

Empirically Analysing Factors Influencing Users' Adoption of Online Information Services (OISs): A Case of a Travel Business In Taiwan

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Abstract: Online Information Services (OISs) have become an important medium for meeting the information needs of consumers for e-commerce purposes. Yet, there is little existing research that has investigated the factors which govern users' intentions to adopt OISs. The study addresses this gap. Data collected from 511 users of a travel company OIS in Taiwan through a cross-sectional survey were analysed using the Structural Equation Modelling technique. It was found that: (a) subjective norms manifested through social influences, information sharing and word-of-mouth directly influence the Behavioural Intention (BI) to adopt and, (b) social interaction in the form of 'networking' among users is not associated with the BI or with the Trust of the service provider to adopt OIS. The results extend earlier research by showing that social media interactions underpinned by subjective norms are significant in influencing adoption behaviours. Evidence is provided that people's behaviours are shaped by how they will be perceived by people they trust - or wish to be aligned with. Therefore, subjective norms should be viewed from users' networks perspective, rather than broad societal context. Managers need to focus on social networks made up of people with close alignments and common interests, where people look to each other to maintain a level of positive perception and trust. Simply focussing on social networks composed of loose relationships may neither lead to trust nor affect the behavioural intentions of users. The work offers empirical evidence of the design factors that can encourage OISs adoption.

Keywords: Online information services (OISs), Web 2.0, Peer-to-Peer, Online audience behaviour, Networking

1. Introduction

An Online Information Service (OIS) is a dedicated medium of information exchange between two parties over the internet (Hommrich, 2018). OISs have become popular over the last two decades as consumers seek convenient sources of up-to-date and relevant information for day-to-day decision making (Liu, Shao and Fan, 2018).

The first OISs predate the general provision of the internet to the population at large. For example, CompuServe in 1979 and The Source were among the first major online information services that offered PC users services like news, financial and stock information, bulletin boards, special interest groups (SIGs), forums and some possibility for users to exchange and chat about items.

With the growth of the Internet in the post-2000 era, OISs became a major channel for people in the developed and developing worlds to acquire and exchange information and help shape their views (McKenna, Tuunanen and Gardner, 2013). There are now many online services that could be categorised as an OIS, for example, the Apple iTunes focusses on providing access to music and TripAdvisor is primarily for advice on travel destinations. The latter has some 390 million average monthly unique visitors (TripAdvisor, 2017).

One of the reasons for users' acceptance of OISs is that OISs have been able to integrate elements such as audio, video and other interactive objects (e.g. Flash, Java, and database technologies) to present information and interact with users (Kavoura and Stavrianeas, 2015). As such, OISs in general have become an essential part of almost all of the many services provided on the Internet as they play an important role in serving as the communication medium or interface between users and the many online applications (Liu, Shao and Fan, 2018).

Despite its impact and importance, the understanding of users' intention to adopt OISs, and how those intentions are shaped by the dedicated online communities, is at an early stage of development. Additionally, knowledge of the factors that may lead to the adoption of an OIS also remains limited (Panopoulou, Tambouris and Tarabanis, 2014). The studies that exist are fragmentary and diverse in nature. For instance, earlier studies have explored a host of users' behavioural aspects in an online travel industry context such as: privacy and

security risks generate negative emotions and frustration towards online travel communities (Ruiz-Mafe, Tronch and Sanz-Blas, 2016); consumer participation behavior and word-of-mouth intention of Wechat official account users of a travel agency (Liang and Yang, 2018); users' behavioural intention to follow travel advice on OISs and identify themselves with peer groups in online communities (Lee and Hyun, 2015); influence of personal versus e-factors on sharing knowledge in online travel communities (Yuan, Lin and Zhuo, 2016); and influence of posting related attributes on users' intention and engagement in online travel communities (Fang, Li and Prybutok, 2018). Additionally, the studies (e.g. Agag and El-Masry, 2016; Casaló et al., 2015, Fang, Li and Prybutok, 2018) that have investigated factors of users' adoption of online travel communities are not specifically in an OIS context.

The lack of a robust knowledge base as discussed above is reflected in the results of a study by the Gartner Group who observed that 75 percent of all online business ventures were failing every year due to insufficient understanding of customers' online preferences, resulting in inadequate service design and poor business planning (Welfare, 2015). The creation and launching of an OIS was no exception.

Besides the opportunities and challenges for the industry brought by OISs, scholars have found difficulties in simply applying established models of information system (IS) adoption to the OIS context. One reason is that the Internet provides a more comprehensive and multi-purpose communication platform than in the previous offline days, and is different to other information communication technologies. Another reason is that most previous IS theories and models were developed for analysing offline systems, while research suggests that online users are in a different frame of mind and behave differently when they are online (Zhang et al., 2018).

It is now accepted that people's interaction with, and use of, internet sites provides them with hedonic value as well as just being utilitarian (Liang and Yang, 2018). This merits a need to improve understanding of the adoption of OISs. Yet, little knowledge exists on this subject.

The aim of our study, which addresses this gap in knowledge, is, therefore, to hypothesise and explore a set of factors that may contribute to the adoption of an OIS. The principal research question to be addressed here is: What are the main factors that help to explain consumer adoption of online information services (OISs)?

Given the research question and the nature of study, the unit of analysis of this study is the individual users of an OIS.

The study makes significant contributions to theory and practice. It identifies factors to the adoption of OISs—an area of research that merits further work, not only because of the existence of limited knowledge but also because the use of social media and online content have become a way of life and part and parcel of business activities. Academically, the study advances knowledge on the theory of users' acceptance (e.g. TAM) and builds foundation for further research. It also provides recommendations for practising managers to use the results for deploying new strategies and improving existing business operations involving online information services.

The rest of the paper includes a discussion of theoretical underpinning and a critical review of literature (Section 2); hypotheses and corresponding model development (Section 3); methodology (Section 4); results (Section 5); discussion of findings (Section 6); and Conclusions, implications, limitations and future research directions (Section 7).

2. Literature review and Development of a research model

2.1 Theoretical underpinning

There is a long history of research on the adoption of innovations (Rogers, 2003) and in particular that of new IT technology (Venkatesh and Davis, 2000). The Technology Acceptance Model (TAM) paradigm, for instance, has been used extensively for analysing the adoption and use of IS systems.

Venkatesh et al., (2003) synthesised various earlier IT adoption models and subsequently empirically tested a new IT adoption model for its utility, but in an offline context. Although the model has been applied in some online contexts, including examination of the online adoption of social media use (e.g. Yuan, Lin and Zhuo, 2016), some limitations of its use and practicability have been identified by, among others, Bagozzi (2008). He

felt that “a model with 41 independent variables for predicting intentions and at least 8 independent variables for predicting behavior,” was an overwhelming requirement for practical purposes Bagozzi (2008). Similarly, van Raaij and Schepers (2008) commented on the parsimonious form of the model.

Growing number of studies argue that a reason people engage in online activities, is related to a hedonic or emotional outcome for them (Zhang et al., 2018). For example, pleasure of community involvement, learning and the entertainment value positively influence people’s continued use of sites (Liang and Yang, 2018).

There is evidence that supports the need to capture the potentially more subtle psychological motives for an online service use, since users may engage in greater ‘activeness’ and purpose-oriented behaviours in the consumption of online content than for their use of non-online media (Kamboj and Rahman, 2017). Apart from a few studies (e.g. Gao and Lee, 2017), there has been limited work to explore the adoption of an OIS. The Internet is the delivery platform for an OIS and the extensive growth of Web 2.0 applications attests to the scope of its multifaceted nature. The widely demonstrated collaborative capabilities of Web 2.0 speak to the potential for examining the adoption of an OIS, in order to gain additional insights about explanatory factors for its adoption. Given the many applications of the constructs underlying the TAM- based models to the understanding of the adoption and use of IS, we felt it was warranted to seek to adapt it to our study of the adoption of an OIS and, where appropriate, utilise concepts that accommodate the emotional, hedonic values that people gain in online engagement.

2.2 Factors that drive adoption of an OIS

Consistent with the theoretical underpinning and the OIS context of the study, a critical review of the literature on factors that explain users’ acceptance and intention to adopt technologies such as OIS is presented below.

2.2.1 Perceived Usefulness (PU)

One of the most important factors influencing the user adoption is the ‘perception of usefulness to adopt’ (PU) (Yuan, Lin and Zhuo, 2016). PU was originally defined as “the extent to which a person believes that using the system will enhance his or her job performance” (Davis, 1989). Given the context of this study, PU is defined as: ‘the extent to which a user believes that using the OIS will most enhance his or her task outcomes.’

PU has been tested in a variety of technological adoption situations and found to be an important predictor of intention to adopt (e.g. Cheng and Mitomo, 2017). For instance, based on respondents’ data of 364 airline travellers drawn from an online travel community, Yuan, Lin and Zhuo, (2016) found that PU significantly influences knowledge sharing in online communities. Other authors such as Agag and El-Masry, (2016); Casaló et al., (2015) and Fang, Li and Prybutok, (2018) have also empirically validated the role of PU in adoption of online travel communities or portals. Their findings point to the importance of having an OIS that is considered useful for users to share information and actively use the OIS.

Notwithstanding these findings, it is pertinent to note that due to the ubiquitous nature of online commercial activities, users have a great number of choices of sources from which to seek information from to make informed decisions (Kavoura and Stavrianeas, 2015). Therefore, the one that is perceived as the most useful is likely to be selected and PU needs to be established for this one. PU, as such, is established through a comparison process of available services and the associated information leading to sense of belonging and ultimately selection of the best service from among a group of “useful” services (Kavoura and Stavrianeas, 2015).

In contrast, the online or e-Word-of-mouth (eWOM) factor also contributes to shaping the PU and ultimately behavioural intentions to travel (Reza Jalilvand and Samiei, 2012). These findings indirectly show that if an OIS is effective it can serve as a medium to generate and channel positive eWOM, thus significantly influencing the users’ behavioral intentions.

2.2.2 Service Quality (SQ) and Networking

Another stream of literature has highlighted the importance of service quality (SQ) as an important predictor of PU in the online context (Ruiz-Mafe, Tronch and Sanz-Blas, 2016). Research findings suggested that the perception of online SQ is formed through comparisons against some standard, in which conventional services, or other similar online services, set the standards or basis of expectations (Reza Jalilvand and Samiei, 2012).

Kamboj and Rahman, (2017) suggested that online SQ can help in building customer loyalty and satisfaction as well as increased hit rate and 'stickiness' of online sites. SQ influences users' behavioural intentions such as participating in eWOM (Reza Jalilvand and Samiei, 2012). Therefore, users' adoption of an OIS depends on that OIS's ability to provide an environment which reflects quality of services in the form of information, interactivity, 'look and feel' and ease of use.

Prior research has also highlighted a direct association between the online interactiveness of an OIS hosted by a business and its customers/users Behavioral Intention (BI) (Forrester Research 2003; Liang and Yang, 2018).

Social Media facilitates online networking among users and such interactions are a potent source of information and help - at little cost, and at 'any time anywhere' (Kavoura and Stavrianeas, 2015). This implies that the concept of 'Networking', or sense of collaboration, might serve as a direct antecedent to online Trust (Gao and Lee, 2017). Huang, Hsieh and Wu, (2014) found that online experience of such interaction has a mediating effect on the relationship between social motivation and use behavior.

An interactive OIS is expected to foster development of strongly bonded online community (Kavoura and Stavrianeas, 2015). Fang, Li and Prybutok, (2018)'s study supports such an assertion, as they argue that the interactivity is related to the level of engagement of users. These findings underline the need to examine the role of networking in driving BI of adopting OIS, and hence are tested by this study.

2.2.3 Perceived ease of use (PEOU)

The ease and friendliness of a site's user interface is vital to facilitate networking, interaction and user adoption (Reza Jalilvand and Samiei, 2012). The Interface of an information system is regarded as the key determinant in the decision-making process towards acceptance or rejection of the system (Visinescu, Sidorova, Jones and Prybutok, 2015). In the TAM model it is measured through the construct of the perceived ease of use, PEOU. However, the literature suggests that PEOU might not be sufficient for capturing the influence on the decision making process and some researchers have argued that PEOU is less effective in its impact on BI (Casaló et al., 2015).

Consequently, PEOU has been tested widely as a determinant of user adoption leading to researchers proposing further 'variables such as reasonable complexity, protecting privacy, security, accuracy of inputs and outputs, and personalization' (Corkindale, Ram and Chen, 2018; Reza Jalilvand and Samiei, 2012; Yang and Jun 2002) in order to further understand technological adoption.

Furthering work on PEOU, Visinescu et al., (2015) found that the visual design of an interface has a significant effect on users' adoption behavior. Further, the quality of interface design has been found to be a determinant of the BI of repeated system use (Kim, Suh and Lee, 2013), PU and trust (Vrechopoulos et al., 2002). PEOU also plays a role in influencing knowledge sharing in online communities (Yuan, Lin and Zhuo, 2016); habit formation to continue to use an online community (Liu, Shao and Fan, 2018); and attitude leading to spreading eWoM (Agag and El-Masry, 2016). These findings underline the importance of integrating PEOU attributes in OIS design for attracting users and encouraging their adoption.

2.2.4 Subjective norms (SN) and Trust

While technological attributes of PEOU are critical, users' adoption is also influenced by SN as enshrined in user acceptance theories (Section 2.1). In general, the more a user is influenced by the SN, the stronger will be the likelihood that his/her behavioural intentions could be predicted from the locus of his/her influence (Reza Jalilvand and Samiei, 2012). In our case, SN could influence a user to adopt or not to adopt an OIS because his/her peers or locus of influence have or not have favorable view of the OIS. Ruiz-Mafe, Tronch and Sanz-Blas, (2016) concur as they found that SN positively influence emotions and loyalty of users of online travel communities. Similarly, Reza Jalilvand and Samiei, (2012) found that SN have significant bearing on the intention to travel. However, SN are inter-dependent with Trust. A trustworthy relation will likely to have greater level of SN (Agag and El-Masry, 2016). Especially in an OIS context, users have many choices to seek information, therefore an understanding of the relationship between SN and Trust is critical, yet it has been little explored.

Trust on its own has significant bearing on intention to purchase, attitude and positive WoM (Agag and El-Masry, 2016). Liang and Yang, (2018)'s study extends the understanding on the role of 'Trust' by showing that

'Trust' influences participation and eWoM in a travel industry context. While previously 'Trust' was shown to influence loyalty, Zhang et al. (2018) found that 'Trust' is a significant determinant for establishing a positive brand relationship in the field of online travel communities. Other authors including Kamboj and Rahman, (2017), Kavoura and Stavrianeas, (2015), and Reza Jalilvand and Samiei, (2012) support the critical role of 'Trust' in shaping users' intention to adopt.

2.2.5 Other factors

Finally, another body of research dealing with the interface of an online service is "Web Usability" (Nielsen, 2012). The central ideas of "Web Usability" are the concepts of "convenience" and "ease of site navigation and search". Convenience is also associated with "site findability and accessibility".

The above review shows that while a number of factors have been examined for their influence on user adoption of online communities and related sites, more work is required to be done to firmly establish an understanding of factors that drive OIS adoption and the relationships among these various factors. This study addresses this need.

3. The Research Model and Hypotheses

While a number of factors could potentially influence the adoption of an OIS, the theoretical underpinning of the factors in the TAM and our review of the literature leads us to focus on six candidate factors, adapted to our context, as potential drivers in the adoption of an OIS.

In-depth interviews were conducted with a range of industry experts to seek their views and comments on the adequacy of our selected factors and the possible relationships among them in the context of OISs.

Subsequently, the findings from these interviews were published in an earlier article (Chen and Corkindale, 2008).

The outcome of this exercise largely supported the following proposed factors, which were: Perceived Core Service Quality (PCSQ), Perceived Supplementary Service Quality (PSSQ), Trust, Networking, Interface (design), Subjective Norm (SN) and Perceived Usefulness (PU). In the next sections we summarise the rationale for these factors and derive hypothesised relationships among them so as to propose a research model of OIS adoption, shown in Figure 1.

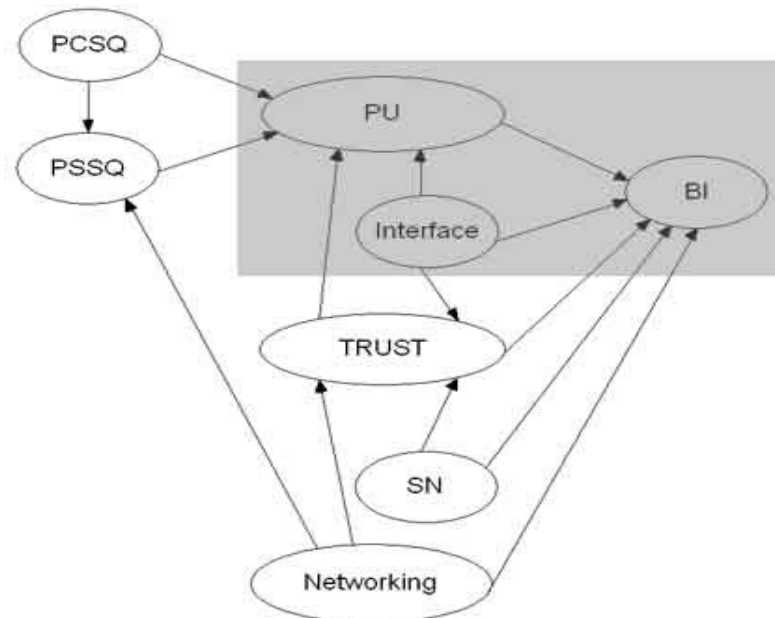


Figure 1: The proposed research model with effects of Networking on Trust/BI; Trust on BI; and Subjective Norms on Trust/BI tested in this study (the shadowed part of the model is the original TAM)

In the Figure 1, the direct effect of: (a) PSSQ on PU, (b) PCSQ on PU and PSSQ, (c) Trust on PU, (d) Interface (FAS) on PU, BI and Trust, (e) Networking on PSSQ, and (f) PU on BI have been reported in another paper

(Corkindale, Ram and Chen, 2018) hence are not replicated here. The details of these relationships are available in Table 5. In this paper, we test the effects of Networking on Trust, Networking on BI; Trust on BI; Subjective Norm on Trust; and Subjective Norms on BI.

3.1 Networking

The importance of online interactivities on the adoption of online services has been repeatedly verified in prior research (Zhang, Lu, Gupta and Zhao, 2014). Quality online interactivities can to a certain degree compensate for the lack of physical contact with the online company and also reduce the sense of uncertainty by users (Constantinides, 2004; Kamboj and Rahman, 2017).

However, solely business-to-customer focussed online interactivities can no longer capture all the benefits of the Internet. Being able to facilitate quality interaction among the users of online services has increasingly been identified as a driver for the adoption of online services (Martini, Massa and Testa, 2013). Kim, Suh and Lee, (2013) found that co-presence has an indirect effect on intention to use a site, and stressed the importance of media richness to enhance co-presence.

To capture the impacts of both business-driven and customer-initiated online interactivities on the adoption of OIS, we introduce "Networking" as a construct in our model. Networking is defined here as "the degree to which a user is satisfied with the online interactivities (both business and customer originated interactivities) facilitated by an online service provider".

This Networking is also expected to have direct bearing on the user acceptance and the quality of supplementary services provided by the OIS. If the online users are satisfied with online interactivities facilitated through Networking, the users are expected to effectively use the discussion boards, blogs and other related services. Such an acceptance will have a direct effect on the perception of the quality of supplementary service provision.

The impact of the Internet's collaborative communication nature on online system adoption, and the huge growth in Social Media 'networking', has largely been ignored in previous TAM-based research. Given the above argument, following two hypotheses are proposed:

- H1a: Networking has a positive direct effect on BI;
- H1b: Networking has a positive direct effect on Trust;

3.2 Trust

Prior research has integrated trust in studies using TAM, arguing that trust relates to PU and Perceived Ease of Use (PEOU) (Pavlou, 2003). While in (Gefen, 1997) Trust was known to be the determinant of PU, Agag and El-Masry, (2016) recently showed that PU influences Trust. Trust has often been found to be a predictor of BI in online research (e.g., Agag and El-Masry, 2016). Trust has been found to play an important role in online travel communities' adoption (e.g. Kavoura and Stavrianeas, 2015, Reza Jalilvand and Samiei, 2012), due to the fact that Internet users enjoy multiple choices on almost every kind of online service, and one of the important criteria for selection is trustworthiness. Therefore, it has been argued that "price does not rule the Web; trust does" (Schefter and Reichheld, 2000; p.107). Ingham, Cadieux and Berrada (2015) found support for a positive role of trust in influencing technology adoption behaviors.

We define trust as "the extent to which a user believes the OIS providers will fulfil their expectations and behave in a socially responsible manner" (McKnight and Chervany, 2002). In the light of above arguments, it is expected that trust will have a direct positive effect on BI in an OIS context. Hence the following hypothesis is postulated:

- H2: Trust has a positive direct effect on BI;

3.3 Subjective Norms (SN)

SN is theorized as a direct determinant of BI (e.g. Fishbein and Ajzen, 1975). A subjective norm is defined as "a person's perception that most people who are important to them think he or she should - or should not - perform the behavior in question" (Fishbein and Ajzen, 1975, p302).

In virtual communities users often seek and depend for information from other users, referents or influencers (e.g. friend, family members) (Smith, 2005). Online SN thus might contribute directly to online trust (Reza Jalilvand and Samiei, 2012). It has been shown that the effect of word-of-mouth in the online context is often more powerful and far-reaching than it is in the offline marketplace (Gounaris and Dimitriadis, 2003). In our study, SN is proposed as a determinant of Trust.

Prior research has found that SN directly affects BI in the application of the Theory of Reasoned Action (TRA) and Theory of Planned Behaviour (TPB) models, but has produced inconsistent findings when tested for in TAM models (e.g. Pavlou, 2003). Zhang et al. (2014) found that social support, and social presence have a positive effect on social commerce intention. Mahmood and Sismeiro, (2017) found that those who newly visit and adopt an OIS are likely to have friends who are already regular users. Further, Ingham, Cadieux and Berrada, (2015) showed that social influence contributes towards intentions of technology adoption. Given the above, the study proposes SN as direct determinant of BI and Trust and hypothesise as follows:

H3a: SN has a positive direct effect on BI;

H3b: SN has a positive direct effect on Trust

4. Methodology

4.1 Research design and Sample selection

Given the nature of research question, the study adopted a confirmatory quantitative approach to data collection and analysis which is consistent with earlier studies in a similar context (e.g. Zhang et al., 2018).

In our study we focussed upon a particular type of OIS, whose prime purpose is to enable users to gain independent news on local and international affairs and which also provides the ability for users to exchange news and information via facilities like Blogs and Chat.

As such, the sample frame of the study was drawn from the users of the OIS. The level of analysis of the study was the individual users of the OIS, which is also consistent with prior studies and the theoretical underpinning of the study (Ruiz-Mafe, Tronch and Sanz-Blas, 2016; Yuan, Lin and Zhuo, 2016). A new commercial OIS, co-designed by one of the study's authors who had experience in such design, was launched by CTS Travel for this study.

Several approaches were also adopted to ensure sound sampling:

Tourism-oriented OISs were generally visited by a wider cross-section of the online population than many other kinds of OISs. For this reason, CTS Travel was selected as the industry partner for this study because it demonstrated several advantages as they were recognized for innovativeness of operations in Taiwan, and also collaborated and shared media content with other print and television outlets (Corkindale, Ram and Chen, (2018).

To make the web-based survey known to many potential participants, banner advertisements were sponsored by Yam.com, one of the three major portals in Taiwan at the time, for two weeks. Several Blog syndications promoting the survey were also facilitated by Yam.com during this period.

To avoid repeated submissions and duplicated responses, the website was programmed to detect and eliminate this possibility by checking the name, email address, contact number and IP address (Corkindale, Ram and Chen, 2018).

4.2 Research questionnaire development

In line with prior adoption/acceptance research (e.g. Venkatesh et al., 2003), a questionnaire survey was utilized as the method of data collection. The survey questionnaire consisted of multiple scaled items for each of the constructs and respondents were asked to indicate their level of agreement with the statement on each of the items on a five-point Likert scale. All measurement scales of the constructs were adapted from previous research where the reliability and validity of the original scales are well confirmed. However, since there are some minor modifications made on individual questions relating to some scales to better suit the context and

the objectives of the research, a two-stage pilot study was conducted to ensure the quality of the revised instrument.

In the first stage, two senior academics specializing in the marketing and commercialisation of new technology at a major university in Australia were asked to evaluate the survey instrument. In the second stage, 16 ‘elite’ customer service representatives (CSRs) of CTS Travel (the industry partner of this study) were selected by the company and asked to complete the draft questionnaire. They were asked to comment on the clarity of the question wording and possible sources of bias in them and to report the time needed to complete the questionnaire. The feedback from the two stages were used to refine the questionnaire for ensuring clarity of wording, ease of use, and appropriateness of the format (Corkindale, Ram and Chen, (2018) (also see Table 1).

Table 1: Constructs and Item details

Constructs	Measurement Items	References
1. Networking (NET)	5 items	Livaditi et al. (2002) and Song et al. (2004)
2. Trust (TRUT)	5 items	Pavlou (2003)
3. Subjective Norm (SN)	2 items	Venkatesh and Davis, (2000)
4. Behavior Intention (BI)	2 items	Venkatesh and Davis, (2000)

4.3 Data Collection and analysis

As explained above, to facilitate data collection, a new commercial OIS was co-designed for the study and launched by CTS Travel. This was a well-established company in Taiwan and the criteria for its selection are described as below.

A Web-based survey of subsequent users of the OIS was devised and launched based on the following considerations (Corkindale, Ram and Chen, 2018).

1. The online survey questionnaires are convenient way to collect data and fit the purpose of this study as the study targeted current Internet users in Taiwan.
2. To ensure capturing the users’ OIS experience, “respondents were encouraged to explore the use of the OIS during their visit and to interact with other users. Visiting the new OIS did not limit respondents’ abilities to robustly answer survey questions based on their experience and interaction with the new OIS. These respondents had to have prior experience of using OISs, so had the capabilities to judge and understand the functionalities and features of new OIS during their visit to this new OIS. They expressed their experience by answering the survey questions on the new OIS” (Corkindale, Ram and Chen, 2018).

557 completed questionnaires were collected and 46 cases with significant outlier responses were eliminated from the sample after univariate distribution tests. The effective sample size was thus 511.

The descriptive analysis of the data shows that 62.8% of the respondents are female and 37.2% male. The respondents are mostly young (76% under 40 years old), highly educated (75.3% hold a bachelors degree or higher), and have many years of experience in using the Internet (92.8% have more than three years Internet experience), and use the Internet on a daily basis.

The data were analysed using Structural Equation Modelling (SEM) technique which is regarded as a sophisticated and robust technique involving confirmatory analysis of large data which is also consistent with prior studies (Liang and Yang, 2018).

5. Results

5.1 The evaluation of the measurement model

Confirmatory factor analysis (CFA) - with the Maximum Likelihood method - was used to examine the adequacy of the measurement model. The analysis of the initial full measurement model demonstrates a moderate fit to the empirical data. The Normed Chi-square is 2.399; RMR, GFI, AGFI, TLI CFI are 0.19, 0.898, 0.872, 0.937 and 0.947 respectively. These indices provide evidence supporting the construct validity of the initial full measurement model.

The convergent validity is also confirmed while the standardized regression loadings under Maximum Likelihood estimation range from 0.618 to 0.936 with all the t-values significant ($p < 0.001$). However, a review of the modification indices reveals that there are covariances between indicator variables. Adjustment is thus made by eliminating the items labeled PCSQ3, PCSQ4, PSSQ2, PU2, TRUT3, and NET2 after re-examining the relations between correlated indicator variables.

The modified full measurement model demonstrates a good fit to the empirical data. The Normed Chi-square is 2.037; RMR, RMSEA, GFI, AGFI, TLI CFI are 0.014, 0.045, 0.938, 0.913, 0.962, and 0.970 respectively, these indices provide strong evidence supporting the construct validity of the modified full measurement model. The convergent validity is also confirmed while all the standardized regression loadings under Maximum Likelihood estimation range from 0.673 to 0.940 with all the t-values significant ($p < 0.001$).

Composite reliability and Average Variance Extracted (AVE) of the individual construct is calculated to assess reliability and convergent validity of the measurements. It is concluded that the items used in this study have demonstrated good reliability (see Table 2) as composite reliability values are greater than the recommended threshold of 0.7 (Nunnally and Bernstein, 1994). Content validity is supported by the pilot testing.

Convergent validity is also confirmed by AVE values and the factor loading. As the AVE values for the constructs are greater than 0.5, the constructs demonstrate adequate convergent validity (Chin, 1998). Further, as all items exceed the recommended level of 0.6 (Byrne, 2001), it confirms that the constructs possess adequate convergent validity.

Table 2: The reliability coefficients, means and standard deviations of the constructs in the measurement mode with shaded areas showing constructs involved in relationships reported in this paper (Adapted from Corkindale, Ram and Chen, 2018)

Construct	Indicator	Regression Weight	C.R.	P	Composite Reliability	Variance Extracted	Mean	Standard Deviation
PU	PU1	0.737	18.450	***	0.788	0.554	4.308	1.087
	PU3	0.773	19.698	***				
	PU4	0.722	17.964	***				
PCSQ	PCSQ1	0.749	18.079	***	0.737	0.583	2.910	0.728
	PCSQ2	0.778	18.873	***				
PSSQ	PSSQ1	0.673	16.347	***	0.834	0.629	4.778	1.345
	PSSQ3	0.817	21.312	***				
	PSSQ4	0.875	23.512	***				
Trust	TRUT1	0.829	21.425	***	0.828	0.619	4.525	1.213
	TRUT 2	0.840	21.830	***				
	TRUT 4	0.682	16.483	***				
Networking	NET1	0.725	17.559	***	0.797	0.567	4.984	1.221
	NET3	0.792	19.743	***				
	NET5	0.741	18.080	***				
Interface	FAS 2	0.724	18.155	***	0.883	0.655	4.984	1.221
	FAS 3	0.736	18.579	***				
	FAS 4	0.814	21.482	***				
	FAS 5	0.825	21.920	***				
Subjective Norm	SN1	0.921	23.971	***	0.928	0.866	3.290	0.954
	SN2	0.940	24.630	***				
Behavioural Intention	BI1	0.876	22.274	***	0.831	0.712	2.975	0.862
	BI2	0.810	20.221	***				
Note: * $p < .05$ ** $p < .01$ *** $p < .001$								

Discriminant validity is demonstrated when correlations between different constructs are relatively low (Hatcher, 1994). The most common test for assessing discriminant validity is the confidence interval test.

Discriminant validity is confirmed when the confidence interval around the correlation between any two latent constructs does not include one (Torkzadeh, Koufteros and Pflughoeft, 2003). The confidence interval tests for the correlation between the pairs of constructs showed that the confidence interval values do not include “one” confirming that the construct were distinct and demonstrate discriminant validity (Torkzadeh, Koufteros and Pflughoeft, 2003). Correlations between latent constructs is presented in Table 3 and none of the values exceed the criterion (0.9 and above) as suggested by Hair et al., (2009) as well. It is thus concluded that discriminant validity is adequate for the measurement model.

Table 3: Correlation Matrix among constructs with shaded areas showing constructs involved in relationships reported in this paper (Adapted from Corkindale, Ram and Chen, 2018)

	PCSQ	PSSQ	BI	SN	Interface	Networking	TRUST	PU
PCSQ	1.000							
SSQ	.628	1.000						
BI	.717	.532	1.000					
SN	.378	.365	.266	1.000				
Interface	.735	.656	.677	.411	1.000			
Networking	.550	.734	.517	.509	.635	1.000		
TRUST	.643	.518	.578	.426	.653	.508	1.000	
PU	.874	.746	.683	.450	.807	.640	.729	1.000

5.2 The evaluation of the structural model

Having confirmed that the model is reliable and valid, we evaluated the structural model and tested the hypotheses.

The structural model is built according to the proposed research model. The model fit indices demonstrate a good model fit with Normed Chi-square under 3 (2.136), GFI, AGFI, TLI, CFI being way above 0.90, RMR and RMSEA are also good with value 0.015 and 0.047 respectively. The structural model demonstrates a good CFI with the value of 0.966. The detailed results of for the fitness of structural model are presented in Table 4.

Table 4: Results of analysis of fitness of structural model

Goodness-of-fit indices for structural model analysis			
Indices		Threshold	Results
Chi-square	CMIN		403.792
Degree of Freedom	DF		189
Normed Chi-square	CMIN/DF	≤3	2.136
Goodness-of-fit Index (GFI)	GFI	≥0.9	0.931
Adjusted Goodness-of-fit Index (AGFI)	AGFI	≥0.9	0.908
Tucker-Lewis Index (TLI)	TLI	≥0.95	0.959
Comparative Fit Index (CFI)	CFI	≥0.9	0.966
Normed Fit Index (NFI)	NFI	≥0.90	0.938
Incremental Index of Fit (IFI)	IFI	≥0.95	0.966
Root Mean Square Residual (RMR)	RMR	≤0.05	0.015
Root Mean Square of Error of Estimation (RMSEA)	RMSEA	≤0.05	0.047

Most of the path coefficients prove to be significant at the $p < .001$ and $p < .01$ level, indicating meaningful relationship between the proposed constructs (Svensson, 2004).

The results show that SN ($\beta = 0.160$, $t=3.296$, $p<0.001$) was found to be positively significantly related to Trust. However, contrary to a priori assumption, Network ($\beta = 0.080$, $t=1.214$, $p>0.05$) was found to have an insignificant relationship with Trust.

Moreover, the study finds that SN ($\beta = -0.102$, $t=-2.167$, $p<0.05$) is negatively significantly related to BI. In addition, contrary to the a priori assumption a significant relationship was not found between Network ($\beta = 0.63$, $t=0.954$, $p>0.05$), and Trust ($\beta = 0.075$, $t=1.144$, $p>0.05$) and with BI. The results of hypotheses testing are presented in Table 5.

Table 5: Results of Path analysis with shaded areas showing paths reported in this paper (Adapted from Corkindale, Ram and Chen, 2018)

Std. Regression Weights			S.E.	C.R.	P	
PU	←	PSSQ	.203	.048	3.847	***
PU	←	PCSQ	.552	.090	6.043	***
PU	←	Trust	.234	.042	4.597	***
PU	←	FAS	.112	.087	1.359	.174
PSSQ	←	PCSQ	.347	.063	5.911	***
PSSQ	←	NET	.544	.057	8.440	***
Trust	←	SN	.160	.030	3.296	***
Trust	←	FAS	.554	.085	8.319	***
Trust	←	NET	.080	.065	1.214	.225
BI	←	PU	.438	.116	4.273	***
BI	←	FAS	.280	.115	2.937	.003
BI	←	SN	-.102	.027	-2.167	.030
BI	←	NET	.063	.060	.954	.340
BI	←	Trust	.075	.062	1.144	.253
Note: 1. * $p < .05$ ** $p < .01$ *** $p < .001$						
2. FAS is the abbreviation of Interface						
3. NET is the abbreviation of Networking						

6. Discussion

6.1 Direct effect of Networking (NET) on BI, and Trust

Networking is confirmed to be the antecedent of PSSQ. However, the proposed links from Networking to BI and Networking to Trust are not supported.

The non-significant link from Networking to BI was unexpected. Academic and industry literature have suggested that social interaction is a strong predictor of online service use (Lee, Hwang and Lee 2006). It is probable that the major developments in the use of social media platforms is the reason. Many potential users of OISs have turned to purpose-built online social networking services, such as Facebook and Twitter, instead of the OISs, to gratify their needs associated with online social interactions.

The non-significant link from Networking to Trust in this study was also unexpected. An implication is that the importance of Networking in the process of the OIS adoption may have been overestimated in prior literature and that consumers have learned over time that OISs can be trusted.

6.2 Direct effect of Trust on Behaviour Intention

Trust did not demonstrate a direct and positive effect on BI as hypothesised. However, there are strong regression coefficients for the indicator variables representing “the prior experience (with the OIS provider)”, labelled as “TRUT2”, and “the reputation (of the OIS provider)”, labelled as “TRUT1” of 0.839 and 0.834 respectively. This shows that these play major roles in formulating a positive Trust perception towards an OIS.

This also does not imply that Trust can be overlooked completely. If accessing an OIS by a user is to help them in some decision-making process then the information provided by the OIS needs to be reliable and accurate to encourage people to regularly visit it, i.e. to adopt it.

Moreover, PCSQ and Interface both have a direct and positive effect on Trust. This implies that new OISs can utilize good CSQ and Interface to improve Trust and to compensate for the disadvantages of the absence of an established reputation and positive prior experiences with it by potential users.

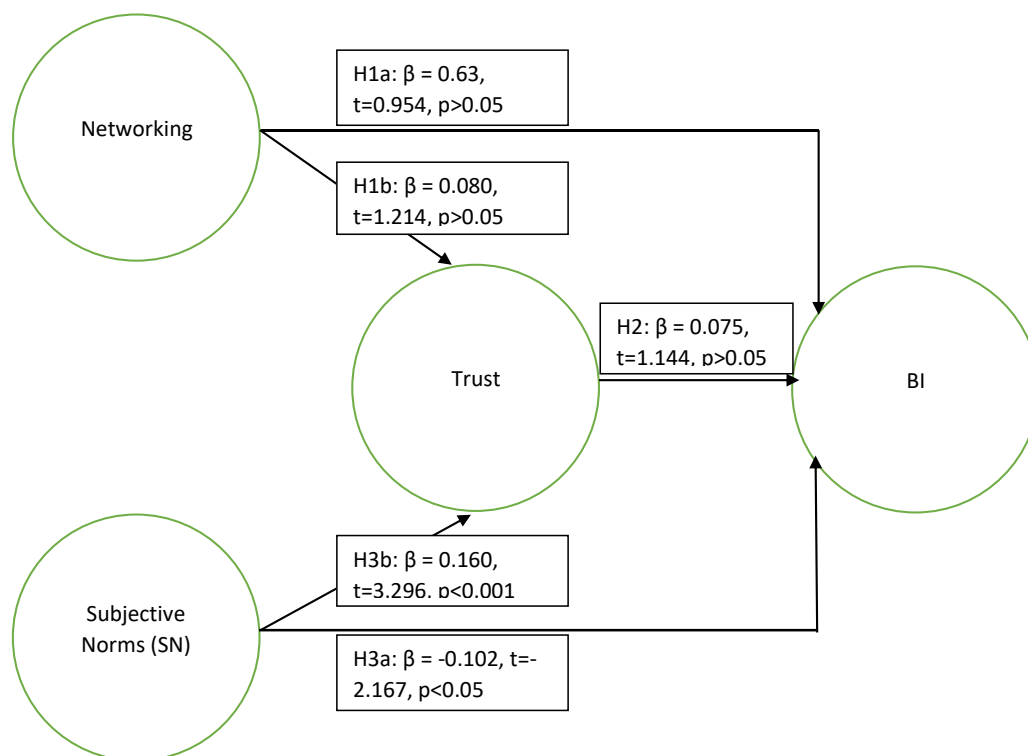
6.3 Direct effect of Subjective Norm (SN) on Behaviour Intention, and Trust

Whether SN has an effect on BI had not been consistently found in prior, early studies (Venkatesh and Davis, 2000). However, a positive association between SN and BI was found. This implies that often the sharing of information by an online user helps in shaping the behavioural intention of other users, for instance a positive word of mouth about an OIS can help in generating traffic to the it, and so influence OIS adoption behaviours.

Our study confirms that SN has a positive influence on Trust in an OIS and the importance of generating a positive experience for online users so creating a positive environment to encourage further potential users to visit it. This is particularly important in the wake of the social media revolution where information, either positive or negative, could spread very quickly and could cause a loss in the trust of an OIS.

The resultant updated model is presented in Figure (2) below.

Figure 2: Updated research model



7. Conclusion and Implications

The findings suggest, among other things, that online interactivity among users generates a strong contribution to Behavioural Intention and Trust, which is a necessary attribute of an OIS for gaining its adoption. Our results further suggest that subjective norm is one of the drivers in influencing OIS adoption and so the management of it is important.

Moreover, subjective norms manifested through social influences, information sharing and word-of-mouth directly influence the Behavioural Intention (BI) to adopt. The results underline the importance of perception of peers, friends, family and connected people in motivating and shaping the BI. As the subjective norms are

shaped by people who are important in some way to a particular user, therefore intuitively, the behavioural influence exerted through subjective norms is different and more pronounced compared to influence that mere networks of social media contacts exert.

Social interaction in the form of 'networking' among users is not associated with the Behavioural Intention (BI) to adopt or with the Trust of the service provider, contrary to expectations. This confirms the belief that having large number of social media interaction may not necessarily translate into influences that shape behaviour. In fact, large social networks could lead to divergence of opinion and information making it difficult to process the right and legitimate information from the inaccurate and false information.

7.1 Theoretical implications and lessons

This study has made a number of contributions to theory development, as discussed below.

Firstly, the study contributes to innovation adoption literature by showing application of TAM to an OIS context, and confirming that the tenets of TAM are applicable to new types of online communities' initiatives.

Secondly, theoretical knowledge has been extended by identifying some factors that can influence OIS adoption and broadly confirming factors that explain users' acceptance as per TAM. Thirdly, although the development of OISs has played an important role in the evolution of the online service industry, this study is one of the few so far to examine the adoption of OISs. Finally, having conducted the research in a real business context involving a community of initial users of an OIS, this research project design avoided one of the major cited limitations of some previous adoption / acceptance studies that have been conducted using data gathered from university students and use of an artificial OIS (Venkatesh et al., 2003).

7.2 Managerial Implications

Firstly, the study highlights that managers need to focus on social networks that consist of closely aligned people, the people that trust and regards each other as important. Hence, maintaining a certain image or perception is important in those networks. Instintively, once the behaviours of few people are shaped and influenced, it will be much easier and more effective to shape the behaviours of others in the same network given the perceptual and image effect. Usual social media networks are not necessarily the sources of influencing behaviours and may not generate enough benefits to offset the costs involved.

Secondly, OIS managers may need to rethink their strategies on influencing networks, as the results point out that social networks do not influence trust and behavioural intentions. This is because with so much information flow, users' capacities to process information from a variety of information sources is becoming constrained. Therefore, pushing information in all types of loosely constructed social networks may not help managers.

Finally, managers need to carefully put in place strategies to build trust for the products, services and image to induce behavioural intentions to adopt the product offerings. The many sources of information, while on one hand should help in making sound decisions are, on the other hand, making it difficult to filter accurate from falsified information, leading to a lack of trust.

7.3 Limitations and Opportunities for Future Research

Our study has some limitations. Firstly, and similar to the limitation of other studies in the online context, while the constructs devised and used were appropriate for the context and time of the study but are likely to be dynamic in nature. In the highly competitive online service market, changes in perceptions of, and towards, OISs will be changing. A longitudinal study over a fuller cycle of an OIS's development could help to more reliably identify the more enduring relationships between the antecedent constructs and the adoption of an OIS reducing the limitation of the cross-sectional data collection.

Another limitation is the reliance on individual users to report their truthful perceptions of the studied OIS prior to their claimed adoption, or otherwise, of it. Future studies can seek to complement the findings of our study by utilizing alternative data collection techniques such as log-files analyses.

As the study was conducted solely in Taiwan in a travel industry context, any generalisation must be drawn with caution. The applicability of findings in other countries or industries may be limited, or may vary depending on the specific environment of the particular country, region or industry.

An area for further research will be to examine the role of networks with divergent participants in influencing trust. How is trust affected when a) the networks consist of people with unshared and diverse interests?; b) when people avoid using networking for seeking information? Are there special circumstances that keep people away or make people avoid using networks for seeking information?

Additionally, future studies can examine how differences in social norms affect the intention to adopt OIS and other internet based social media products and services. People with different social norms may have a different understanding of trust and behaviours towards the internet products and services, so their habit and intentions may vary. Further work needs to be done to better understand users' social settings for creating more tailored and bespoke services to enhance users' experience and their adoption intentions.

An additional area for further examination is to empirically test the nature and magnitude of moderated and mediated effects of networking on social norms and the ultimate influence on behavioural intention to adopt OISs.

More work is needed to investigate the difference in influence exerted through subjective norms and the mere social media interactions. Further research on the direct, mediated and moderated effects of influence exerted through subjective norms and other types of social interactions will help augment the knowledge created by this study.

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