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Consumer control, dependency and satisfaction with online service

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Introduction

In recent times the Internet appears to be playing an ever increasing significant role in aiding the successful marketing of both products and services. Research suggests that using the Internet can help firms to build customer loyalty (Anderson and Srinivasan, 2003; Kassim and Abdullah, 2010; Ganguli and Roy, 2011), influence repeat customer purchases (Kaur and Quareshi, 2015; Reibstein, 2002), reduce cost, enhance efficiency (Jayawardhena and Foley, 2000), improve market share and enhance profitability (Reichheld and Schefter, 2000). Whilst a plethora of such studies have tended to focus on corporate outcomes, this research offers a more customer-centric perspective by investigating Internet user control as a customer-oriented concept. Through using online services, customers are now able to control the service process and determine their own online service outcome (Ba and Johansson, 2008). The study argues that through experiencing control, customers can contribute to their overall satisfaction at both the online service encounter level and corporate level.

In the era of online services, customer experience is an important factor that is affecting customer satisfaction (Wang *et al.*, 2013; Oh *et al.*, 2012; Yen, 2014).

Perceived customer control (Ba and Johansson, 2008; Gao and Bai, 2014) and dependency (Ruiz-Mafe *et al.*, 2014) are crucial attributes surrounding customer experience that have yet to be fully explored. This is because customers, when

utilising on-line services equally are acquiring more overall control, yet at the same time are becoming more dependent on online service providers. While control implies some degree of determination that is preferred by customers in the service process, dependency relates to a loss of independency. Understanding more about these two contrasting attributes can therefore be useful in explaining this subject further at large.

Whilst there are a growing number of customers acquiring Internet skills and being able to control their online service process, simultaneously they unconsciously depend on the Internet to attain their specific transactional needs (Rowley, 2006). Their habitual dependence on online communication therefore serves as an intrinsic goal that they pursue automatically without cognitive processing (Wang *et al.*, 2005). To some degree, online service dependency therefore becomes a common phenomenon for consumers. Control and dependency imply continuous usage and are likely to have an influence on satisfaction among users. Further research is warranted to examine how control and online service dependency affect online service and specifically how these attributes can be used to predict online satisfaction.

Prior research has examined online behaviour and platforms as resources that lead to dependency (Sun *et al.*, 2008; Wirtz *et al.*, 2013). However, in this study we focus on the customer perspective, viewing control as a motivational factor that can influence online dependency and satisfaction. Control is an important attribute

relating to the online environment but has been somewhat neglected by academic researchers. Dependency appears unconsciously by customers and it is now receiving more attention among researchers in the field of online marketing (such as Aquilani *et al.*, 2015; Sutcliffe, 2009; Tsai and Men, 2013).

The study is novel and meaningful in that it tests the relationships between variables such as online customer intention i.e. control, online service dependency, satisfaction with the online encounter and overall corporate level satisfaction.

Customer control and dependency are two online service variables which ought to be considered by both service marketing researchers and practitioners. The paper seeks to fill a gap in the literature by examining their importance from a customer intrinsic perspective. If such relationships exist, then online service providers need to let customers have more control of the service process to nurture their dependency in order to enhance satisfaction.

The study has three main objectives: (1) to explore the importance of customer perceived control and dependency in an online service context; (2) to identify the relationship between control, online service dependency, online encounter satisfaction and overall satisfaction, and then theorise their relationship by building an online service model; and (3) to examine the strategic implications of control and online service dependency for online service providers.

The study contributes to the online service discipline in various ways: First, it is the primary study to highlight the importance of consumer control and dependency in online service; second, in a theoretically anchored way, it identifies and defines important behavioural constructs in online service; third, it tests the validity of such associations among consumer behaviour constructs characterised in the online service context. Finally, it explores and validates a new online service model.

The remainder of the article is organised into six sections. First, we review the theoretical background of control and dependency. Second, we posit our conceptual model and a set of research hypotheses that explain the associations among the various constructs. Third, we explain the research approach developed for carrying out the survey. Fourth, we present and discuss the findings based on the data analysis in testing the research hypotheses. Fifth, we draw several conclusions and implications from theoretical, managerial and social perspectives. Finally, we present the limitations and directions for further research.

Theoretical background

Social learning theory assumes that human behaviour is determined by the continuous reciprocal interaction of personal cognition and the environment (Bandura, 1977).

Being a cognitive factor affecting consumer behaviour, locus of control is defined as

the extent to which an individual perceives events or behaviour to be determined by him/her i.e., intrinsic or extrinsic factors (Rotter, 1954).

Following Rotter's intrinsic/extrinsic view of control, we analyse control as an intrinsic factor by considering that online service users perceive control of the interaction process with online service system and achieve the outcome as expected by them. While services are now available online, customers become more informed, sophisticated and aware of the advent of Internet technology (Aquilant *et al.*, 2015). The provision of superior consumer experience via online service determines customer satisfaction in this era of consumer control (Carlson and O'Cass, 2010; Mangold and Faulds, 2009). Companies are building engagement platforms for customer use in order to create a favourable service experience (Mahrous and Kotb, 2014; Ramaswamy, 2011). Building on social learning theory, the Technology Acceptance Model (TAM) and media dependency theory as the theoretical foundation, we now discuss control and dependency.

Control

Having the sense of control is captivating for users in the human-computer interaction process (Lepper and Malone, 1987). User ability, resources and opportunity determine perceived control (Fishbein and Ajzen, 1975). As more and more options relating to Internet sites became more widely available to users offering various

degrees of control (Peng and Chu, 2011; Dimmick *et al.*, 2009; Ju and Fu, 2013), this becomes a strong motivating factor for consumers' continuous usage. User motivation was recognised as a major concept by Davis (1989) in order to develop his Technology Acceptance Model (TAM). Following this line of thought, control is considered as a motivation factor and a core concept to explore user psychology in online service.

Control influences the contingency relationship between actions and outcomes (MacDonald, 1973). It affects the achievement of intended outcomes by execution of determined actions (Leone and Burns, 2000). By considering control being the same as Bandura's (1977) self-efficacy, Fishbein and Cappella (2006) define control as the belief that an individual executes the actions required to produce outcomes. Task completion is an important measurement of self efficacy in an IT context (Venkatesh and Davis, 1996). So in a Web environment, control relates to users' perceptions and their ability to successfully navigate through the Web (Gao and Bai, 2014; Novak *et al.*, 2000). It is the positive subjective experience that motivates an individual to perform an activity (Csikszentmihalyi, 1975) using his/her skill, personal preference (Hoffman and Novak, 1996) and some degree of empowerment (Lachman and Burack, 1993).

TAM offers a well accepted explanation of the intrinsic determinants surrounding the internal beliefs and attitudes on information technology usage behaviour. Control is an attribute of technology acceptance affecting customer satisfaction in eCommerce (Devaraj *et al.*, 2002). Obviously, the Internet provides a high degree of control to users (Dimmick *et al.*, 2009). Internet users determine specific actions and achieve outcomes through depending on its usage.

Control can also be reflected via users' intrinsic characteristics, such as their capability, perceived self-efficacy or effort (Bates and Khasawneh, 2007). From TAM, perceived ease of use is an important construct that contributes to technology acceptance and usage. It implies the extent to which users believe that adopting a particular technology will be effortless (Davis, 1989). Effort expectancy therefore affects the adoption and usage surrounding technology (Venkatesh *et al.*, 2012).

Control and ease of use during Web interaction leads to flow experience and has an influence on the online service encounter experience (Manganari *et al.*, 2014; Zhou *et al.*, 2010). Originally proposed by Csikszentmihalyi (1975), flow relates to a state of consciousness that is experienced by people who are deeply involved in an enjoyable activity. Control meanwhile, is considered to be one of the attributes relating to the flow experience that helps to distinguish control as a construct influencing customer satisfaction in an online service context.

Dependency

Online engagement is the application of interactive techniques to promote user interest and satisfaction experience (Sutcliffe, 2009). Customers' increasing reliance of online media i.e., dependency, indicates the service providers' successfulness of online engagement application.

Consumers depend on service and its providers for the fulfillment of needs and goals. Consequently, the gratification of needs and goals from a particular medium can result in consumption dependence on that medium, leading to a pattern of media use (Rubin, 1994), media affinity (Papacharissi and Mendelson, 2007) and affinity for the Internet (Ji and Fu, 2013). Affinity relates to user attachment and importance of a particular medium (Ji and Fu, 2013; Papacharissi and Mendelson, 2007). Chou and Hsiao (2000) confirmed that users with dependency perceive the Internet to be entertaining, interactive and satisfactory. Ruiz and Sanz (2006) meanwhile discovered that Internet exposure, online experience and affinity with the Internet positively affect dependency.

Internet users depend on online service for information, facilitation of communication, interaction with service providers and service delivery to fulfil their financial goals. However, Internet dependency has been the subject of contrasting views and definitions among scholars, resulting in different standards or measures

being used to operationalise the concept (Sun *et al.*, 2008). Media dependency influences various attitudinal and behavioural outcomes (Tsai and Men, 2013), including trust (Jackob, 2010). As customer satisfaction is an important service outcome held by marketing researchers and practitioners, this study examines the effects of online service dependency on customer satisfaction.

Service encounter satisfaction

Service encounter satisfaction is the outcome achieved relating to a particular service encounter. It is the measure of consumer satisfaction with the transaction (Koufteros *et al.*, 2014). Online service depends on the Information System (IS) as a means to interact with customers, facilitate service delivery and contribute to customer satisfaction. Thus, satisfaction is determined by the system's ability to fulfil the information needs of users and fulfilment of services (Koufteros *et al.*, 2014). Given the lack of human-interaction in the online service process, system capability, information comprehensiveness and effective customer service are important factors that can affect customer satisfaction (Wolfenbarger and Gilly, 2003). However, computing satisfaction is only limited to transaction satisfaction at the service encounter level.

Overall customer satisfaction

Customer satisfaction is an evaluative and cumulative judgment relating to post-purchase experience (Oliver 2010; Van Doorn and Verhoef, 2008). Satisfaction (or dissatisfaction) represents the discrepancy between prior expectation and the actual performance perceived after consumption (Tse and Wilton, 1988; Yi, 1990).

While expectation-disconfirmation theory compares actual performance with expected performance, equity theory compares the cost spent with the benefit accrued by customers. Satisfaction is therefore achieved based on perceptions of equity and fairness (Oliver and Swan, 1989).

Satisfaction of a single-transaction is not sufficient and the development of continuous satisfaction should be the strategic objective of companies. Overall satisfaction views customer satisfaction in a cumulative way. It requires the summing of satisfaction associated with specific products and service offerings for a company in a continuous base and considers satisfaction with various facets of the company (Parasuraman *et al.*, 1988). It represents the overall satisfaction to the service provider as a whole i.e., satisfaction at the corporate level.

Conceptual model and research hypotheses

The antecedents of and the positive relationship between service encounter satisfaction and overall satisfaction have previously been examined in the literature

comprehensively. Control and dependency have also been studied by scholars of online consumer behaviour and communication (e.g., Bridges and Florsheim, 2008; Chou and Hsiao, 2000; Koufaris, 2002; Novak *et al.*, 2000; Ruiz and Sanz, 2006; Wang *et al.*, 2005). However, the role of consumer control in relation to online dependency leading to satisfaction in an online service context has not previously been examined, but is worthy of investigation.

Previous studies have examined control from a psychology perspective (such as flow theory) or from an IS perspective (such as the extended TAM model by Venkatesh, 2000) and its impact on consumer behaviour (Koufaris, 2002). Other work has investigated 'online buying' and 'pathological Internet use' (Bridges and Florsheim, 2008). However, previous work has not tended to examine how control contributes to the psychology fulfilment of users/customers, i.e. satisfaction. This study now builds on these two focal constructs, control and online service dependency, and aims to develop an explicit model that shows the influence of control and online service dependency on service encounter satisfaction and overall satisfaction.

Online service customers frequently have a strong sense that they are able and prefer to control the interaction and transaction by using online services. While consumers get used to controlling their online service experience, at the same time a

kind of affinity develops. For this study, a more specific concept is used to emphasise user-online service affinity and relationship engagement i.e., user dependency on online service. As various types of affinity carry different consequences (Ji and Fu, 2013), our model posits within the service context that encounter satisfaction and overall satisfaction represent two key outcomes. Figure 1 shows the hypothesised relationships between the constructs.

Figure 1 about here

The four constructs in the model have been well defined in traditional marketing and communication research, but for this online service study, their definitions were modified to reflect specific characteristics associated with this particular context:

- *Control (CNT)* represents the determination of online service customers in the customer-online service system interaction process. Customers perceive that the online service system is manageable with their Internet skills for the completion of certain online tasks.
- *Online Dependency (ODP)* is the very high tendency among online service customers to rely on such service to meet their action orientated goals.

- *Online Encounter Satisfaction (OSAT)* is the outcome achieved when a customer finds pleasurable experience in the online service process.
- *Overall Satisfaction (SAT)* is the online service customers' cumulative pleasurable experience with the overall service of the service provider over time.

The control-online dependency relationship

Ji and Fu (2013) suggested that the Internet can satisfy human needs by providing information and user empowerment. The fulfilment of consumer control motivates users to repeatedly access technology (Castaneda *et al.*, 2007). Once customers experience control intrinsically they are often motivated to use online service more frequently. This tendency becomes even more prominent when their skilfulness in using online service improves. Based on this logic, it is reasonable to propose that intrinsic control contributes to online dependency.

Online dependency can be represented by customers' habitual usage of online service. It is reflected by high volume usage and high frequency visiting of online service sites. Customers are also becoming more skilful and experienced in using the Internet and related applications to help them manage daily life matters. The phenomenon of control leading to online dependency is well illustrated for example by online share trading and bill payment. Based on the preceding discussion, we hypothesise the following:

H_1 User control has a direct positive effect on online dependency among online service customers.

The control-online encounter satisfaction relationship

Control enhances customer satisfaction associated with a service (Hui and Bateson, 1991). An increasing number of customers are turning to online service for a higher level of control and convenience (Ding *et al.*, 2007). It is anticipated that user control positively influences customer emotional responses and satisfaction. Online service customers are goal and functional-oriented. They aim for effective control in order to complete tasks online. Control comes from Internet users' ability to successfully navigate through the web environment and their perceptions of the web page responses relating to their inputs (Novak *et al.*, 2000). Customers might be anxious when they use online service for the first time. However, later on once they have obtained a certain level of familiarity, the interaction process is likely to become more manageable and they will be able to use online service as expected. We therefore posit the following:

H_2 User control has a direct positive effect on online encounter satisfaction among online service customers.

The online dependency-online encounter satisfaction relationship

Habitual usage of online service is very important for service providers. Once customers are familiar with using online service, they will be more prone to depend on it. As a consequence, online service customers become more satisfied.

Ball-Rokeach (1985) advocates that dependency is the outcome of the gratification of those needs which are relied upon and draw on the resources of the counterpart. In line with these thoughts, online service offers a resource to help satisfy customer needs. When customers get used to using online service to achieve their goals, their online dependency will increase. Users with some degree of Internet dependency tend to consider the service satisfactory (Chou and Hsiao, 2000; Wang, 2001). It is therefore proposed that online dependency serves as a useful predictor of online encounter satisfaction, and in response it is hypothesised that:

H₃ User online dependency has a direct positive effect on online encounter satisfaction among online service customers.

The online dependency-overall satisfaction relationship

The rising dependence on technological encounters and the resulting increase in the number of service encounters further signal the importance of satisfaction with the technological interaction process, which influences overall satisfaction (Haytko and Simmers, 2009). Online dependency implies the tendency to heavily rely on online

service format for goal attainment. In fact, the increasing popularity and habitual usage of online bill payment and online trading services illustrate the effect of online dependency on overall satisfaction with service providers. It is proposed that once an individual exhibits a certain degree of dependency on online service, it is very likely that this will contribute to overall satisfaction at the corporate level. As a result, it is hypothesised that:

H₄ User online dependency has a direct positive effect on the overall satisfaction among online service customers.

The online encounter satisfaction-overall satisfaction relationship

Customer satisfaction is a core construct of service. Transactional marketing and service encounter satisfaction represent only an intermediate step. Overall satisfaction is the outcome or the cumulative effect of positive experience with a set of discrete service encounters or transactions with a service provider over a period of time (Bitner and Hubbert, 1994; Jones and Suh, 2000).

As online service is a relatively new mode of communication and transaction, which is driven by Internet technology, customers have to move through the adoption process. Various and numerous encounters in the adoption process should contribute to overall satisfaction with the service provider. Therefore, it is posited that:

H₅ Online encounter satisfaction has a direct positive effect on overall satisfaction.

Investigation method

The study used iBanking (i.e. Internet banking) to exemplify online service here. It focused on the iBanking usage behaviour of Hong Kong consumers. Hong Kong is an ideal location as it has a world class Internet network and well developed iBanking service. Hong Kong customers are sophisticated, experienced and demanding. Such a consumer demanding condition facilitates the development of iBanking which makes the subject worthy of such study. Four personal interviews were conducted with four senior managers responsible for iBanking services in four different banks in Hong Kong. This process proved useful in clarifying the constructs and developing appropriate measurement scales to capture those four pertinent attributes in the study.

Constructs were operationalised by adapting measurement items from previous studies (see Table I). These were modified based on feedback from the industry experts. A few measures were also newly created to ensure a high degree of specificity and validity associated with the context of the investigation. The research instrument was a structured questionnaire consisting of four sections. The first covered questions on the respondents' behaviour and usage patterns of iBanking and other banking services. The second section included questions about the usage experience of iBanking i.e., control, online dependency and online encounter satisfaction. The third section focused on questions relating to the respondents' overall level of satisfaction with the bank

offering the iBanking service. The final section asked demographic questions relating to the respondents' socio-economic background. All the indicator measures in the main body, i.e., the second and third sections of the questionnaire, used 5-point Likert scales to capture the constructs in question. The instrument was initially developed in English and was later translated into Chinese. It was back translated into English to ensure linguistic equivalency. Two face validity tests were conducted to confirm all the items.

Table I about here

The questionnaire was also pilot-tested twice to ensure its reliability. The Hong Kong Telephone Directory was used as the sampling frame and a random sampling method was administered. Data was collected by telephone through trained interviewers. Of 599 individuals contacted, 292 were successfully interviewed signalling a response rate of 48.7 percent. Surveys with missing data were eliminated and the final number of surveys for further processing and analysis was 280.

Research Findings

Demographics and banking behaviour of respondents

Demographics and banking behaviour of respondents are provided in Tables II, III and IV. Among the 280 respondents, 56.1% were male, while 43.9% were female. Nearly half of them (47.1%) were 26 to 40 years of age, followed by the age group of 41 to 55 (33.6%). The majority (65.4%) were educated to university level, while 28.9% of the respondents had college or secondary level education. In general, respondents were well educated. Regarding computer usage, 62% of the respondents had computer usage experience of more than 10 years, meanwhile respondents with 6 to 10 years computer usage experience accounted for 24.6% of the sample. The majority of respondents were therefore well experienced in using computers. Such a characteristic was very important for the effective use of computers and the Internet as tools for online service (see Table II).

Table II about here

The majority of the respondents were experienced users of iBanking and they preferred iBanking as their primary banking service (43.9% were experienced users and 37.1% were expert users; 59.3% used iBanking as their primary banking service). Twenty-six percent of the respondents were heavy users of iBanking, as they logged into their iBanking account 15 times or more each week, while thirty-five percent were regular users as they logged in between 8 and 14 times a week.

Among the three groups of iBanking users, and as could be expected, expert users had the highest weekly mean in both iBanking log-in frequency (mean 15.66; SD 5.19) and transaction frequency (mean 8.26; SD 1.99). Expert users' weekly log-in frequency was much higher than those of experienced users (mean 8.66; SD 2.96) and novice users (mean 6.73; SD 1.66). Expert users' weekly iBanking transaction frequency (mean 8.26; SD 1.99) was also much higher than those of experienced users (mean 5.67, SD 1.65) and novice users (mean 3.16; SD 0.97). Overall, expert users were therefore considered to be heavy users of iBanking due to their relatively high usage experience i.e. their high levels of log-in frequency and transaction frequency (see Tables III and IV).

Table III about here

Table IV about here

Testing of the conceptual model

To test the conceptual model proposed, we adopted structural equation modeling and used a confirmatory modeling strategy to test the significance of the proposed concept.

The data was analyzed using LISREL for Windows. First, we evaluated the internal

consistency of the scales by using item-to-total correlations and confirmatory factor analysis (CFA). Items on the scales that were below the minimum reliability threshold were removed. Subsequently, the Cronbach's alphas for the constructs ranged from 0.79 to 0.93 and the composite reliabilities ranged from 0.72 to 0.92.

Convergent validity was satisfactory as each standardized loading for the items on each factor exceeded .55, and the standard errors of the estimated coefficients were also low. By considering the standardised loadings, the average variance extracted and the reliability estimates, convergent validity of the measurement model was supported. The AVE was compared with the squared interconstruct correlations associated with each factor. As the AVE estimates were greater than the corresponding interconstruct squared correlation estimates, our findings confirm discriminant validity for the model posited (see Table V).

Table V about here

The validity of the structural model and the corresponding hypothesised theoretical relationships were then tested. By examining the structural path estimates, four out of five structural path estimates were significant and in the expected direction. Four hypotheses (i.e., H₁, H₂, H₄ and H₅) were supported but H₃ (ODP → OSAT) was rejected for its standardised parameter estimate at 0.184 (see Table IX).

Meanwhile, by analyzing the incremental fit measures and parsimony fit measures, the model did not provide a good fit with the data (NFI = .75; RFI = .73; IFI = .78; NNFI = .76; CFI = .78 - see goodness-of-fit statistics of original online service model in Table VI). The goodness-of-fit statistics were less than .90, thus below the recommended threshold (Hair *et al.*, 1998).

To improve the structural model fit, modification indices were calculated to identify possible parameters that were not estimated but might be included in a model (Mueller, 1996). The modification index of 4.6 suggested adding a path from control to overall satisfaction. The coefficient when adding the path proved negative which suggested that a higher degree of perceived control by customers contributed to their high degree of overall satisfaction. The addition of this path helped to improve the model fit. The positive effect of control on overall satisfaction was also supported in prior research (Chang, 2008; Collier and Sherrell, 2010; Dong *et al.*, 2011; Greenberger *et al.*, 1989; Hunt *et al.*, 2012; Lee, 2012; Van Rompay *et al.*, 2008). Incorporating this parameter in the model led to a reduction in the overall χ^2 and improved the model fit. The model was re-tested and the overall χ^2 reduced from 1202.82 to 666.77 ($p < 0.001$) and the model fit statistics were significantly better than in the original model (NFI = .89; RFI = .91; IFI = .90; NNFI = .92; CFI = .90 - see goodness-of-fit statistics of the modified online service model in Table VI).

A rival model was then tested and compared with the original and modified models. Given the potential mediating role of online dependency and online encounter satisfaction, a non-mediated model was used as the rival. Table VI compares their goodness-of-fit measures.

Table VI about here

The findings revealed a better fit for the modified online service model over the original or rival models. The rival model also provided further support for the relationships between the exogenous constructs (control), the mediating constructs (online dependency and online encounter satisfaction), and the endogenous construct (overall satisfaction). Figure 2 shows the standardised structural path estimates of the modified model (i.e., the final model). All the estimates of the retained and newly added paths were significant and in the expected direction.

We also conducted mediation analysis for the final model (see Tables VII and VIII) to further confirm the mediation effect of online dependency and online encounter satisfaction. In mediation, the relationship between the independent variable and the dependent variable was hypothesised to be an indirect effect that occurred due to the influence of a third variable (the mediator). To test the mediating effect of online dependency and online encounter satisfaction, we followed

the three-step regression procedure recommended by Baron and Kenny (1986). The Sobel mediation test statistic indicated that there was an indirect effect of control on overall satisfaction with the inclusion of online dependency (Sobel test = 2.98, $p < 0.01$) and online encounter satisfaction (Sobel test = 3.89, $p < 0.01$) as mediating constructs. As confirmed in the modified model, control had a positive and significant effect on overall satisfaction. The improvement of the overall model fit after the path of control – overall satisfaction was added suggests a partial mediation of online dependency and online encounter satisfaction.

Figure 2 about here

Table VII about here

Table VIII about here

To conclude, given that four of the five estimates were consistent with the hypotheses proposed, the results supported the theoretical model. One further path was also added i.e., control \rightarrow overall satisfaction, which also tested significant and contributes further to the improvement of the overall model fit (see Table IX).

Table IX about here

Discussion

In the study, an online service model was formulated to theorise the relationship between control, online dependency, online encounter satisfaction and overall satisfaction. The findings confirmed the significance of control as an initiator and driver of customer satisfaction in an online service context. Control was found to be a significant factor leading to online encounter satisfaction and online dependency.

Based on the findings and the model, customers control actively the interaction process via the online service platform which shows their dependency on and encounter satisfaction with the online service. Their dependency and encounter satisfaction then lead to overall satisfaction.

Four of the five hypotheses proposed were supported. The exogenous construct, control, is confirmed to have a positive influence on online dependency and online encounter satisfaction (i.e. H₁ and H₂). These findings are in congruence with previous research on media and Internet dependency (such as Grant *et al.*, 1991; Sun *et al.*, 2008). The current research extends the concept of control and dependency to online service and online encounter satisfaction.

In the final model, control also influences directly and positively on overall satisfaction. Such a significant relationship reflects that customers' active control is

critically important to achieve overall satisfaction at the corporate level, both directly and indirectly via online dependency and online encounter satisfaction. The two mediating constructs, online dependency and online encounter satisfaction are also confirmed to have a positive influence on the endogenous construct, overall satisfaction with the bank (i.e. H₄ and H₅). This study further extends the application of dependency and service encounter satisfaction as predictors of overall satisfaction in an online service platform.

Perhaps the non-significant path of online dependency and online encounter satisfaction (i.e. the rejected H₃) is not too surprising as it may be explained by the habitual and unconscious nature of dependency (Dijksterhuis *et al.*, 2005; Wang *et al.*, 2005). As online service customers become more experienced, they are somewhat familiar with using online service habitually and simply depend on it to complete their daily transactions. Such habitual behaviour can often be mechanical with limited cognitive consideration. Such habitual dependency fulfils the customers' functional needs but might not contribute to online encounter satisfaction.

Theoretical contribution

By exploring the impact of control and online dependency on customer relationships, the new and validated Online Service Model enriches the existing literature surrounding online service, iBanking, online consumer behaviour, online

communication, customer satisfaction and relationship marketing. It also helps to identify a new concept in online service, i.e., online dependency, which is an important but neglected construct in online service. The study specifically contributes to the development of a new online service model. It also theorises the structural relationships between intrinsic constructs and satisfaction constructs. The structural fit and validated hypotheses provide evidence of the validity of the online service model.

Managerial implications

The research suggests that online service providers should incorporate and consider customer control in their online service development in order to foster customers' online dependency and online service encounter satisfaction, which ultimately will drive overall satisfaction. Control and online dependency will benefit online service providers at both the service encounter and corporate levels.

As the online service option offers benefits, such as cost savings and efficiency advantages, over other service options, online service providers have a very strong motivation to develop customers' online dependency. To achieve this, online service providers need to deliver the experience of control to customers via the online service platform in order to build up online encounter satisfaction and overall satisfaction. The strategy of online service should include the development of a more user-friendly but advanced interface to match their highly skilful and

control-driven customers. Comprehensive functions should also be provided for them to complete the banking tasks under their full control. The more they can control, the more they depend and engage on the online service.

Consequently, it also influences organisational design and resource allocation regarding service delivery. More resources should be allocated to online service development to support customer control as there is evidence to suggest that branch and telephone banking are declining in terms of their importance and functionality.

Social implications

Online service has already become an integral part of individuals, business operations and societies at large. Traditionally, the banking service was predominantly branch-focused in performing various financial management functions to create monetary value for customers. The model of face-to-face interaction offered banks customer service and marketing opportunities every time a customer visited the bank branch, thus providing ample opportunity to foster customer satisfaction.

However, the focus of consumer-bank interaction has already shifted to an iBanking platform in recent years. As supported in this study, iBanking customers are technology-literate and they prefer control in their banking process. This situation implies that service providers, not limited to banking services, need to allow customers to participate in the service process, as well as the value creation process.

Customer control, service co-production and value co-creation will contribute to their encounter satisfaction as well as overall satisfaction. Service co-production and value co-creation will also become the norm for customers in the future, and this will spread to other businesses. Cooperation in service production and delivery will certainly change the customer-company relationship. Technology and the Internet is fostering a new generation of customers who are more demanding, self-sufficient and self-centred. Customers want control over the service process, together with instant online service. Consequently, they want and expect more. At least, customers now assume 24/7/365 services, with no delay, no error and at no cost.

As indicated in the study, while customers control, they also become more dependent on online service. Dependency has both a positive and negative social impact. Dependency on digitally mediated communication will supersede other forms of interaction (Immordino-Yang *et al.*, 2012), such as face-to-face interaction, and will isolate customers from companies. Online activities will negatively decrease participation in offline activities (Espinoza and Juvonen, 2011). It implies a reduction in social communication and human interaction in general. This illustrates the change in communication behaviour under the influence of new technology. However, dependency on online service also implies an automated process with quick response, immediate outcome and satisfaction. It also reflects on improving efficiency and

living standards. The study shows that service innovations are changing the marketplace, workplace and living place beneficially, although with some negative impact.

Limitations and future directions

The Hong Kong context of the research places limitations on the generalisability of the findings to online service in other contexts. The same research instrument can be used in other cities and countries to further validate the findings. The data was only collected from iBanking customers. Thus its application and explanatory capability are limited. Further research in different online service environments will help to refine the current framework and future research should test the generalisability of the online service model confirmed in the study.

Further development and validation of measures for constructs, especially for the newly identified ones such as online dependency, should also be pursued in future research. Constructs are multifaceted and the current research focuses only on a very narrow part of them. Developing measures for these constructs to address their multifaceted nature is an important and challenging topic in itself. Such research would provide validated measures that could be used in future research relating to online marketing and online psychology. As the study is somewhat exploratory and was aimed at developing an explicit online service model, a more comprehensive

model incorporating various related constructs should be further developed and tested in the future. The antecedents of control and online dependency could also be identified and incorporated within the model for future research to explore.

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Figure 1. The research model of online service.

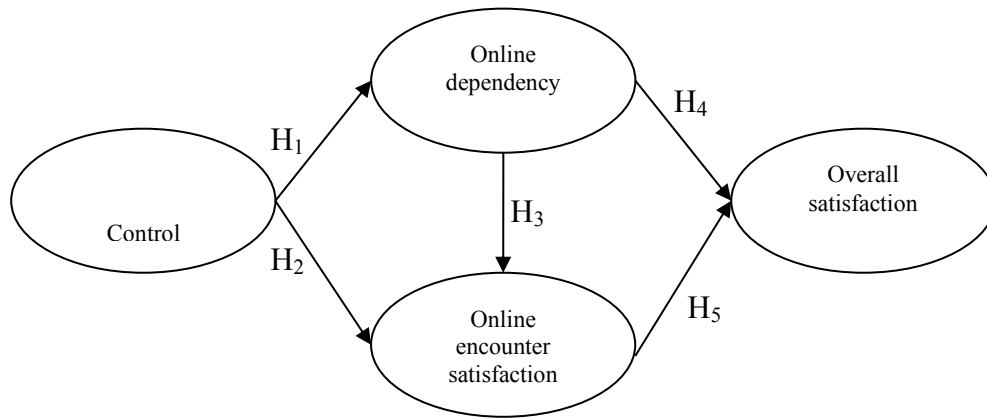


Table I. Measurement scales

Control (CNT)		<i>Sources of influence</i>
CNT ₁	I believe I am very skillful at using the iBanking service.	Venkatesh and Davis (1996); Devaraj <i>et al.</i> (2002); Novak <i>et al.</i> (2000)
CNT ₂	I consider myself knowledgeable about good techniques for using the iBanking service.	
CNT ₃	I can complete the banking tasks I plan to complete by using the iBanking service.	
CNT ₄	I can complete banking tasks accurately by using the iBanking service.	
CNT ₅	I can complete banking tasks quickly by using the iBanking service.	
Online dependency (ODP)		
ODP ₁	iBanking is the most useful platform for me to make banking and financial decisions in my daily life.	Patwardhan and Ramaprasad (2005); Patwardhan and Yang (2003)
ODP ₂	iBanking is the most useful platform for me to manage my bank account in my daily life.	
ODP ₃	iBanking is the most useful platform for me to plan my personal finances in my daily life.	
Online encounter satisfaction (OSAT)		
OSAT ₁	I am satisfied with my encounter experience with the iBanking service.	Keaveney and Parthasarathy (2001)
OSAT ₂	The iBanking service fulfills my banking needs.	
OSAT ₃	In general, I am happy with my iBanking experience.	
Overall satisfaction with the principal bank (SAT)		
SAT ₁	Overall, I am very satisfied with the bank with the iBanking service I am using.	Keaveney and Parthasarathy (2001); Hu and Yang (2006)
SAT ₂	Overall, I am very satisfied with the service provided by the bank with the iBanking service I am using	
SAT ₃	I am happy with the overall service experience delivered by the bank with the iBanking service I am using.	

Table II. Demographics of respondents: Frequency and percentage

Demographic Variables (N = 280)	Frequency	%
Gender of Respondents		
Male	157	56.1
Female	123	43.9
Age		
18 to 25	48	17.1
26 to 40	132	47.1
41 to 55	94	33.6
56 to 65	6	2.1
66 and over	0	0
Personal Monthly Income		
HK\$ 9999 or below	60	21.4
HK\$ 10000 to \$19999	94	33.6
HK\$ 20000 to 29999	73	26.1
HK\$ 30000 to 39999	28	10.0
HK\$ 40000 or above	25	8.9
Education Level		
Primary School	11	3.9
Secondary School	56	20.0
College	25	8.9
University	106	37.9
Graduate School or above	77	27.5
Others	5	1.8
Computer Usage Experience		
Less than 1 year	1	0.4
1 to 5 years	36	12.9
6 to 10 years	69	24.6
More than 10 years	174	62.1

Table III. Demographics and iBanking behaviour of respondents: Mean & standard deviation by user groups

Types of iBanking Users	Novice¹		Experienced²		Expert³	
	<i>Mean</i>	<i>Standard Deviation</i>	<i>Mean</i>	<i>Standard Deviation</i>	<i>Mean</i>	<i>Standard Deviation</i>
Age	40.11	7.56	34.51	6.44	33.06	4.31
Personal Monthly Income (HK\$)	23453.12	3153.12	19561.16	4766.15	20648.58	4112.66
Computer Usage Experience (Years)	10.66	2.63	11.07	2.28	11.96	2.72
Weekly iBanking Log-in Frequency	6.73	1.66	8.66	2.96	15.66	5.19
Weekly iBanking Transaction Frequency	3.16	0.97	5.67	1.65	8.26	1.99

¹ Novice users represent iBanking customers with less than 1 year of iBanking usage experience

² Experienced users represent iBanking customers with more than 1 year but less than 3 years iBanking usage experience

³ Expert users represent iBanking customers with more than 3 years of iBanking usage experience

Table IV. Banking behaviour of respondents

Banking behaviour (N = 280)	Frequency	%
iBanking usage experience		
Novice users	53	18.9
Experienced users	123	43.9
Expert users	104	37.1
Primary option of banking service		
iBanking	166	59.3
bBanking ¹	27	9.6
pBanking ²	13	4.6
ATM	74	26.4
Primary option of customer-bank interaction		
iBanking	157	56.1
bBanking	40	14.3
pBanking	21	7.5
ATM	62	22.1
Weekly iBanking log-in frequency		
7 times or less	109	38.9
8 to 14 times	98	35.0
15 to 21 times	56	20.0
22 to 28 times	11	3.9
29 or above	6	2.1
Frequency of weekly iBanking transaction		
3 times or less	93	33.2
4 to 7 times	120	42.9
8 times to 14 times	53	18.9
15 times or above	14	5.0

¹ bBanking represents branch banking

² pBanking represents phone banking

Table V. Validity, reliability and factor correlations

Construct	Factor Loading	Cronbach's			Factor Correlations			
		alpha α	CR	AVE	CNT	ODP	OSAT	SAT
CNT	0.848-0.927	0.852	0.80	0.79	-			
ODP	0.908-0.922	0.903	0.84	0.84	0.26*	-		
OSAT	0.690-0.920	0.789	0.72	0.72	0.36**	0.29*	-	
SAT	0.938-0.972	0.934	0.92	0.91	0.42*	0.48**	0.36**	-

Constructs: Control (CNT); Online dependency (ODP); Online encounter satisfaction (OSAT); Overall satisfaction (SAT).

* Significant at 5% level

** Significant at 1% level

Table VI. Comparison of goodness-of-fit measures between online service model, modified online service model and rival model

Goodness of Fit Indices	Original online service model	Modified online service model	Rival model
Absolute fit measures			
χ^2	1202.82	666.77	1280
Degrees of freedom	212	199	230
Probability	0.08	0.04	0.06
RMSEA	0.14	0.1	0.13
Incremental fit measures			
NFI	0.75	0.89	0.71
RFI	0.73	0.91	0.70
IFI	0.78	0.90	0.76
NNFI	0.76	0.92	0.71
CFI	0.78	0.90	0.75
Parsimony fit measures			
PRATIO	0.92	0.86	0.90
PNFI	0.69	0.82	0.69
PCFI	0.72	0.82	0.71

Figure 2. The final model (Standardised estimates for the modified online service model).

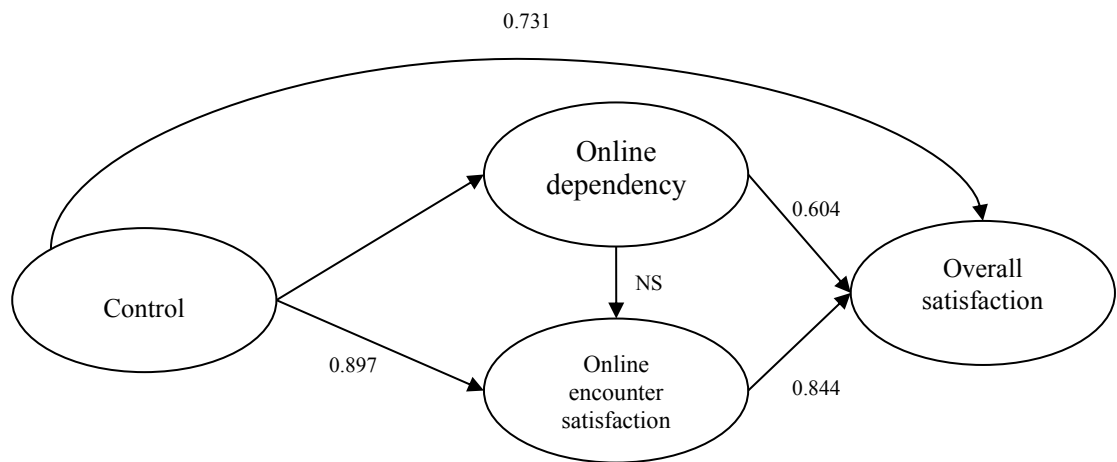


Table VII. Mediation test for CNT → ODP → SAT (Status: Partial mediation)

Independent \ Dependent	Overall satisfaction	Online dependency	Overall satisfaction
Control	1.12** (14.00)	0.16** (3.20)	
Online dependency			0.49** (8.17)
F-value	196.00**	10.24**	66.69**
Sobel test			2.98**

** Significant at 1% level

Table VIII. Mediation test for CNT → OSAT → SAT (Status: Partial mediation)

Independent \ Dependent	Overall satisfaction	Online encounter satisfaction	Overall satisfaction
Control	1.12** (14.00)	0.53** (8.83)	
Online encounter satisfaction			0.26** (4.33)
F-value	196.00**	78.03**	18.78**
Sobel test			3.89**

** Significant at 1% level

Table IX. Standardised parameter estimates of the modified model

Structural relationship	Modified online service model standardised parameter estimate	Hypothesis Supported/Rejected
H ₁ CNT → ODP	0.733	Supported
H ₂ CNT → OSAT	0.897	Supported
H ₃ ODP → OSAT	0.184	Rejected
H ₄ ODP → SAT	0.604	Supported
H ₅ OSAT → SAT	0.844	Supported
CNT + → SAT	0.731	