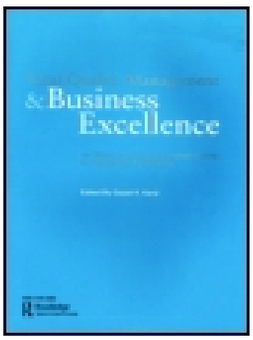

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Determinants of online service satisfaction and their impacts on behavioural intentions

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The paper aims to identify the key antecedents of overall online service satisfaction and reveals their pattern of impact on behavioural consequences. Five determinants of e-service satisfaction were first developed by an exploratory study among online banking users. Data collected through a web-based survey of 235 online service users suggest that each antecedent of e-service satisfaction influences the four behavioural intentions either directly or indirectly through the mediation of overall satisfaction. Theoretical and practical implications of these findings are examined and discussed in depth.

Keywords: online service; e-satisfaction; antecedents of satisfaction; behavioural consequences

Introduction

The role of customer satisfaction and long-term customer loyalty has been well established (Oliver, 1999). Most studies on customer satisfaction, however, have been primarily conducted within traditional business contexts. The boom of Internet and electronic commerce in recent times has evoked several research efforts aimed at understanding service satisfaction in relation to the virtual business environment (Anderson & Srinivasan, 2003; Bansal et al., 2004; Choi et al., 2000; Evanschitzky et al., 2004; Ho & Wu, 1999; Ribbink et al., 2004; Szymanski & Hise, 2000; Yang & Peterson, 2004). The unique characteristics of Internet-based services, e.g. extensive human–computer interactions and high-level self-service, may imply that customers of online services form their perception of satisfaction differently when contrasted with their offline counterparts. Similarly, the salient consequences of overall online service satisfaction may also be varied (Choi et al., 2000; Ho & Wu, 1999; Ribbink et al., 2004; Szymanski & Hise, 2000).

However, findings of the studies pertaining to identifying antecedents of online customer satisfaction remain largely disparate and their impacts on overall satisfaction and other behavioural consequences have not been fully investigated (Szymanski & Hise, 2000). Furthermore, as far as we know, only a few researchers have investigated simultaneously the antecedents of e-service satisfaction and behavioural consequences (Bansal et al., 2004). It is still fairly uncertain – will satisfaction antecedents directly or indirectly impact on behavioural intentions through the mediation of overall satisfaction? The answers to this question may lead to profound theoretical and practical implications.

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If the impact is largely transmitted through overall satisfaction, a company can rely on this construct to understand the desirability of its service more confidently. On the other hand, if antecedents of overall satisfaction also directly and differently influence distinct behavioural intentions, measuring overall satisfaction is not sufficient and the exact pattern needs to be pictured. The pattern can be serviced as the basis for better market mix formulation. For example, a company may need to adjust its pricing policy based on knowing how customer price sensitivity is influenced. Following the same logic, in order to predict market share more accurately, overall satisfaction in conjunction with antecedents, directly impacting on customer repurchase intention and recommendation intention, merit investigation.

The purpose of the current research is to examine the antecedents of online service satisfaction and their direct and indirect effects on behavioural intentions. Specifically, the study addresses four research questions: (1) How can a customer form a more positive evaluation of overall e-service satisfaction? (2) What are the major consequences of overall e-service satisfaction? (3) Are there any direct effects of antecedents of overall e-service satisfaction on behavioural intentions? If so, (4) What are (a) the exact pattern for antecedents; (b) overall e-service satisfaction; and (c) behavioural intentions?

The remainder of the paper is structured as follows. We first provide a literature review to illuminate extant research on service satisfaction in both traditional and online purchase settings. Then, we report results from two studies reflecting insights among online service users. Finally, we summarise our contributions, and conclude with limitations and suggestions for future research.

Conceptual development

The process of measuring antecedents of customer satisfaction has been found to be both problematic and somewhat controversial (Szymanski & Henard, 2001). To date, researchers have employed various approaches including attribute-level performance, prior experiences with the service, frequency of service usage, and expectation-disconfirmation approaches to measure customer satisfaction (Shankar et al., 2000). Each approach has its own unique advantages and shortcomings. For instance, the well-known SERVQUAL measurement scale proposed by Parasuraman et al. (1988) has a major strength due to its analytical capabilities. Some researchers, nevertheless, have argued that perceived service performance (SERVPERF) is a superior indicator of service quality and is analytically more advanced (Cronin & Taylor, 1992, 1994; Parasuraman et al., 1988). To date, most marketers have not established definitive standards for their online business due to lack of experience, emanating from the relatively short history of e-commerce. Similarly, many customers have not yet formulated explicit expectations for online services or products (Zeithaml et al., 2001). The current study opted for the attribute-level performance approach as it has been found to be the most practical and well-established approach in both marketing and information system research (Devaraj et al., 2002; Szymanski & Hise, 2000).

Determinants of online customer satisfaction

Various studies have attempted to identify the key dimensions of service quality or customer satisfaction in the context of narrowly defined online industries, such as travel agencies, retailing and portal services (Evanschitzky et al., 2004; Kaynama & Black, 2000; Szymanski & Hise, 2000; Van Riel et al., 2001; Wolfinbarger & Gilly, 2003; Yang et al., 2003; Zeithaml et al., 2001). Among these, several studies have been found

to be highly relevant in assessing the antecedents of e-satisfaction. Szymanski and Hise (2000) have employed the cumulative approach to identify five facets of e-satisfaction. These are shopping convenience, product offerings, site design, financial security and product information. The first four factors significantly impact on customer satisfaction with online shopping. Wolfinbarger and Gilly (2003), through focus group interviews, a content analysis and an online survey, have uncovered four contributors to the online retailing experience: website design, reliability, privacy/security and customer service. From the information system perspective, Ho and Wu (1999) uncovered five factors that significantly affected customer satisfaction with cyber shopping stores. These are logistical support, technological characteristics, information characteristics, homepage presentation and product characteristics. Similarly, Choi et al. (2000) have empirically confirmed that customer satisfaction with Internet retail stores was primarily determined by four indicators, i.e. assurance, product presentation, customer relationship and system performance.

A close examination of the above-mentioned studies has revealed that customer satisfaction with web-based services (or online satisfaction) can be explained by conceptual paradigms drawn from the fields of management information systems, human–computer interaction and service marketing. Table 1 demonstrates several useful approaches for explaining online satisfaction. These are the technology adoption model, end-user satisfaction with computing (EUCS), and the SERVQUAL model.

The technology adoption model proposes that customer intention to adopt a new information technology is primarily determined by the ease of use and the usefulness of the technology (Davis, 1989; Davis et al., 1989). The Internet is, of course, a relatively novel form of information technology. If ease of use and usefulness of information seeking and transaction consummation through the Internet do not outweigh customer deprival occasioned by factors such as impersonal communication, technical difficulties and learning effort, then customers may simply switch their patronage back to traditional channels. It is apparent that usefulness and ease of use of Internet transactions can play a pivotal role in customer satisfaction with online services.

A typical website often contains a database interface, which serves as an expert system. From this perspective, online consumers are the end-users of the computer

Table 1. Conceptual foundations related to e-satisfaction.

Paradigms	Constructs related to Internet setting	Previous studies
Technology adoption model	Usefulness Ease of use	Davis (1989) Davis et al. (1989) Hendrickson and Collins (1996) Igbaria et al. (1997)
End-user computing satisfaction	Content Accuracy Format Ease of use Timeliness	Doll and Torkzadeh (1988) DeLone and McLean (1992) Hendrickson and Collins (1996)
SERVQUAL	Reliability Responsiveness Assurance Empathy Tangible	Parasuraman et al. (1988, 1991)

programs and the networked system. Hence, the end-user computing satisfaction model could serve as a reference for assessing end-user satisfaction with a website as an information system. Doll and Torkzadeh (1988) have generated a 12-item scale that gauges five quality dimensions influencing end-user satisfaction. These are content, accuracy, format, ease of use and timeliness. The reliability and validity of this scale have been confirmed through other studies (Evanschitzky et al., 2004; Hendrickson & Collins, 1996).

The most frequently utilised paradigm is the SERVQUAL measurement scale generated by Parasuraman et al. (1985). Based on 10 initial dimensions (tangibles, reliability, responsiveness, communication, credibility, security, competence, courtesy, understanding the customer and access) Parasuraman et al. (1988) further purified the consideration set to five: tangibles, reliability, responsibility, assurance and empathy. These five service quality attributes constitute the basis for global measurement of service quality. SERVQUAL has been applied to projects in various service industries, although it has received some criticism (for a comprehensive review, see Cronin & Taylor, 1994; Dabholkar et al., 1996). The primary concerns raised by the critics are that: (1) difficulty arises in measuring different types of expectations (Cronin & Taylor, 1994); and (2) service quality dimensions tend to be context-bounded and service-type-dependent (Bienstock, 1997; Van Dyke et al., 1997).

The three conceptual models discussed above all show promise for assessing online service satisfaction. The attributes employed in these models, along with dimensions identified by previous studies (e.g. product offerings), should provide a workable preliminary framework for assessing customer satisfaction with online services through the content analysis and the field survey we conducted.

Behavioural consequences of customer satisfaction

Customer behavioural consequences are strongly affected by their relative degree of satisfaction and dissatisfaction with the particular products that have been used. Satisfied customers may pass on positive comments about the firm and its offerings and recommend the company to others. Gratified customers can be powerful influences if they disseminate favourable word-of-mouth views and sometimes attract new patrons as a result (Bearden & Teel, 1983). This development is particularly likely for Internet commerce since the breadth and depth of spread afforded by the Internet is far beyond that of traditional contact by word of mouth. Further, satisfied customers generate high patronage frequency. They tend to remain loyal to the firm, repurchase or spend more with it, and be willing to pay a price premium (Bearden & Teel, 1983; Zeithaml et al., 1996).

Dissatisfied customers may take actions detrimental to the firm, including spreading word-of-mouth criticism, switching patronage to another company, complaining to internal and external agencies, and reducing purchases from the company (Zeithaml et al., 1996). Moreover, the effects of negative experiences on customer behavioural consequences are often more severe than those of positive experiences (Mittal et al., 1998). However, dissatisfied customers may be rebounded to the organisation if the service provider accepts the responsibility for the action and resolves the underlying problem(s) (Hart et al., 1990).

Various studies have attempted to uncover the behavioural consequences of customer satisfaction in the conventional channels of distribution. Zeithaml et al. (1996) proposed four types of behavioural intentions: word-of-mouth communications, repurchase intention, price sensitivity and complaining behaviour. After conducting a factor analysis of the behavioural intentions of retail chain customers, automobile insurers, computer

buyers and life insurers, they uncovered five dimensions: loyalty to company, willingness to pay more, propensity to switch, external response to problems and internal response to problems. However, this five-factor model has not been further confirmed and therefore evoked controversy. Instead, Bloemer et al. (1999) note that the original four factors model performs better. Internal and external responses to problems are merged into the complaint factor. Other studies have found that overall satisfaction impacts significantly on one or more behavioural consequences such as patronage, repurchase intention and recommendations to others (Anderson & Sullivan, 1993; Boulding et al., 1993; Woodside et al., 1989). Nevertheless, very few studies on behavioural consequences have been conducted in the setting of electronic commerce. One exceptional inquiry conducted by Choi et al. (2000) employed exploratory factor analysis to extract three dimensions: loyalty, tolerance and complaining, in the Internet retail store context. Overall satisfaction significantly affected only the first two factors.

In the light of the discussion above, it is worthwhile to conduct further study investigating the implications of overall satisfaction for certain important behavioural and psychological intentions, e.g. recommendation, repurchase intention, price sensitivity and complaining in an online service context.

Direct impacts of antecedents on behavioural intentions

Overall customer satisfaction has been traditionally treated as a mediating variable in determining the influence of satisfaction antecedents on behavioural consequences (Anderson & Sullivan, 1993; Choi et al., 2000). Considerable research provides evidence regarding the positive relationships between overall satisfaction and customer behavioural intentions such as repurchase intention, recommendations to others, price sensitivity and complaining behaviours. If a firm specifies customer satisfaction as a primary goal, there is a high probability that it will be successful in enhancing favourable customer behavioural intentions in the long run (Zeithaml et al., 1996).

Nevertheless, an important question remains, namely: will satisfaction antecedents exert an equivalent effect on behavioural consequences in the manner that overall satisfaction does? The answer to this query has prominent implications for business as well as for academic researchers (Bloemer et al., 1999). If the answer is yes, the focus of a company may be solely on improving customer overall satisfaction. If not, firms may devote their limited and costly resources to those factors leading to the more desirable outcomes. For instance, in advancing market share, managers should employ measures specifically targeting increasing customer repurchase intention and word-of-mouth communications. From a theoretical perspective, the significantly direct impacts of satisfaction antecedents on behavioural consequences imply that the combined effects (i.e. direct and indirect impacts) of satisfaction determinants have more powerful explanations for behavioural intentions than their traditional mediating effects considered alone. Given these factors, the paper aims to identify the pattern of relationships among overall satisfaction, its antecedents and its consequences.

Methodology

Survey instrument development

To date, research efforts have not clearly articulated the construct of customer satisfaction in the online service context. Consequently, the authors have generated scale items of e-satisfaction through a content analysis of 48 consumer reviews of their online banking

service experiences, based on the conceptual framework developed in the previous section. Although consumer comments (i.e. complaints and compliments) probably do not completely reflect a customer's entire gamut of experiences with a bank, they do highlight, through identification of critical incidents, those service attributes that are of major concern. The content analysis identified 19 dimensions of online customer satisfaction, which were further sorted and regrouped into five composite dimensions. These were ease of use, customer services, fulfilment/reliability, security and product/service portfolio.[1] Based on these identified dimensions and their domains, the authors further consulted and incorporated some standardised items provided by Parasuraman et al. (1988) into the survey.

The scale items for assessing behavioural consequences of overall satisfaction were adapted from validated measures emanating from prior studies (Bloemer et al., 1999; Zeithaml et al., 1996). The respondents were requested to indicate the extent to which they agree or disagree, based on recent online transaction experience, by checking the appropriate response to the questionnaire items regarding the key constructs of the study. For each item except that of overall satisfaction, five-point Likert scales anchored by 1 = strongly disagree, and 5 = strongly agree, with 3 = neutral (neither agree nor disagree) as the midpoint, were utilised. In turn, the overall satisfaction measurement items were gauged by seven-point Likert scales.

Five academic experts in relationship marketing were asked to assess the face or content validity of the measurement scales. Subsequently, the questionnaire was forwarded by email attachment to 50 online customers selected from two news groups: online financial investment and e-commerce. A total of 14 respondents replied with useful suggestions. Based on their feedback, the questionnaire was further revised and finalised.

Data collection

A web-based survey was employed in the study. A solicitation letter was transmitted by email to 4000 subjects randomly selected from an emailing list provided by an email broker. The email message described the purpose of the research and invited each recipient to participate in the survey. Sample members who evidenced a willingness to participate were required to click through the URL address provided in the invitation email. A total of 1101 emails were returned as undeliverable. Thus, the actual undeliverable rate was 27.5% (1101 of 4000), which is similar to the rate (26%) experienced by Sheehan and Hoy (2000). The responses from 257 participants were forwarded to the leading author via email. Of these, 22 were eliminated because they were incomplete or duplicated (the ISP address of each respondent was checked). Thus, the effective sample size was 235 and the final response rate was 8.1% (235 of 2899).

Some complaints regarding the sampling effort were forwarded to the authors' employer via a third party. It was not possible to find and delete their email addresses. Since further emailing without deleting those addresses in question could have evoked potential legal issues and the number of collected usable responses was sufficient for further data analysis, no follow-up emails were sent. A comparison was not made between early and late responses for checking non-response bias, since appropriately 90% of the responses were gathered within five days after the initial email.

Profile of respondents

In this study, 80.8% of the respondents were male; 76.9% were between the ages of 25 and 54; 68.0% had earned a bachelor's degree or higher; and 49.4% had a household income of

$60,000 or above. The characteristics of these respondents were similar to Internet user profiles gathered in other studies (Kehoe et al., 1999; Sheehan and Hoy, 2000). It was discovered that 74.0% of the respondents were residing in the United States and the remaining 26.0% in 17 other countries.

A total of 144 respondents indicted that they replied to questions in the questionnaire based on their online financial services experience while the remaining 91 respondents chose other retailing services. As regards the computer and Internet usage profile, 90.2% of the sample had been using personal computers for more than six years; 94.1% reported that they logged on to the Internet at least once a day on average; and 64.6% spent more than six hours per week in browsing websites. Table 2 lists means and standard deviations of four constructs and correlations among the 10 variables.

Measure validation

The authors employed Anderson and Gerning's (1988) two-step approach to evaluate the convergent validity for modelled constructs. In the first phase, exploratory factor analysis was conducted to assess the underlying factor structure of the scale items. The original 25 items of five e-satisfaction constructs drawn from previous content analysis were further purified according to the general guidelines recommended by Anderson and Gerbing (1988). An item was eliminated if the statistics suggested it did not belong to a measure and if another retained indicator conveyed the same aspect of the construct. A total of 18 items was retained for further analysis (see Table 3). For all of the constructs, the common method variance in exploratory factor analysis was examined. The results revealed that the first factor did not comprise a majority of the variance and there was no general factor in the unrotated factor structure (Podsakoff & Organ, 1986). Thus, a total of five factors were extracted and treated respectively for further purification.

Confirmatory factor analysis was performed in the second phase. It indicated that all factor loadings were greater than the recommended 0.4 cut-off and were statistically significant (Nunnally & Bernstein, 1994). The chi-square statistic was significant. However, the ratio of the chi-square value relative to degrees of freedom (1.97) was less than the recommended acceptable ratio ranging from two to five (Marsh & Hocevar, 1985). Furthermore, the goodness-of-fit index (GFI), adjusted goodness-of-index (AGFI), normed fit index (NFI), non-normed fit index (NNFI), and comparative fit index (CFI) were greater than the recommended 0.9; and the root mean square error of approximation (RMSEA) was less than 0.08 and not statistically different from 0.05 (Hair et al., 1995). Therefore, it was reasoned that the model fitted the data reasonably well. Table 3 demonstrates the CFA results of measures.

The internal validity of the measurement model was examined by calculating the composite reliability and average variance extracted (AVE) (Fornell & Larcker, 1981). All the composite reliabilities were well above the recommended 0.7 (Nunnally & Bernstein, 1994). The AVE represents the amount of variance captured by the construct's measures relative to measurement error and the correlations among the latent variables (Bagozzi & Yi, 1988). In this study, the AVE of each measure extracted is greater than or equal to 50% of the variance except that of product/service portfolio (0.48). The internal validity of the measurement model appears to be reasonably adequate.

The discriminant validity of the measures was examined in two ways. First, the AVE was compared with the square of the parameter estimate among the latent variables (Fornell & Larcker, 1981). The correlation among the indicators of each construct was greater than that between a construct and any other construct. Second, the discriminant

Table 2. Correlation matrices.

Construct	Mean	S.D.	1	2	3	4	5	6	7	8	9	10
1. Fulfilment/reliability	4.27	0.71	1.00									
2. Customer services	3.56	0.74	0.50**	1.00								
3. Ease of use	3.63	0.74	0.57**	0.53**	1.00							
4. Service portfolio	3.76	0.70	0.36**	0.38**	0.53**	1.00						
5. Security	3.80	0.71	0.60**	0.51**	0.57**	0.37**	1.00					
6. Overall satisfaction	5.65	1.06	0.63**	0.59**	0.62**	0.51**	0.56**	1.00				
7. Recommendations	3.58	0.92	0.42**	0.57**	0.47**	0.37**	0.37**	0.70**	1.00			
8. Repurchasing intention	3.64	0.71	0.48**	0.53**	0.46**	0.41**	0.43**	0.66**	0.71**	1.00		
9. Price sensitivities	2.48	0.87	0.16*	0.21**	0.19**	0.12**	0.28**	0.27**	0.25**	0.37**	1.00	
10. Complain	4.27	0.61	0.26**	0.26**	0.22**	0.19**	0.19**	0.13*	0.10	0.20**	0.12	1.00

Notes: ** $p < 0.01$; * $p < 0.05$.

Table 3. CFA results of measures.

Scale and item	Mean	SD	Loading	T-value	α	AVE	CR
1. Customer services					0.85	0.58	0.88
(1) Company employees have the knowledge to answer my questions.	3.47	0.90	0.79	15.44			
(2) Company employees properly handle any problems that arise.	3.70	0.93	0.91	17.77			
(3) The contact employees understand my specific needs.	3.27	0.90	0.80	14.65			
(4) Employees address my complaints in a friendly manner.	3.79	0.89	0.69	12.05			
2. Fulfilment/reliability					0.84	0.58	0.87
(1) The company performs the service correctly the first time.	4.33	0.80	0.84	16.46			
(2) My online transactions are always accurate.	4.33	0.92	0.92	18.82			
(3) The company keeps my records accurately.	4.32	0.82	0.83	16.09			
(4) The products or services I ordered were delivered to me within the time promised.	4.12	0.91	0.57	10.30			
3. Ease of use					0.75	0.51	0.81
(1) Using the company's web site requires a lot of effort (R).	3.51	1.04	0.55	8.38			
(2) All my transactional needs are included in the menu options.	3.44	1.04	0.65	10.62			
(3) The organisation and structure of online content is easy to follow.	3.75	0.95	0.75	12.66			
(4) The company provides most of transactional functions that I need.	3.83	0.90	0.91	16.43			
4. Product/service portfolio					0.64	0.48	0.74
(1) The company provides wide ranges of product/service packages.	3.76	0.79	0.68	11.09			
(2) The company provides products/services with the features I want.	3.76	0.83	0.84	14.13			
5. Security& privacy					0.83	0.57	0.86
(1) I feel the risk associated with online transactions is low.	3.46	0.92	0.62	10.45			
(2) The company will not misuse my personal information.	4.05	0.74	0.86	16.75			
(3) I feel safe in my online transactions.	3.86	0.90	0.90	17.36			
(4) I feel secure in providing sensitive information for online transactions.	3.83	0.93	0.71	12.19			
6. Overall satisfaction							
(1) Overall, I am very satisfied with the company.	5.57	1.29	0.91	18.98	0.92	0.7	0.85
(2) Overall, I am very satisfied with Internet-based transactions.	5.79	1.208	0.66	12.41			
(3) Overall, I am very satisfied with the products/services offered by the company.	5.61	1.092	0.83	16.47			

(*Continued*)

Table 3. Continued.

Scale and item	Mean	SD	Loading	T-value	α	AVE	CR
7. Recommendation					0.92	0.8	0.95
(1) I say positive things about the company to other people.	3.67	0.99	0.92	18.66			
(2) I would recommend the company to those who seek my advice about such matters.	3.74	0.986	0.94	19.33			
(3) I would encourage friends and relatives to use the company.	3.72	0.972	0.94	19.47			
(4) I would post positive messages about the company on some Internet message board.	3.25	1.136	0.81	15.44			
8. Repurchase intentions					0.66	0.5	0.75
(1) I intend to continue doing business with the present company.	4.06	0.758	0.89	16.28			
(2) I intend to increase my business with the present company.	3.21	0.892	0.65	11.26			
9. Price sensitivities					0.8	0.6	0.83
(1) If I am offered more favourable products/services costs by another company, I am likely to take some of my order to that company.	2.52	1.143	0.68	12.02			
(2) Even if the present company raises its cost, I will not switch to another company.	2.43	0.961	0.76	14.33			
(3) I am willing to pay a higher price for the present company than its competitors who charge for the benefits I currently received.	2.5	0.971	0.92	17.82			
10. Complain					0.78	0.6	0.87
(1) I will complain to the company if I experience problems.	4.32	0.69	0.94	15.01			
(2) I will tell company employees if I experience problems with the company.	4.23	0.665	0.81	13.01			

Notes: CR = Composite Reliability; AVE = Average Variance Extracted.
Items in Scales 1–6 were mainly based on the content analysis; some were adapted from Parasuraman et al. (1988).
Items in scales 7–10 were mainly adapted from Bloemer et al. (1999).
Model Fit Indices:
$\chi^2 = 661.25$ (P = 0.00), d.f. = 335, χ^2/d.f. = 1.97; RMSEA = 0.06, GFI = 0.85.
CFI = 0.98, NFI = 0.96, NNFI = 0.97.

validity of each construct was evidenced by each indicator loading higher on the construct of interest than on any other variable.

Results and discussion

Following the procedures of simultaneous maximum-likelihood estimation, the authors employed LISREL 8.5 to examine the hypothesised relationship among the five antecedents, overall satisfaction and four behavioural consequences. As recommended by MacKenzie and Lutz (1989), each latent construct was represented with a single index that is equal to the average score on the construct scale.

Figure 1 presents the results of the coefficients, t-values and goodness-of-fit statistics. The chi-square statistic was significant; however, the ratio of the chi-square value relative to degree of freedom was within the acceptable range ($\chi^2 = 25.23$, d.f. $= 6$). Other fit indices, including GFI (0.91), CFI (0.94), NFI (0.94), standardised root mean square residual (SRMR, 0.048) indicate that the proposed model can well explain the observed covariance among the study constructs. These indicators demonstrate the fit of the proposed model to the aggregate data. Therefore, further analyses of relationships among the modelled constructs were conducted.

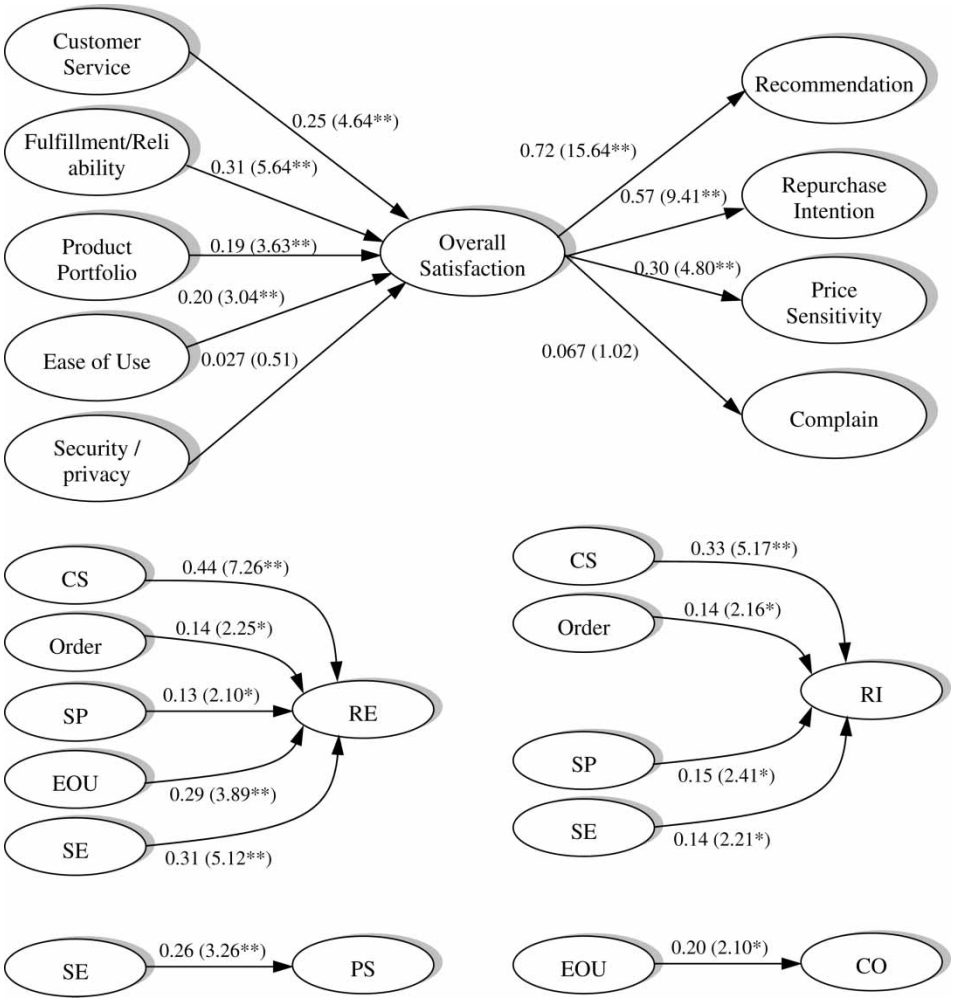

Figure 1. Results for path model.
Notes: *Significant at 0.05; **Significant at 0.01.
CO = Complain; CS = Customer Service; EOU = Ease of Use; Order = Fulfilment/Reliability; PS = Price Sensitivity; RE = Recommendation; RI = Repurchase Intention; SE = Security/privacy; SP = Service/Product Portfolio.

Model Fit Indices:
$\chi^2 = 25.23$ (P = 0.00), d.f. = 6, χ^2/d.f. = 4.20, RMSEA = 0.06
GFI = 0.91, CFI = 0.94, NFI = 0.94.

Five antecedents of customer satisfaction

The five-antecedents model achieved a satisfactory level of goodness of fit in predicting the variance of overall satisfaction with the R^2 being 58%. As expected, fulfilment/reliability, customer service, ease of use and product/service offerings are four powerful predictors of customer satisfaction ($\beta = 0.31, 0.25, 0.20$ and 0.19 respectively). However, the factor 'security and privacy' has no significant impact on overall satisfaction.

In the Internet-based market, customers essentially expect correct services, accurate transactions and records, and prompt delivery either digitally or physically. Customer services are also one of the important antecedents of satisfaction (Anderson et al., 1994). Company employees should have adequate knowledge to answer customer questions, properly handle problems that arise, understand customer-specific needs, and address complaints in an amiable manner. As a unique aspect of electronic commerce, ease of use includes such web-related aspects as website usage, menu design, information organisation and structure, and transaction functions.

In contrast to the findings of Szymanski and Hise (2000), the authors found that a product/service offering is a significant indicator of overall satisfaction. The differences between the two studies are mainly related to the nature of the samples employed. The authors' sample primarily includes financial service users who might have different demands from online merchandise shoppers in terms of the importance of product and service offerings. Merchandise shoppers may find it relatively easy to browse multiple online stores and locate desired products. Financial service users, however, are subject to switching costs and usually have more difficulty in managing multiple online accounts concurrently just to obtain desired services. Thus, providing appropriate service offerings appears to be more desirable.

The finding that security and privacy do not significantly impact on overall satisfaction was consistent with results discovered by Wolfinbarger and Gilly (2003, 196) in their study of service quality dimensions of e-tailings. It also appears that initially consumers judge security/privacy based on elements such as the professional look and feel of the website, as well as functionality of a website, and company reputation.

In other words, it appears that customers experience difficulty in judging the security and privacy of a site in a direct way. Additionally, as increasing numbers of customers have learned to conduct online transactions, they may have more confidence with service providers and consider security and privacy as necessary characteristics. Nevertheless, given the significant effect of security and privacy on three behavioural consequences, i.e. recommendation, repurchase intention and price sensitivity, managers are well advised to take steps to provide acceptable levels of these attributes.

Behavioural intentions of customer satisfaction

The factor structure in the data analysis identified four distinct dimensions of behavioural intentions: recommendations, repurchase intention, price sensitivity and complaining behaviour. This four-dimensional model replicated the conceptual model proposed by Zeithaml et al. (1996) and is consistent with the findings of Bloemer et al. (1999). The authors found that the effects of overall satisfaction on recommendations, repurchase intention and price sensitivity were statistically significant with coefficients of 0.72, 0.57 and 0.30 at the $p < 0.01$ level, respectively. Nevertheless, overall satisfaction seems to have no impact on customers' intention to complain ($r = 0.067$, $p > 0.1$).

The fact that intention to complain is not significantly affected by customer satisfaction has some theoretical and practical implications. As Bloemer et al. (1999, p. 1100) explain:

> Apparently, complaining is determined by other antecedents, such as the subjective probability that complaining will be successful, the attitude towards the act of complaining and the perceived cost of complaining ... With regards to the complaining behavior portion of the loyalty scale, the incidental nature of service problems may require incident-based measurement (such as the Critical Incident Technique) rather than service attitude-based measurement instruments.

Our study further confirms the inability of overall satisfaction to predict intention to complain and the need for more effective methods than the attitudinal measure. Practically, it appears that, instead of complaining to the company, dissatisfied customers may simply choose to stop patronising the company and/or switch to another provider and/or express negative word-of-mouth criticism. Such an outcome is more damaging to a company. Owing to the asymmetric effect of negative experiences, firms should aim to minimise service failures, errors and flaws.

Direct impacts of antecedents on behavioural intention

The research results indicate that the direct impacts of some antecedents of satisfaction on each behavioural intention variable are significant, but vary. For recommendation consequence, each antecedent matters. For purchase intention, all antecedents except for ease of use assume a significant role. Overall, the five determinants of satisfaction explain recommendation and repurchase intention ($R^2 = 0.52$ and 0.43 respectively, $p < 0.01$). However, the powers of these determinants in explaining price sensitivity and complaining are dramatically reduced ($R^2 = 0.09$ and 0.05, respectively, $p < 0.01$). Only one antecedent, security and privacy, has an effect on price sensitivity and on ease of use on complaining. These significant but weak linkages between five antecedents and price sensitivity and complaining justify the prevailing situation where fewer studies have adopted price sensitivity and complaining behaviour as indicators of loyalty (Anderson & Sullivan, 1993). Instead, recommendation and repurchase intention have been widely employed to measure customer loyalty.

It appears that some of the five satisfaction determinants do not have direct effects on consequences. Do these determinants act as contingent variables in the relationship between overall satisfaction and each behavioural intention? The authors examined this issue by employing hierarchical moderated regression analyses (Aiken & West, 1991). The results indicate that no significant interaction effects existed. Thus, the authors exclude the moderating effects of these five antecedents on behavioural intentions.

We further compared the relative magnitude of each antecedent's effect on overall satisfaction with those on each consequence and found that they differ. For example, the security and privacy factor has no significant impact on customer satisfaction. It, however, does affect three behavioural intentions including recommendation, purchase intention and price sensitivity. Three determinants, i.e. customer service, fulfilment/reliability and service portfolio, play a vital role in customer recommendations and repurchase intention; but they are not significantly relevant to price sensitivity and complaining behaviour. These results demonstrate that an investigation of both direct and indirect impacts of antecedents of satisfaction on behavioural consequences actually produces more useful and fruitful insights. Therefore, to build customer loyalty through increasing repurchase intention and recommendations, both overall satisfaction and its antecedents should be taken into account.

The insignificant effects of four antecedents on complaining behaviour are consistent with previous studies (Bloemer et al., 1999; Choi et al., 2000). In their investigation,

Bloemer et al. (1999) found that service quality dimensions have no significant associations with customer complaining behaviours across four industries: supermarkets, entertainment, healthcare and fast food. Similarly, the lower R^2 value indicates that price sensitivity may also be due to other factors such as switching costs, customer purchasing habits and time pressure. The only factor positively influencing price sensitivity is security and information privacy.

Conclusion and directions for future research

This study uncovered five antecedents of overall service satisfaction and four behavioural consequences of satisfaction in the context of online services. The five determinants were found to either directly affect customer behavioural consequences and/or indirectly influence them through overall satisfaction. These findings have both practical and theoretical implications. Practically, customers' overall satisfaction plays a vital role in determining repurchase intention, recommendation and price sensitivity. Furthermore, because some satisfaction determinants directly affect behavioural intentions or indirectly influence behavioural intentions through overall satisfaction, management should focus on these salient attributes. Identifying satisfaction antecedents will not only help management learn how to take effective measures to improve overall satisfaction, but will facilitate efforts to devote limited company resources into the optimum locations and, in turn, achieve favourable behavioural intentions.

Conceptually, this study, along with various previous studies (Bloemer et al., 1999; Choi et al., 2000), found that overall satisfaction did not play a mediating role in the relationships between some identified antecedents (e.g. security and privacy) and behavioural consequences. However, the present study indicates that these antecedents may have a direct influence on one or more behavioural consequences. For instance, security and privacy significantly impact on recommendation, repurchase intention and price sensitivity. Thus, further research on customer loyalty, purchasing intention and price sensitivity should consider both direct and indirect impacts of satisfaction determinants on behavioural intentions.

The study has some caveats that also provide directions for future investigations. As was mentioned above, measurements of customer satisfaction and behavioural consequences are complicated and often controversial. For customer satisfaction, the authors adopted the attribute-level performance approach. Other measures such as the expectation and disconfirmation approach might be utilised to verify the findings and bring about new insights (McKinney et al., 2002). Also, future research may embrace other relevant determinants including prior experiences with the service and frequency of service usage (Shankar et al., 2000). For behavioural consequences, this study employed attitudinal measures, which have been regarded as incomplete substitutes for actual behaviour (Keaveney, 1995). As such, a combination of attitudinal and behavioural measures could be beneficial in assessing consequences of satisfaction.

Second, the insignificant association of complaining behaviours with both overall satisfaction and four of the five antecedents warrants further investigation in order to determine whether this phenomenon results from a measurement problem or from reality. Given the complicated nature of consumer complaint behaviour (Singh, 1998), future studies may employ multiple dimensions instead of a one-dimensional approach to yield more fruitful results. Similarly, price sensitivity can be measured in a more deliberative way by employing multi-dimensional measures, such as price consciousness and price search effort.

Finally, the results reported in this study are limited by the restricted nature of the industries examined. The authors examined only online financial and retailing service users. Other types of services or industries might display different patterns of relationships among antecedents, overall satisfaction and behavioural consequences. Further studies across various industries may yield more robust results.

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Note

1. Detailed findings of the content analysis are available on request.

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