guru.com 2012; oDesk.com 2012a; b; c; d).

However, many of the providers in ESMs are unable to find customers, transact on a regular basis and survive in these marketplaces (Banker et al. 2011). This is despite the survey findings which indicate that such providers are primarily registering on ESMs for steady work and revenue (e.g., Elance.com 2010; Gandia 2011). As of 2012, less than 10 per cent of providers on Elance.com have gained money during a year (Elance.com 2012a). This indicates the high failure rates of ESM providers (Banker et al. 2011).

Lack of accessible information is a significant impediment to the establishment of trust and negatively affects the customer-provider relationship development process (Pavlou and Dimoka 2006). The basic models of customer-provider relationship development (e.g., Dwyer et al. 1987; Smith and Swinyard 1982) emphasise the significant impact of the information available to customers on their relationship development and commitment towards providers. The current ESM literature has examined the impact of some profile information of providers (e.g., ratings, country of origin and size) on the exchange relationship development from either customer perspectives (e.g., Gefen and Carmel 2008; Kim 2009) or process viewpoints (e.g., Gefen and Carmel 2010; Snir and Hitt 2003). However, the information available to customers on provider profiles encompasses other important

elements (e.g., credibility indicators like skill assessment results). Taking a provider-centric perspective, this study extends the existing literature by developing and testing a model of the potential impact of provider profiles on their business outcomes. Hence, the research question of this study is: *"How does the profile information of providers impact on their business outcomes in ESMs?"* The proposed model is based on the integrated information response model (Smith and Swinyard 1982) and tested on a data set from one of the major ESMs.

The remainder of this paper is structured as follows. The next section provides background on the business outcomes of exchange transactions in electronic marketplaces. Then, we discuss the development of a theoretical model based on the integrated information response model. The data collection procedure is explained next, followed by the findings of our data analysis. After that, we discuss the findings in the light of the research question and the existing literature. We conclude with a brief outlook and a research agenda.

LITERATURE REVIEW

The sequence of customer-provider interactions in a typical ESM is usually initiated by a customer. The customer creates an online auction by posting a request for proposal (RFP) for their intended services on the project catalogue. Relying on the profile information of providers and prior exchange relationships, the customer may proactively invite some providers to participate in the auction. The customer can even restrict the auction participants to the invited providers. Subsequently, the providers bid by proposing their technical solution, price and project delivery time. In contrast to online auctioning marketplaces for physical goods (e.g., eBay.com), ESMs usually rely on English reverse auctions in which providers bid only once (Gefen and Carmel 2008). When the auction is closed, the customer awards the project to a service provider who is perceived as providing the best overall fit. The payments to the provider are all made through a dedicated project workspace in the marketplace. After the project, the customer can submit public feedback such as comments and ratings.

Figure 1 illustrates the major flows of information from and to the provider profiles throughout the above-mentioned course of customer-provider interactions. ESM providers can publish and update information about their competencies, previous job samples and skill assessment results (self-descriptive, portfolio and skill assessment information in Figure 1) in their profiles. This information is partially verified by the ESM. Provider profiles also reflect the entire history of their transactions in the electronic marketplace, especially the feedback such as text comments and ratings posted by their previous customers (customer feedback in Figure 1). This information which is updated by the marketplace automatically upon its submission by customers (third parties) is completely verified by the ESM. Finally, as illustrated in Figure 1, the ESM system also reflects business outcomes of providers (e.g., their annual revenue) in their profiles.
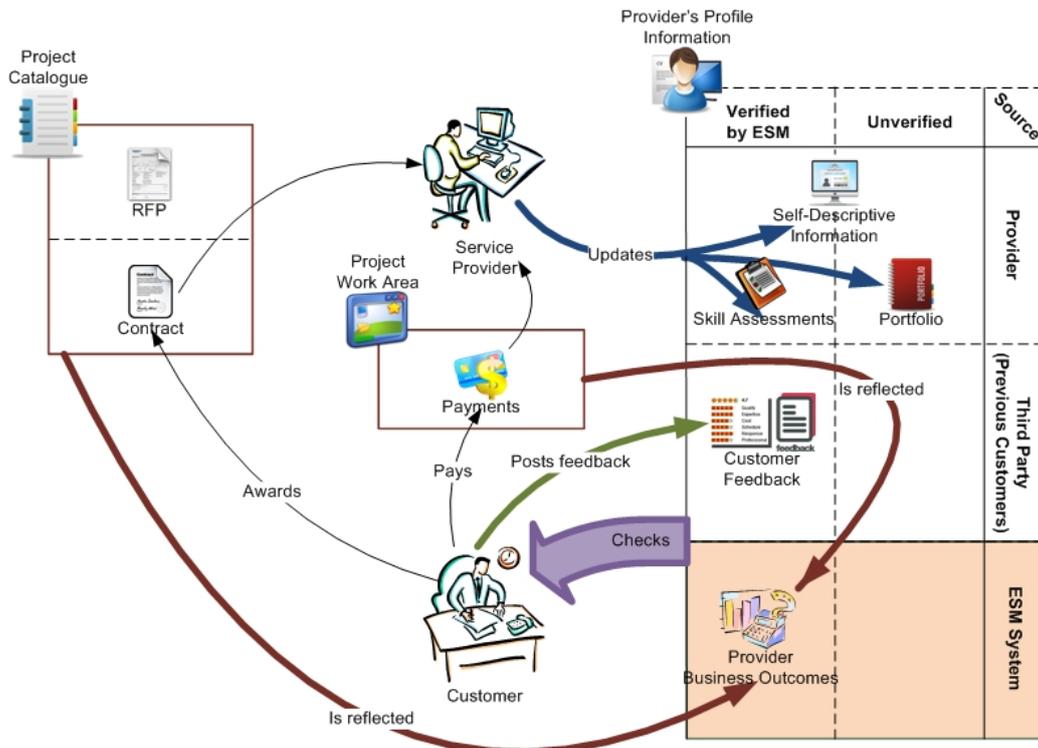

Figure 1: Flow of information from and to a provider's profile in an ESM (own illustration)

Business outcomes of providers significantly influence the participation of both transacting parties in the ESM and, thus, the success of the entire marketplace (Pavlou and Dimoka 2006). Jap (2002) pointed out that the biggest business concern of providers in electronic markets is to increase their revenue with both new and existing customers. Especially for new customers, providers' competencies and reputation need to be presented well in their profiles (Gefen and Carmel 2010).

Taking a customer's perspective, Kim (2009) as well as Gefen and Carmel (2008) investigated some of the economic, cultural and behavioural characteristics of providers reflected in their profiles which potentially influence the vendor selection decision of customers and, thus, the business outcomes of providers in ESMs. Gefen and Carmel (2008) confirmed the significant impact of the economic and cultural differences between customers and providers at the country level, in terms of their purchase power parities (PPPs), their countries as an abstract indicator of the cultural differences among them and their speaking languages, on the vendor selection decision of the customers. Their findings indicated that customers prefer to outsource services to providers from their own country of origin which was also validated by Kim (2009). However, according to Gefen and Carmel (2008), when customers decide to outsource their projects to offshore destinations, they generally prefer to exploit the labour arbitrage by outsourcing these service projects to providers from countries with inferior PPPs. Furthermore, customers from English-speaking countries favour English-speaking providers.

Finally, Kim (2009) illustrated the positive impact of provider ratings and the negative influence of the provider's size on their likelihood of being selected by customers. The study by Gefen and Carmel (2010) also confirmed the significant impact of provider ratings on their business outcomes and provided a more accurate description of this impact from the project's perspective. They showed that the customer's decision to ultimately pay for their projects outsourced to an ESM provider is positively associated with the provider's average rating when it is equal to or higher than a threshold, namely the average rating of the entire electronic marketplace. Therefore, according to Gefen and Carmel (2010), the average ratings of providers in an ESM possess a 'triggering effect' on the ultimate payment of their customers.

What is missing in the literature is a further investigation of the other information presented in provider profiles on ESMs. So far, only some parts of the information available on ESM provider profiles (mainly ratings) have been studied by the existing literature. Furthermore, few studies have adopted a provider-centric (as opposed to customer-centric) perspective towards the investigation of ESM profiles.

THEORETICAL FRAMEWORK

In this section, the 'integrated information response model' proposed by Smith and Swinyard (1982) is briefly explained and adapted to the ESM context to support theorising the association between the provider's profile information and the customer's purchasing behaviour towards the provider. The model suggests that a customer's exposure to information about a supplier (provider) forms their 'awareness' about the supplier. This awareness is the main source of the customer's beliefs and attitudes towards the supplier and determines the sequence of their subsequent behavioural responses to the supplier.

According to Smith and Swinyard (1982), the three main stages of a customer's response to the information about a supplier include 'cognition', 'affect' and 'conation', and the sequence of these stages differs based on the perceived credibility of the information. The model emphasises that a customer's response sequence is always initiated by their cognition of the supplier which is formed by relying on the accessible information about the supplier. The customer's cognition is associated with their emerging beliefs about the supplier, namely their likelihood of attributing specific characteristics (e.g., trustworthiness) to the supplier. When the information is perceived as less credible by the customer, their cognition is associated with doubt and 'lower order beliefs' about the supplier. These beliefs potentially persuade the customer to collect more information about the supplier by direct negotiation or a trial exchange conation with the supplier through which the customer's higher order beliefs and attitudes can be established. In contrast, whilst the information is perceived as highly credible by the customer (e.g., due to a third party's validation or prior experience with the supplier), the customer's cognition is associated with their higher order beliefs about the supplier. Such beliefs affect the customer by causing their higher order liking, preference and conviction attitudes towards the supplier which, in turn, can lead them to commitment conation.

Furthermore, Smith and Swinyard (1982) argued that the information source is an important determinant of the information's perceived credibility and acceptance by customers. They classified the information source into internal (or direct) and external categories. A customer's direct experience or a trustworthy, third-party information provider (e.g., an ESM system) can represent an internal source of information. In contrast, an information provider who is suspected of presenting information biased by their self-interest (e.g., service suppliers themselves) can be classified as an external source of information. Finally, whilst information obtained

from an internal source is potentially perceived as highly credible, the customer's suspicion of information bias can weaken the perceived credibility of information acquired from an external source.

In conclusion, it can be argued that provider profiles can significantly influence their business outcomes in ESMs. On the one hand, information within these profiles can persuade customers to conduct trial exchange transactions with the corresponding providers when the customers perceive it as less credible. External information, such as the profile information which is published by providers themselves, is potentially associated with less credibility. On the other hand, the profile information of ESM providers can cause customers to repeatedly transact with the same providers when they perceive it as highly credible. The internal information, e.g. supplier ratings which are provided by third parties, is possibly considered as highly credible by customers.

Relying on the theoretical foundation presented above, the association between a provider's profile information and their ultimate business outcomes in an ESM can be hypothesised by the conceptual model illustrated in Figure 2. The provider's profile information, which is classified into two distinct categories of internal and external information based on its source, represents the two categories of independent variables (IVs). Two principal hypotheses theorise the association between these variables and the business outcomes of the provider in terms of their annual revenue. The hypotheses are further justified based on the findings of the literature.
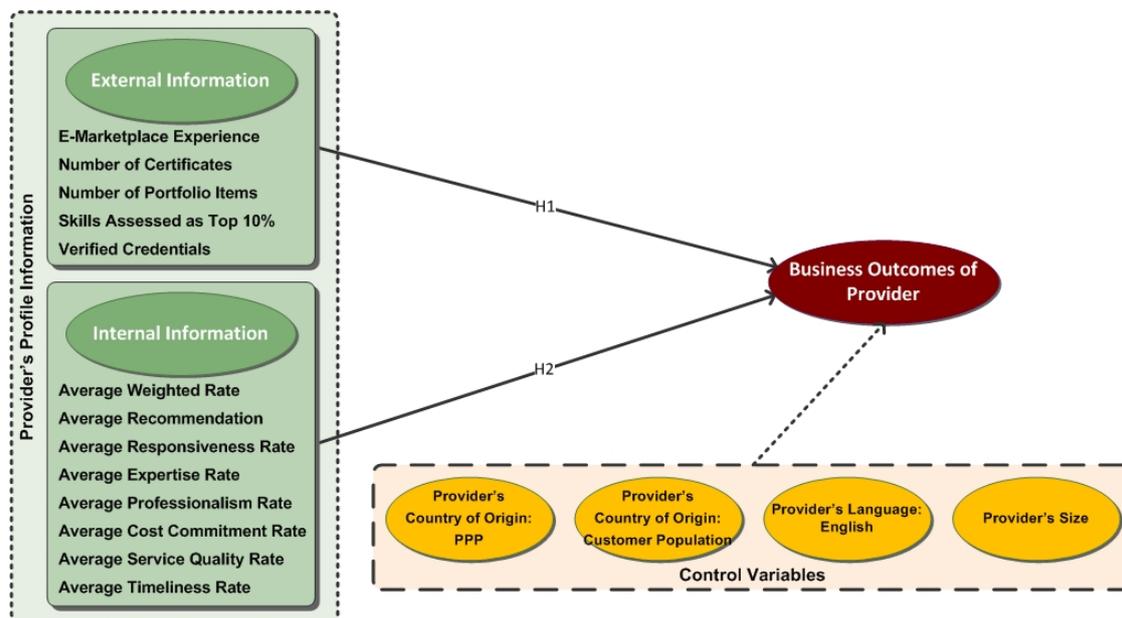

Figure 2: Research model

Various approaches are used to measure business outcomes. According to Misra (2004), a provider's outcomes in outsourcing arrangements can be measured at different levels of analysis. At the business level, which is the highest level of analysis, researchers have mainly applied revenue as the indicator of a provider's outcomes (e.g., Dibbern et al. 2004; Levina and Ross 2003; Misra 2004), whereas other indicators such as profit (Levina and Ross 2003; Misra 2004), return on investment (Misra 2004), number of customers (Misra 2004) and number of contracts or sales volume (Clark 2007; Levina and Ross 2003) have also been used in the literature. In this study, a provider's revenue over a year is used as a dependent variable. The other measures of a provider's business achievements, such as profit or return on investment, are more complex to calculate, whilst organisations also prefer to conceal them. Moreover, these measures are not available in ESMs.

As discussed above, the information in ESM provider profiles, which is published and updated by the providers themselves, can be categorised as external. Although some parts of this information may be verified by the ESM upon the providers' request, providers still possess complete control over the public availability of different aspects of this information in their profiles. The main components of this information in a provider's profile which are common across different ESMs include the provider's experience in the ESM (in terms of their length of membership), certificates, portfolio of work samples, skill assessment results and total number of credentials (e.g., references) verified by the ESM. Thus, the provider's ESM experience, number of certificates, number of portfolio items, number of skills assessed as being in the top 10 per cent of providers in the ESM and number of verified credentials are incorporated in the research model as the indicators of external information. These indicators are 'formative' (Chin 1998) because their combination forms the external information as a latent construct, they are not correlated and they do not always change in the same way, when the external information is altered.

The external information components in an ESM provider's profile indicate the extent of their trustworthiness and, thus, potentially influence the provider's business outcomes. In fact, whilst 'benevolence', 'integrity' and 'competency' are often considered by the literature as the three major aspects of a provider's trustworthiness (Zhong and Shao 2006), the external information components mainly imply the possession of technical abilities and experience by the provider, namely the provider's competence. Furthermore, the perceived trustworthiness of a provider in an electronic marketplace can significantly influence the business outcomes of the provider (Gefen and Carmel 2010; Kim et al. 2009), primarily through decreasing the perceived risks and uncertainty related to transacting with the provider and by encouraging customers to conduct such transactions (Gefen 2002; Palvia 2009; Wang and Chiang 2009). Therefore,

H1: The more positive the external information of a provider's profile in presenting their competency over a certain period of time, the better business outcomes the provider attains in the ESM in terms of revenue over that period.

Feedback ratings, recommendations and text comments submitted by an ESM provider's previous customers constitute another portion of information in their profile which can be classified as internal information. This information is automatically updated by the ESM without any intervention by the provider. Whilst customers can rate the provider in some predetermined categories which are common across the well-known ESMs, the average rating for each of these categories is included in the research model as an indicator of internal information. These categories consist of responsiveness (or communication), expertise, professionalism (or cooperation), cost commitment, service quality and timeliness. Furthermore, the average customer recommendation and the average overall rating of the provider across all projects (which is weighted by the project values) are also published on the provider's profile and, consequently, they are incorporated in the research model, both as indicators of internal information as well.

The internal information of an ESM provider's profile indicates the level of customer satisfaction with the provider. According to Palvia (2009), a customer's single-transaction satisfaction with a provider is their instant post-transaction affective response to their beliefs about the provider formed during their latest pre-transaction as well as transaction experience with the provider. Whereas perceived service quality, responsiveness, reliability in terms of expertise and timeliness, professional behaviour like compensation and commitment of an electronic provider are major determinants of customer satisfaction in e-commerce (Chiou et al. 2009; Gefen 2002), feedback ratings across these factors constitute the primary method through which customers express their satisfaction after each single transaction with providers in ESMs. The overall satisfaction of a customer with a provider, which is their aggregate evaluation of their previous transactions with the provider (Chiou et al. 2009), can be estimated by the average of the ratings they have already assigned to the provider (Shen 2008). The internal information indicators measure different aspects of customer satisfaction and may vary differently as the result of a change in their latent construct. Therefore, these indicators are also considered 'formative', as suggested by Chin (1998).

Relying on the findings of the existing literature on e-commerce, it can be argued that the internal information on an ESM provider's profile potentially influences the provider's business outcomes in terms of their annual revenue. It has been shown in the literature that a provider's positive ratings and recommendations on online shopping websites and electronic marketplaces for physical goods are positively associated with both frequency and value of transactions and, thus, the provider's business outcomes (Gefen and Carmel 2010; Pavlou and Dimoka 2006; Shen 2008; Zhang and Dellarocas 2006). This association is mainly attributed to the perceived trustworthiness and reputation of the provider implied by their previous satisfactory relationships with their customers (Wang and Chiang 2009). Consequently,

H2: The more positive the internal information of a provider's profile in presenting their previous customers' satisfaction over a certain period of time, the better business outcomes the provider attains in the ESM in terms of revenue over that period.

Finally, three characteristics of ESM providers are included in the analysis as four control variables (shown in Figure 2), relying on the discussions in the literature review section. In this research, we are not interested in the likely impact of these characteristics on the provider's business outcomes. Hence, we have incorporated them in the analysis to control their effect. The provider's size is included as a control because Kim (2009) illustrated its negative impact on the likelihood of that provider being selected by ESM customers. The provider's country of origin and language are included as controls because ESM customers prefer to outsource their services to providers from their own country and, when they decide to outsource their projects to offshore destinations, they favour providers from lower PPP and/or English-speaking countries (Gefen and Carmel 2008). Indeed, providers from English-speaking countries, those from countries with large customer populations and those who are located in lower PPP countries potentially obtain better business outcomes.

RESEARCH METHOD

The data were collected from one of the largest ESMs, in November 2011. It includes the profiles of all service provider companies who possessed an annual revenue of US$50,000 or more at the time of the data collection within the category of 'Programming'. As the annual revenues of some providers were private, the ordered list of the providers based on their earnings was retrieved first and the private revenues in the list were estimated by the average of the first above and the first below known earnings. The value of all other measures was extracted from the provider profiles for the 12-month period prior to the data collection. The original data set included 225 provider profiles. After excluding eight cases that did not possess any provider ratings, 217 provider profiles remained for the analysis.

This study assumes that the provider profiles' data collected, reasonably indicates the patterns of data at other ESMs because of a high level of similarity among these marketplaces, although generalisation of results to other marketplaces needs further investigation. Furthermore, because of their intrinsic customisability and intangibility, software development services can be representative of other types of services (Kim and Wulf 2009; 2010). The software development categories in ESMs possess the highest level of user (i.e., both customer and provider) participation compared to other categories of services (Elance.com 2011; Snir and Hitt 2003). The collected data encompass comprehensive and accurate descriptions of variables. Therefore, precise coefficients and fit indices are expected for the data set, as is the case for the secondary data analysis (Gefen and Carmel 2008; Tomlinson-Keasey 1993).

The data analysis was performed using partial least squares (PLS). PLS has become increasingly popular in information systems (IS) research during the past decade, mainly owing to its ability to evaluate complex structural models with both reflective and formative constructs relying on small to medium-sized samples with any kind of distribution (Hair et al. 2010; Urbach and Ahlemann 2010). It is a second-generation multivariate technique that allows researchers to specify and simultaneously estimate the relationships among multiple constructs (i.e., independent and dependent variables) and the indicators of each construct in a single theoretical model (Haenlein and Kaplan 2004; Hair et al. 2010). Therefore, PLS examines the associations in the theoretical model, while at the same time evaluating the measurement model specified for each construct (Urbach and Ahlemann 2010).

To assess the proposed hypotheses, a PLS bootstrapping analysis was performed with 1,000 samples and the seed number of zero. The sample size of 217 was adequate for the PLS analysis because it should be at least 10 times the largest number of structural paths heading to a construct in the model (Chin 1998), namely 80 for this study. As the variance inflation factors (VIFs) were all less than 10, multicollinearity was not a significant concern (Hair et al. 2010).

FINDINGS

The results are illustrated in Figure 3. As shown, the dependent variable is significantly associated with the external information ($p < 0.001$) which means that the first hypothesis is strongly supported. The second hypothesis is rejected, although the path coefficient of the relationship between the internal information and the dependent variable is significant. In fact, contrary to the proposed hypothesis, a negative coefficient was estimated for the path. In summary, along with the two control variables which have significant impact on the dependent variable, the independent constructs explain 51.3 per cent of the variance in the business outcomes of the provider.
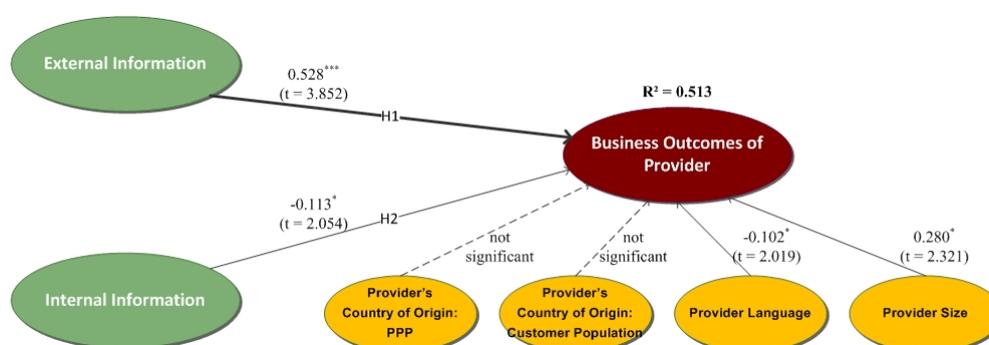

Figure 3: Partial least squares (PLS) results

Table 1 demonstrates the weights and t-values for each of the indicators of our research model. As shown in the table, the number of portfolio items and the provider skills assessed as in the top 10 per cent with weights at 0.399 (t-value = 2.104) and 0.471 (t-value = 2.714) demonstrate a significant contribution to their related

construct (i.e., external information). Similarly, the average weighted rating and the average cost commitment rate with weights at -0.517 (t-value = 2.240) and 1.086 (t-value = 3.319) contribute significantly to their respective construct (i.e., internal information) and, thus, they are the main cause of the significant, negative relationship between internal information and the provider's business outcomes. The remainder of the items do not contribute significantly to their corresponding constructs.

Table 1: Measurement weights and the associated t-values

Construct		Weight	t-value
External Information (Formative) Max VIF = 2.298	Number of Portfolio Items	**0.399**[*]	2.104
	Verified Credentials	0.199	1.325
	Number of Certificates	0.115	1.017
	E-Marketplace Experience	0.215	1.912
	Skills Assessed as Top 10%	**0.471**[**]	2.714
Internal Information (Formative) Max VIF = 6.627	Average Recommendation	0.518	1.580
	Average Weighted Rating	**-0.517**[*]	2.240
	Average Service Quality Rate	-1.022	1.850
	Average Timeliness Rate	0.390	1.213
	Average Responsiveness Rate	-0.415	1.190
	Average Expertise Rate	0.186	0.468
	Average Professionalism Rate	0.199	0.651
	Average Cost Commitment Rate	**1.086**[***]	3.319

DISCUSSION

The objective of this study was to evaluate the association between the common pieces of information in provider profiles and providers' ultimate business outcomes in ESMs. The estimated model supported the relationship between some aspects of this information and the annual revenue of ESM providers. In fact, the results illustrated the significant contribution of external information to the providers' business outcomes, whilst they did not support the significant, positive impact of internal information on these outcomes. These results can be further explained by applying the integrated information response model.

The external information of a provider's profile significantly influences their business outcomes in an ESM. As discussed before, this information is provided and updated by the provider. Customers potentially consider this part of the profile information as less credible. According to the integrated information response model, such information can persuade customers to enter into trial exchange transactions with the provider, mainly to collect more information about them through direct experience (Smith and Swinyard 1982). These trial transactions cause increases in the provider's annual revenue, as demonstrated by the results.

Among the external information pieces in a provider's profile, the number of portfolio items and the skills assessed as being in the top 10 per cent contribute significantly to their corresponding construct. Both of these items illustrate the technical capabilities of the provider and, thus, indicate their level of trustworthiness. Therefore, it can be argued that these two items form the customers' beliefs about the ability and trustworthiness of the provider. This initial trust can lead customers to trial transactions with the provider (Smith and Swinyard 1982).

By contrast, the internal information in a provider's profile does not significantly contribute to their business outcomes. This information is provided by customers who have transacted with the provider and mainly indicates their level of satisfaction. Because the source of this information is neutral third parties, it is potentially perceived as highly credible by customers. As asserted by the integrated information response model, such information forms the higher order beliefs and attitudes of customers and ultimately results in their loyalty towards the provider (Smith and Swinyard 1982). Our results implicitly indicate that customer loyalty does not significantly influence provider revenues in ESMs because internal information is not positively associated with the annual revenue of providers. This finding conforms to the results achieved in online auctioning marketplaces

for physical goods. According to Kim and Wulf (2009), customer loyalty is not a significant determinant of sellers' outcomes in online auctioning marketplaces, such as eBay.com.

The significant negative relationship between internal information and the provider's business outcomes can be attributed mainly to the number of their projects and ratings. In fact, a provider's revenue in an ESM is potentially associated with the number of their projects, considering the relatively small and similar size of the projects in these marketplaces (Radkevitch et al. 2006). A provider with a higher level of revenue potentially possesses more projects and ratings. Accordingly, the likelihood of possessing some low ratings is greater for such a provider. Therefore, providers with a higher level of revenue are more likely to possess lower average ratings as illustrated in our results.

CONCLUSIONS

This study set out to reveal the impact of ESM profile information on the business outcomes of providers. We classified the main pieces of information into two distinct categories (i.e., internal and external information) and theorised their impact on the business outcomes of providers, relying on the integrated information response model. The results indicated that the external profile information, which is published by the providers themselves, significantly influences their ultimate outcomes, whilst the internal information in their profiles (i.e., ratings) does not significantly contribute to their outcomes. The findings of this research emphasise the significance of the portfolio of work samples and the skill assessment results presented in provider profiles to their ultimate business outcomes in terms of their annual revenue. Whilst the applied theory can explain the results of this research, further investigation of ESM provider profiles is required to better understand the impact of the profiles' information on the purchasing behaviour and attitudes of customers towards providers.

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