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Effects of Web 2.0 Experience on Consumers' Online Purchase Intention: The Social Networking and Interaction Orientation Factors

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Abstract

This paper examines the effects of Web 2.0 experience, especially the social networking and interaction orientation factors, which are likely to influence online consumers' purchase intention and buying behaviour. Based on theoretical foundations of what has been identified as Web 2.0 experience, this study proposes a research model consisting of these two factors acting as the main parameters influencing online purchase intention. These antecedents are modeled as first-order constructs with reflective indicators. The model is empirically tested by analysing the results of data from an anonymous survey of 167 students under a real Web 2.0 online shopping environment. Statistical analyses using structural equation modeling (SEM) are used to validate the model and identify the relative importance of the key antecedents to online purchase intention. On the one hand, the results confirm the direct positive influence of the interaction orientation factor on purchase intention. On the other, they suggest that the relationship between the social networking factor and intention to buy is mediated by the interaction orientation factor.

Keywords

Web 2.0, web experience, social networking, interaction orientation, online purchase intention, e-commerce

1. Introduction

Web 2.0, a popular and widely-used term which first introduced by O'Reilly (2005), goes far beyond web buzz. In fact, its technologies and evolutionary trends not only have a strong impact on the Internet usage but also have opened many opportunities for companies to interact with customers and to create sales more effectively (Denger, 2006). The ability to provide rich user experience in Web 2.0 has been realised and continues to be employed by many business websites.

Online experience is one of the most important factors for e-business success, which has been recognised by many academic studies since Web 1.0 started. Novak et al. (2000) argue that compelling online experience is critical for creating competitive advantage on the Internet.

Practitioner and commercial publications also stress the importance of online presence quality and its impact on the online consumer behaviour (Nielsen NetRatings, 2003).

1.1 Research background

In more recent years, plenty of research has also been carried out with the purpose of identifying web experience factors affecting online consumer behaviour and how these factors contribute to the online experience. Table 1 below provides a brief description of some prior research on what web experience elements drives consumers to shop online in various business disciplines. While these studies have investigated extensively a variety of website attributes (e.g. ease of use, usability, site design, trust), very few have actually made a link with Web 2.0.

An important attempt to classify web experience factors is Constantinides’s (2004) taxonomy. Based on the extensive review of 48 research papers between 1997 and 2003, he proposed a comprehensive summary of web experience elements, including three main categories – i.e., content category, psychological category and functionality category – and five factors – i.e., usability, trust, interactivity, aesthetics and marketing mix. However, these web experience factors also have a little focus on the particular characteristics of Web 2.0. Overall, although Web 2.0 has been realised and goes far beyond what Web 1.0 could offer, systematic empirical knowledge about Web 2.0 factors is very limited (Wirtz, Schilke & Ullrich, 2010) and relatively little is known about how these factors influence online consumer behaviour.

From a practical point of view, customers today get savvier and their expectation of online experience continues to rise. Thus, to improve customer satisfaction, it is important to understand how web 2.0 contributes to online shopping experience and its influential factors on buying behaviour of virtual consumers. In addition, since the success of an online vendor can be defined by a large number of sales being made from it (Phippen, Sheppard & Furnell, 2004), it is necessary for online vendors to seek the salient Web 2.0 factors which have a positive influence on consumer purchase intention.

Web experience elements	Study	Source/ Discipline
Website navigation, online product presentation	Lorenzo et al. (2007)	International Journal of Internet Marketing and Advertising
Website trust, product perceived risk	Castillo & Nicolas (2007)	International Journal of Internet Marketing and Advertising
Usefulness, ease of use, security concerns	MccLoskey (2003-2004)	Journal of Computer Information Systems
Perceived behavioural control, trust, subjective norm, attitude	Monsuwe’(2004)	International Journal of Service Industry Management
Website informativeness, product diagnosticity, trust, social presence	Pavlou et al. (2007)	MIS Quarterly
Security, usability, site design, trust, product value	Schaupp & Bélanger (2005)	Journal of Electronic Commerce Research

Table 1: A review of prior literature related to web experience elements affecting online consumer behaviour

1.2 Research problem and research questions

The research background naturally leads to the challenges facing most of online retailers, regardless of whether they are already adopted Web 2.0 shopping experience or intend to do so. The challenges, in particular, include finding Web 2.0 experience factors influencing online consumers' purchase intention and examining the extent to which these factors influence online consumer' purchase intention. To address these challenges, this paper hence seeks to extend the current knowledge on the consumer behaviour by examining the effect of web 2.0 experience on consumers' intention to buy from online retailers. This research is intended to verify the role that social networking and interaction orientation play in influencing the online shoppers intention to buy, which according to Wirtz's et al. (2010) framework are crucial. Thus, the research problem can be framed in the following two research questions:

1. Is the social networking factor a determinant of the online consumers' intention to buy?
2. Is the interaction orientation factor a determinant of the online consumers' intention to buy?

The objectives of the research are twofold. The first one is to empirically examine the association between the social networking and interaction orientation with online purchase intentions of consumers. The second one investigates the relative importance of each of these factors in order to prioritise their significance in predicting online purchase behaviour.

In the next section, we present a review of the literature that is relevant to the research problem explained above, with a focus on the social networking and interaction orientation constructs. Based on the literature review, we present in the third section the research model and put forward the hypotheses to be tested in this study. In the fourth section, we explain the methodological approach. This is followed by an extensive data analysis section.

2. Literature Review

The spectacular growth of the Internet, particularly the developments associated with the Web 2.0 phenomenon have created radically new ways for customers to interact with companies operating on the Internet. Although there is a growing trend toward using it among many online companies in an attempt to maximise their consumers' online experience, the specific meaning of the term 'Web 2.0' is still raising a great deal of ambiguity (Constantinides & Fountain, 2007). In fact, even experts still disagree on the definition. O'Reilly (2005), who is accredited with the creation of the term Web 2.0, referred it as the second generation of the Internet, composing of seven core principles – i.e., the Web as a platform, harnessing collective intelligence, data as the next Intel Inside, end of the software release cycle, lightweight programming models, software above the level of a single device and rich user experiences (Burkhardt, 2011). Since the present study aims to investigate the effects of Web 2.0 experience on online consumers' purchase intention, it is intended to hold particular interest for the seventh principle – the rich user experiences.

From a technical point of view, Web 2.0 is not really new as it is simply comprised of various existing technologies which have been around since Web 1.0 widely used. In other words, there

are no truly fundamental differences between the technologies used in Web 2.0 and Web 1.0 (Burkhardt, 2011). However, it is worth noting that the distinction between these two is actually placed on the end-user experience. Websites adopting Web 2.0 are designed to be faster, easier and more intuitive for users, compared to the use of traditional Web 1.0. A closer examination of what makes rich user experience in Web 2.0 possible reveals three general thrusts. First, Web 2.0 leverages the power of end users' computer by running some of application logic and user interface (UI) manipulation on their machine. This has improved significantly the responsiveness of the web user interface compared to previous web application architecture, where all the heavy work load of an application is placed on centralised servers. Second, information content has been separated from the UI design. This enables end users to fully concentrate on writing the information part only without any concern over programming UI for styling their published content. Third, UI is designed to be more dynamic and highly responsive so that web applications can react as quickly as desktop applications. Hence, a significant amount of website loading time can be reduced and user experience can greatly be improved.

Regardless of what Web 2.0 really means, its rich user experience plays an important role in e-commerce. In particular, traditional retailers and pure-play online retailers continue to leverage Web 2.0 technologies in an attempt to maximise their consumers' online experience. The importance of Web 2.0 in businesses' online presence has been recognised in both prior academic research and practical business application. However, the literature lacks a systematic analysis of the broad characteristics and trends associated with the Web 2.0. In particular, relatively little is known about what is actually characterised as Web 2.0 experience.

One of the first attempts regarding this aspect is the taxonomy summarising Web 2.0 factors proposed by Wirtz et al. (2010). By using grounded theory to analyse the data collected from in-depth field interviews with manager from 22 different US and German Internet companies associated with the Web 2.0, the researchers provide a comprehensive framework of Web 2.0 characteristics, consisting of four factors ranked from the most important to the least important:

- Social networking, by which a large number of participants often exert influence on the assessment of certain products and services.
- Interaction orientation, which enables the firm to interact effectively with customers by leveraging a more intense and authentic communication channel with its customers.
- User-added value, by which user-generated content (e.g. customer feedback, products review) is leveraged fostering online collaboration and active participation among online consumers.
- Customisation and personalisation, which enhances the online experience by making it possible for Internet users to reconfigure website (e.g. changing the look and feel or functionalities) to suit their particular needs and preference.

This ranking of Web 2.0 factors was empirically tested and can be served as a general guideline for online retailers to assess the extent to which their online presence meets Web 2.0 characteristics (Wirtz et al, 2010).

Next, we examine the two most important Web 2.0 factors: the social networking and interaction orientation.

2.1 Social Networking

The concept of social networking has evolved from sociology studies in the late 1800s and continues to mature even today (Burkhardt, 2011). It is commonly described as structures of human online interactions, which often involve a large number of participants, and can be categorised into a set of four sub-factors (Wirtz et al, 2010):

- Social identity: Internet users increasingly seeking for a sense of ‘belong’ to specific web interest groups and wanting to manage their image in these online environments.
- Social trust: The confidence that people will reciprocate beneficial behaviour in their interactions with others
- Virtual word of mouth: The informal information transfer between different parties via electronic applications such as blogs, review websites or even email.
- Consumer power: A side effect of the rising interactions between consumers

2.2 Interaction Orientation

Interaction orientation focuses on enhancing the firms’ effectiveness in dealing with customer demand through a more intense and authentic dialogue between firm and customer. Based on Wirtz’s et al (2010) work, there are four related aspects:

- Customer centrality: Customers’ interactivity should be placed at the centre stage and viewed as the focal point of all business activities
- Interaction configuration: The interaction process should be structured in the way it can address what information is exchanged, and with whom, and for what reasons.
- Customer response: the extent to which a company can manage the dialog with its customers
- Cooperative value generation: Customers’ interactivity should be integrated into business transactions. This would enable companies to leverage first-hand information on how to improve products services and processes so that they can develop and sustain a ‘customer-led’ competitive advantage.

3. The model and development of hypotheses

In order to provide an answer to the aforementioned research questions, we propose the model depicted in Figure 1. It consists of the endogenous construct consumers’ intention to buy, and two exogenous constructs: social networking and interaction orientation. The model shows the relationship among these constructs which are further explained by their associated set of observable variables - i.e., customer support (S1), information sharing (S2), product rating(S3), ordering process (I1), product searching (I2), interaction (I3), likely to purchase (IB1) and likely to recommend (IB2) (see Figure 1). Some of the observable variables are gleaned from previous studies; we have developed some others (see Appendix 2).

The following hypotheses are further established for investigating the research model:

H1: There is a positive relationship between the social networking factor and the online consumers’ intention to buy.

H2: There is a positive relationship between the interaction orientation factor and the online consumers’ intention to buy.

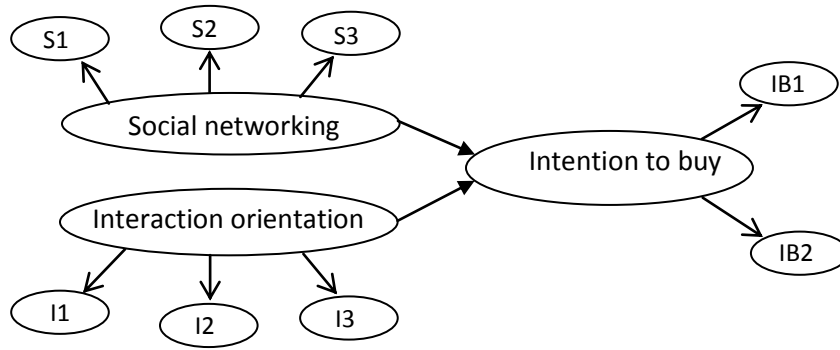


Figure 1: The research model

4. Methodology

We identified operational measures (see Appendix 2) for our constructs mainly from extant literature. These operational measures were summarized into various items and a survey instrument was created. In the case of lacking relevant items, the new scale items were essentially developed. All the proposed items were pre-tested by a scholar who is considered to be expert in the field. After this pre-test, we conducted an anonymously paper-based survey among 173 students from Auckland University of Technology (AUT), New Zealand. The survey first asks questions about basic demographic characteristics including their experience in using the Internet for online purchase and their frequency of online shopping. The respondents are then required to visit a real online store using Web 2.0 under a hypothetical scenario (see Appendix 1) so that they can rate the level of their agreement with the items in relation to their online shopping experience. Each item is rated on a scale of 1 to 5, where 1 represented strongly disagree, and 5 represented strongly agree.

5. Data Analysis

5.1 Sample

Because of missing data and invalid data, only 167 responses were deemed valid for analysis. Identification of outlier was performed through the computation of the squared Mahalanobis distance (D^2) and no compelling evidence of serious multivariate outliers was found. The gender distribution among the participants is relatively equal with 87 males and 80 females. In addition, the majority of them (79.0%) are young, with the age between 18 and 25. A large percentage of participants (69.5%) have made a purchase on the Internet during the last twelve months; forty-four participants (26.3%) have not and only a few (4.2 %) simply do not remember whether they have made any online purchase or not. Regarding the extent to which the participants have sought for online product during the last six months, the majority (13.2 % always, 28.7% often and 37.7% sometimes) are keen on seeking product online and only a few have paid less interest – 7.2% never and 13.2% seldom.

5.2 Reliability Assessment

The construct validity indicating how accurately the scale measures the model constructs is established via confirmatory factor analysis. Further, we did reliability analysis using Cronbach's coefficient alpha to assess how highly interrelated the indicators are used together to measure their associated construct. Given the recommended Cronbach's alpha greater than 0.7 (Kline, 2011), all the constructs – social networking ($\alpha = 0.718$), interaction orientation ($\alpha = 0.702$) and intention to buy ($\alpha = 0.837$) – are above the threshold of acceptable reliability.

5.3 Data normality check

A multivariate normal distribution is an important assumption when conducting SEM analysis in general and in the use of Amos in particular (Arbuckle, 2007). The assessment of multivariate normality often deals with the issues related to skewness and kurtosis. According to the assessment result (see Appendix 3), Mardia's (1970) normalised estimate of multivariate kurtosis value is found to be 10.451. This significant positive value provides evidence that data are certainly multivariate nonnormal. In addition, its equivalent critical ratio of 5.339 (in excess of 5.00) is also highly suggestive of nonnormality in the sample (Bentler, 2005). One common approach to handling nonnormality is to use bootstrapping technique (West et al., 1995; Byrne, 2010). Therefore, the following SEM procedures are carried with the support of bootstrapping as an aid to nonnormal data.

5.4 Structural Equation Modelling

5.4.1 Confirmatory Factor Analysis (CFA)

Given 2000 bootstrap replications from Amos, the Boolean-Stine statistics finds that the model fit worse than expected in 248 of the 2000 samples, or $248/2000 = 0.124$, which is the obtained p-value of overall model fit. The measurement model hence fits data well with a conventional significant level of 0.05. In addition, fit indices of the model reported in the Table 2 below indicate that the model provides a good fit to the data. In particular, the NFI, CFI, GFI are greater than 0.96 and RMSEA is significantly lower than 0.08. The bootstrap procedure results in a Chi-square statistic of 26.747 with 17 degrees of freedom and a probability value greater than 0.05, indicating the CFA model has an adequate fit

Fit Index	Bootstrapping test	Guidelines
RMSEA	0.059	<0.08
NFI	0.963	>0.90
CFI	0.986	>0.90
GFI	0.960	>0.90
AGFI	0.915	>0.90

Table 2: Selected goodness of fit statistics: AMOS output (n=167) and recommended guidelines

5.4.2 Structural Model Testing

Based on Lee-Hershberger replacing rules (Hershberger, 1994), the structural model is considered as an equivalent model of CFA model. In fact, they statistically have the same fitted variance-covariance matrix, chi-square values, degree of freedom and fit indices. Hence, the structural model should fit data as well as the CFA model does. However, a review of the

estimates from the bootstrap procedure (see Appendix 4) shows social networking does not affect intention to buy ($p=0.562$, C.R. < 1.96) while interaction orientation has significant impact on intention to buy ($p=0.022$, C.R. > 1.96). As a result, the proposed structural model is not supported.

In addition, by comparing the correlational relationships from CFA model with the structural relationship, a significant estimate (0.923) of correlational relationship between social networking and interaction orientation is found. This suggests that model improvement might be possible with the addition of a causal relationship between social networking and interaction orientation. According to Wirtz et al (2010), social networking provides the platform for users to get involved which is likely to increase the level interaction among users. Thus, adding the causal relationship from social networking to interaction orientation could reasonably improve the model fit. Therefore, the best alternative model in this case is supposed to have social networking affecting intention to buy through interaction orientation.

5.4.3 Model respecification

Figure 2 below presents the respecified model where social networking affects intention to buy through interaction orientation. The bootstrap procedure results in a Chi-square statistic of 26.956 with 18 degrees of freedom ($p > 0.05$). The Table 3 below shows the comparison of the selected model fit statistics (e.g., RMSEA, NFI, CFI, GFI and AGFI) between the original model and the alternative model. As shown, all the model fit statistics of the alternative model not only meet the recommended standard value but also imply a better model fit. In particular, while its NFI and GFI are similar to the values of the original model, its RMSEA is smaller and the CFI, AGFI are bigger. A review of the estimates from the bootstrapping procedure (based on the maximum likelihood estimates) (see Appendix 5) also demonstrates that interaction orientation greatly mediates social networking to intention to buy. In particular, social networking significantly affects interaction orientation ($p=0.000$) and interaction orientation exerts a significant impact on intention to buy ($p=0.000$). As a result, this respecified model is considered as the superior model and confirms that social networking affects intention to buy through interaction orientation.

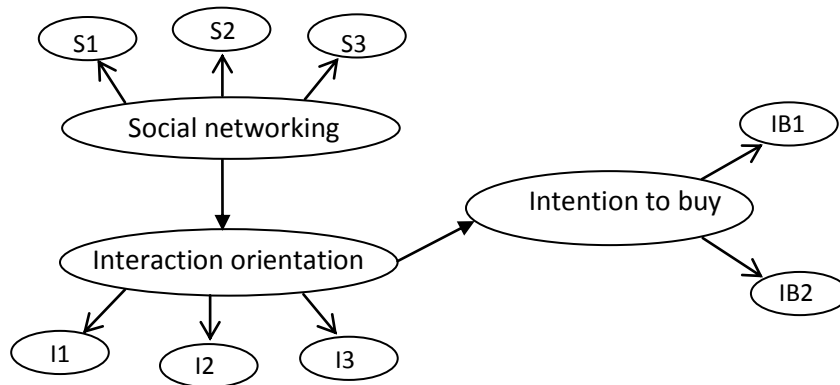


Figure 2: The respecified model

Fit Index	Original model	Alternative model	Guidelines
RMSEA	0.059	0.055	<0.08
NFI	0.963	0.963	>0.90
CFI	0.986	0.987	>0.90
GFI	0.960	0.960	>0.90
AGFI	0.915	0.920	>0.90

Table 3: Comparison of selected goodness of fit statistics between the original model and the alternative model: AMOS output (n=167) and recommended guidelines

6. Conclusions

Consistent with the results of prior studies in the traditional Web 1.0 context, this study confirms interaction orientation has direct positive influence on purchase intention in the Web 2.0 context, which the hypothesis H2 describes. The hypothesis H1 is not supported and the unexpected finding that social networking affects purchase intention through interaction orientation raise two interesting issues. First, it suggests that future research on online consumer behaviour in the Web 2.0 environment should pay great attention to the elements influencing interaction orientation. Second, the significant effect of social networking on interaction orientation reveals the possibility to enhance purchase intention and interactivity on the website through social networking features. This finding deserves further research.

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Appendix 1 Survey

Research project
***Effects of Web 2.0 Experience on
Consumers' Online Purchase
Intention: The Social Networking and
Interaction Orientation Factors***



Completion of this questionnaire will be taken as indicating your consent to participate

Part A: General Information

1. What is your gender? Please tick one.

- Male Female Prefer not to disclose

2. What is your age? Please tick one.

- 18-25 26-30 31-40 41-50 51-60 60+

3. Have you bought anything on the Internet during the last 12 months? Please tick one.

- Yes No I don't remember

4. Have you visited an online shopping website during the last six months to find the products you want to buy? Please tick one

- Never Seldom Sometimes Often Always

Part B:

Imagine that you are interested to buy a 16GB USB. Please go to www.ascent.co.nz and take a few minutes to perform the following tasks

1. Please search a 16GB USB. You are free to choose the model yourself and there is also no restriction as to how you search for the product.
2. After you find the USB you would like to buy, please start ordering process until the point that you have to confirm the purchase by giving your credit card number or any other personal information necessary for the payment. **DO NOT ORDER THE PRODUCT: At this point you must interrupt the ordering procedure.**

Please complete the following questions. You are free to visit back to the website if you wish when completing these questions.

From question 5 to 10, please specify in the scale of 1 (Fully disagree) to 5 (Fully agree) to what degree the issues mentioned below played an important role in your decision whether or not to buy the product from this online vendor.

5. The site's ordering process is clear and understandable.

Fully disagree 1 2 3 4 5 Fully agree

6. The site's product rating is helpful.

Fully disagree 1 2 3 4 5 Fully agree

7. It is easy to find the product I am looking for in this online shop.

Fully disagree 1 2 3 4 5 Fully agree

8. It is easy to share the product information I am looking for with friends.

Fully disagree 1 2 3 4 5 Fully agree

9. The website is user-friendly, quick and easy to interact with.

Fully disagree 1 2 3 4 5 Fully agree

10. The site provides excellent customer support (e.g., FAQs, support information and contact details)

Fully disagree 1 2 3 4 5 Fully agree

Please note that the product price must not be taken into account when completing the question 11 and 12.

11. Based on the shopping experience provided by the website, how likely would you be to purchase the product from this online vendor? (please tick one)

Very likely Likely Less likely Unlikely Very unlikely

12. Based on the shopping experience provided by the website, how likely would you recommend this online vendor to your friends? (please tick one)

Very likely Likely Less likely Unlikely Very unlikely

Appendix 2 Construct measurement

Construct	Name	Description	Supporting Literature
Social networking	Customer support (S1)	The site provides excellent customer support (e.g., FAQs, support information and contact details)	Shen & Eder(2011)
	Information sharing (S2)	It is easy to share the product information I am looking for with friends.	New Scale
	Product rating (S3)	The site's product rating is helpful.	New Scale
Interaction orientation	Ordering process (I1)	The site's ordering process is clear and understandable.	Gefen et al.(2003)
	Product searching (I2)	It is easy to find the product I am looking for in this online shop.	Lorenzo et al.(2009)
	Interaction (I3)	The website is user-friendly, quick and easy to interact with.	Gefen et al.(2003); Pavlou (2003); Venkatesh & Davis (2000)
Intention to buy	Likely to purchase (IB1)	Based on the shopping experience provided by the website, how likely would you be to purchase the product from this online vendor?	Gefen & Straub (2000); Taylor & Todd(1995); Hassanein & Head (2006); Kim &Kim(2005); Pavlou (2003)
	Likely to recommend (IB2)	Based on the shopping experience provided by the website, how likely would you recommend this online vendor to your friends?	Kim & Kim (2005)

Appendix 3 Assessment of normality

Variable	min	max	skew	<u>c.r.</u>	kurtosis	<u>c.r.</u>
I1	1.000	5.000	-.481	-2.538	-.022	-.059
I2	1.000	5.000	-.664	-3.505	.129	.340
I3	1.000	5.000	-.680	-3.586	.543	1.431
IB1	1.000	5.000	-.653	-3.444	.894	2.357
IB2	1.000	5.000	-.323	-1.707	.521	1.375
S1	1.000	5.000	-.263	-1.387	-.134	-.353
S2	1.000	5.000	-.345	-1.819	-.167	-.439
S3	1.000	5.000	-.231	-1.221	-.155	-.410
Multivariate					10.451	5.339

Appendix 4 Structural model testing: Maximum likelihood estimates

		Estimate	S.E.	C.R.	P	Label
Intention to buy	<--- Social networking	.233	.402	.580	.562	par_6
Intention to buy	<--- Interaction orientation	.795	.346	2.297	.022	par_8
IB2	<--- Intention to buy	1.000				
IB1	<--- Intention to buy	1.018	.071	14.418	***	par_1
I3	<--- Interaction orientation	1.000				
I2	<--- Interaction orientation	.902	.106	8.490	***	par_2
I1	<--- Interaction orientation	.919	.107	8.550	***	par_3
S1	<--- Social networking	1.081	.124	8.732	***	par_4
S2	<--- Social networking	.982	.133	7.390	***	par_5
S3	<--- Social networking	1.000				

Appendix 5 Respecified model: Maximum likelihood estimates

		Estimate	S.E.	C.R.	P	Label
Interaction orientation	<--- Social networking	1.148	.148	7.761	***	par_6
Intention to buy	<--- Interaction orientation	.992	.086	11.517	***	par_7
IB2	<--- Intention to buy	1.000				
IB1	<--- Intention to buy	1.019	.071	14.420	***	par_1
I3	<--- Interaction orientation	1.000				
I2	<--- Interaction orientation	.904	.108	8.395	***	par_2
I1	<--- Interaction orientation	.924	.108	8.534	***	par_3
S1	<--- Social networking	1.085	.124	8.741	***	par_4
S2	<--- Social networking	.985	.133	7.395	***	par_5
S3	<--- Social networking	1.000				