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Clicks or Bricks? Online Shopping Adoption in Australia

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Abstract

Purpose: This research identifies and ranks the decision factors associated with online shopping adoption in Australia.

Design/Methodology/Approach: Primary data for this study was collected with self-administered questionnaires and analysed using EFA and logit regression.

Findings: The following factors, ranked in order of importance, influence online shopping

behaviour in Australia: perceived risk, service quality, website factors, brand image, product variety and Australian product loyalty. The findings also show that demographic characteristics also influence the probability that Australian consumers will shop online.

Originality/value: This is the first empirical study in which the decision factors influencing Australian consumers' decisions to shop online are examined. The research contributes to the empirical literature on online shopping from a theoretical perspective as the modelling framework can be used to analyse online shopping behaviour in different cultural settings. Longitudinal studies based on the modelling framework can also be undertaken to identify emerging decision factors and to track the changes in importance of the current factors. The results will also enable retailers to make informed decisions on their existing or future shopping channels.

Keywords: Australian's Online Shopping Decisions, EFA, Logit Regression

1. Introduction

The rapid rise of the world wide web as a business medium has prompted most nations to increase their investment in state-of-the-art internet infrastructures. The increases in operational efficiency the internet provides has also encouraged numerous organisations to embrace the web as a primary medium for marketing their goods and services. The internet has now become an important communication and distribution channel for many successful global enterprises (Schlegelmilch, 2016).

In Australia, where over 90% of households have access to the internet, retailers are well placed to take advantage of the opportunities afforded by the online marketing. AUSD 267.4 billion was spent on retail purchases in 2017 (Australian Bureau of Statistics, 2018), and an estimated nine percent of that expenditure was spent online (Yip et al., 2018). By March 2018, 46.8 percent of Australians 14 years or older purchased one or more products over the internet in an average four-week period (Roy Morgan Research, 2018).

Online shopping is popular among consumers worldwide, and Australian consumers are no exception. However, there is a conceptual gap in the literature on just how Australians perceive online shopping. In particular, the published empirical research investigating the factors influencing Australians' business-to-consumer online shopping decisions is sparse. This research contribution fills this gap by identifying and measuring the factors associated with Australian consumers' decisions to shop online.

The specific objectives of this research are to:

1. identify the factors which influence the adoption of online shopping in Australia;
2. determine the relative importance of these factors with respect to their impact on the likelihood that someone will shop online; and
3. examine which demographic characteristics are associated with the adoption of online shopping in Australia.

2. Potential Factors Influencing Online Shopping, and Hypothesised Relationships

Previous research has identified a range of factors that may prompt consumers to shop online. Ranganathan and Ganapathy (2002) found that website design characteristics, security, privacy, design, and information content all influenced consumers' perceptions of online shopping in the United States. The authors reported that security and privacy had a stronger influence on consumers' intentions to shop online when compared to the design and information content of the website.

Clemes et al. (2014) report that website factors, perceived risks, service quality, convenience, product variety, subjective norms, and consumer resources were the main factors influencing Chinese consumers' perceptions of online shopping. Xu and Huang's (2015) survey of 210 Chinese internet users shows that perceived product costs, purchase risk, the ability to organise and research products within the cart, payment intention, and comparisons with external websites influence cart abandonment in the online shopping process. Pratminingsih et al. (2013) found that consumer e-satisfaction, e-trust and e-commitment directly influenced consumers' online shopping loyalty in Indonesia.

Scholars recognise that psychological factors affect consumers' online shopping behaviour. Opaloğlu (2012) explains that both utilitarian and hedonic values influence the purchase intentions of consumers in Turkey. Jiang and Jones (2014) identify several psychological variables that have an impact on domestic online shopping from foreign vendors, which include consumer confidence, preference, and trust.

Drawing from this previous empirical literature, the factors that are proposed to influence Australian consumers' online shopping adoption and their pertaining hypotheses are as follows:

2.1 Website Factors

Online merchandising strategies differ from a typical brick-and-mortar approach. For example, a consumer can physically examine an article of clothing, and they can "try it on for size" at a retail outlet, where the sense of touch and fit is more difficult to achieve in a virtual environment. To mitigate this relative disadvantage, online apparel retailers are adopting various types of image interactivity technology (IIT) such as close-up pictures or zoom-in functions, mix-and-match functions, and 3D virtual models to enhance consumers' online shopping experiences (Kim et al., 2007).

Advancing internet technology also enables retailers to customise their online store atmosphere for consumers. Karimov et al. (2011) suggest a general classification scheme for website design: visual design, such as layout and colour that gives consumers their first impressions; content design, such as the information provided on the website; and social cue design, which is embedded in the web interface and allows people to communicate using different media.

The level of interactivity on a website is important as it can offer a wide range of benefits to consumers and marketers, including facilitated communications, customization of presented

information, image manipulation, and entertainment (Fiore et al., 2005). The interactive nature of websites may positively affect consumer responses, and in some cases, increase their desire to browse and purchase online (Fiore et al., 2005).

Poorly designed websites may impede navigation of the site, make finding specific products difficult, and interfere with purchase behaviour (Gao & Koufaris, 2006). A consumer may abandon the shopping cart without making a purchase if they encounter a poorly-designed website. Annoying experiences may also have an adverse and lingering effect on consumers' beliefs about online retailers' trust, benevolence, competence, dependability, and integrity (Gao & Wu, 2010; Thota, 2012). The correct website design is important for online retailers as consumers can easily defect to a competitor's website (Wu et al., 2014).

These observations collectively give rise to the first testable hypothesis:

H1: High perceptions of website visual design will have a positive effect on online shopping adoption.

2.2 Perceived Risk

Perceived risk may be a critical antecedent to the hesitation of shoppers to purchase products via the internet (Kuhlmeier & Knight, 2005; Rajamma et al., 2006). High levels of perceived risk can be a barrier to purchasing online (Dillon et al., 2014), and both the degree and the source of uncertainty may influence the behaviour of individual consumers (Fontana & Gerrard, 2004). Clemes et al. (2014) report that perceived risk is one of the biggest impediments for consumers who shop online in China.

The risks associated with information privacy and security are particularly problematic for electronic transactions (Miyazaki & Fernandez, 2001; Swinyard & Smith, 2003). Quester et al. (2007) note that internet users in Australia have concerns about providing their credit card details online.

H2: Consumers with higher levels of perceived risk will be less likely to make online purchases.

2.3 Service Quality

Service quality is an overall judgement regarding the superiority of a service (Cronin & Taylor, 1992). The exact conceptualization and measurement of service quality is contentious and may vary across service industries. However, marketing academics generally agree that service quality is a multidimensional, higher order construct consisting of varying sets of sub and primary dimensions (Brady & Cronin, 2001; Clemes et al., 2011).

Service quality is an important determinant of online retailers' success. A high level of service quality provided by internet retailers has a positive impact on the purchasing intentions of consumers (Lee & Lin, 2005). Service quality influences the satisfaction and loyalty of existing customers and good service quality may also attract new online customers and aid customer retention (Cai & Jun, 2003; Clemes et al., 2014).

The dimensionality of service quality has been examined in the literature (Wolfinbarger &

Gilly, 2003; Van Riel et al., 2001). Mpinganjira (2015) explains that online service quality is reflected by three primary dimensions: interaction, platform and outcome quality and their pertaining sub dimensions. The author notes that the level of service quality has a significant influence on South African customers' attitudes toward online stores and their behavioural responses in positive word of mouth engagement.

H3: Poor e-service quality (e-SQ) has a negative effect on online shopping adoption

2.4 Brand Image

Product brand image has been defined as "*perceptions about a brand as reflected by the brand associations held in consumer memory*" (Keller, 1993, p.3). Numerous researchers report that a strong and favourable brand image can have a positive impact on consumers' impressions of product attributes (Kwon & Lennon, 2009), and consumers are more likely to shop online for products with well-established brand names (Belan del Rio et al., 2001; Lee & Tan, 2003). Brand image can assist consumers in interpreting, storing, and processing the product and/or brand-related messages, facilitating differentiation from competitors and providing consumers with more confidence to make purchase decisions due to reduced perceived risks (Abu ELSamen, 2015).

Consumers have traditionally used both the product brand name (Dawar & Parker, 1994) and the store name (Teas & Agarwal, 2000) as surrogates for product quality to reduce their risks and simplify their purchase decisions. These associations are important for online shoppers where many product attributes cannot be examined directly (Aghekyan-Simonian et al., 2012). Research focusing on multi-channel retailers also shows a significant, positive relationship between online store image and consumer purchase intention (Kwon & Lennon, 2009; Verhagen & van Dolen, 2009).

H4: A favourable brand image has a positive influence on online shopping adoption.

2.5 Convenience

Scholars have identified several service convenience features unique to virtual shopping (Jun et al., 2004). Jiang et al. (2013) identify and rank five convenience dimensions pertaining to online shopping using EFA: access convenience, search convenience, evaluation convenience, transaction convenience and possession/post-purchase convenience.

Shopping convenience is one of the principal motivations underlying consumers' online purchasing adoption (Haas & Kenning, 2014). Many consumers allocate less time for shopping and more time to other endeavours and this desire for convenience has strengthened the demand for virtual shopping as an alternative medium.

Berry et al. (2002) note that the greater the time costs associated with a service, the lower the degree of consumers' perceived service convenience. The authors consider that consumers' perceptions of convenience are negatively influenced by their perceptions of the cognitive, physical, and emotional effort associated with shopping. As consumers obtain utilitarian value from efficient and timely transactions, both time and effort savings positively influence consumers' online purchase intentions (Childers et al., 2001).

H5: Consumers' perceived level of online shopping convenience has a positive effect on online shopping adoption.

2.6 Price

Price represents a monetary sacrifice and can be expected to influence consumer purchasing behaviour, which implies that an increase in the price offered by the current vendor in comparison with the price offered by other vendors lowers the acquisition utility for consumers, *ceteris paribus* (Brassington & Pettitt, 2000; Reibstein, 2002). Prices have generally been lower online than in traditional retail stores. Reibstein (2002) suggested three reasons to explain this phenomenon: online shops have lower direct costs associated with supplying the product (i.e., no rent, lower or centralized inventory), there is more price competition online – more competitors that focus on price, and the physical monopoly, or the advantage of store proximity to the consumer has been removed.

There are also product characteristics that place a focus on price as a determining factor for e-shoppers. Many leading product categories in the context of internet shopping (tickets, books and cell phones accessories) involve 'low touch' products and 'no touch' services (Lynch et al., 2001). When products are of a low touch nature (search products), product quality remains constant across vendors (Flanagin et al., 2014; Kim et al., 2012), allowing consumers to focus primarily on price minimisation (Garbarino & Maxwell, 2010). The efforts of consumers to seek out the vendors offering the best prices are facilitated in part by internet shopbots or comparison websites. Electronic markets thus allow consumers to easily compare prices across vendors and find the cheapest possible alternative (Kim et al., 2012).

H6: A perceived lower relative price has a positive effect on online shopping adoption.

2.7 Product Variety

Product variety refers to the depth or breadth of product assortment – with depth defined as "the number of variants in a product line" and breadth as "the number of product categories offered by a retailer" (Hart & Rafiq, 2006). Prior research has documented the influence of product variety on consumer behaviour (Hoch, et al., 1999). Online marketing research also shows that online shoppers value product variety. A wide product selection contributes to greater website satisfaction, better attitudes towards online shopping, and greater store loyalty (Bansal et al., 2004). Online shoppers also positively evaluated a wide product variety offered by Hong Kong online retailers (Sin & Tse, 2002).

A large product assortment provides consumers with decision freedom and choice flexibility and may lead to an increase in online sales (Borle et al., 2005). A wide selection of products may result in improved comparison shopping for online shoppers, and eventually, better purchases for those consumers with low choice-uncertainty (Keeney, 1999).

H7: A large product variety range has a positive effect on online shopping adoption.

2.8 Australian Product Loyalty

Participants in the focus groups indicated that Australia's positive country image and the

favourable reputation of its products encourages them to purchase Australian goods. This expressed "home country bias" is consistent with a well-established stream of research on country of origin effects (Bilkey & Nes, 1982) that continues to develop in the marketing literature (Esmaeilpour & Mohammad, 2016). In this context, Australian consumers with a strong Australian product loyalty may also be more likely to use the internet as a shopping medium.

H8: Australian product loyalty is positively associated with consumer online shopping adoption.

2.9 Subjective Norms

A subjective norm is defined as "*a person's perception of the social pressures put on him to perform or not perform the behaviour in question*" (Ajzen & Fishbein, 1980). Subjective norms are related to intention to the extent that people often act based on their perception of what others think they should be doing. The Theory of Reasoned Action (TRA) (Ajzen & Fishbein, 1980) provides a theoretical basis for the link between subjective norms and behavioural outcomes. Within the current context, subjective norms capture the consumers' perceptions of the influence of significant others (family, peers, authority figures, media) on their propensity to make an online purchase. A consumer's intention to shop online is expected to be influenced by the opinions held by people who are important to them, such as friends and family (Vijayasarathy & Jones, 2000).

H9: Stimulation from family members, peers, friends, media, advertising and promotion affect consumers' decisions to adopt online shopping.

2.10 Demographics

Demographic factors are socioeconomic characteristics of a population such as age, education, occupation and ethnicity that may have an influence on purchasing behaviour. Yarimoglu (2017) assessed the influence of four demographic variables (age, gender, income and experience) on internet shopping preference and shoppers' perceptions of services quality and value. Yarimoglu's (2017) results suggest that in Turkey, men and younger individuals were more likely to shop online; gender had no influence on perceptions of quality or value, whereas age and experience did; and income had an influence on perceived value but not on service quality.

Hansen (2005) reported that perceived order accessibility had a significant positive effect on future online buying intentions for well-educated consumers, but not for less well-educated consumers. Donthu and Garcia (1999) noted that internet shoppers were older and earned a higher income compared to non-internet shoppers. However, these findings were reversed in a study of online shoppers in China (Clemes et al., 2014). Recent research suggests that online consumers tend to be younger, possess greater wealth, have a higher education, employment positions, and incomes (Clemes et al., 2014; Brashear et al., 2009).

H10: There is a negative relationship between age and the adoption of online shopping.

H11: There is a positive relationship between education and the adoption of online shopping.

H12. Occupation has an impact on the adoption of online shopping.

H13. There is a positive relationship between income and the adoption of online shopping.

3. Method

A survey instrument with a range of items related to attitudes and beliefs that might influence the respondent's propensity to shop online was developed and used to collect primary data. An empirical analysis of the data was conducted using a three-step procedure. First, exploratory factor analysis (EFA) was used to identify variables that capture the latent factors hypothesized to influence consumers' decisions regarding online shopping adoption. The factors identified with the EFA were then used as independent variables in a regression-based model to determine whether they have a significant impact on consumers' decisions to shop online. Finally, the marginal effects were calculated to rank the influential factors from the most important to the least important with respect to the decision to shop online.

3.1 Conceptual Research Model

The conceptual research model (Figure 1) is based on the literature review. The research model proposes that consumers' decisions to shop via the internet are based on nine factors: (1) website factors; (2) perceived risks; (3) service quality; (4) brand image; (5) convenience; (6) price; (7) product variety; (8) Australian product loyalty; and (9) subjective norms, as well as demographic characteristics, such as age, education, occupation and income.

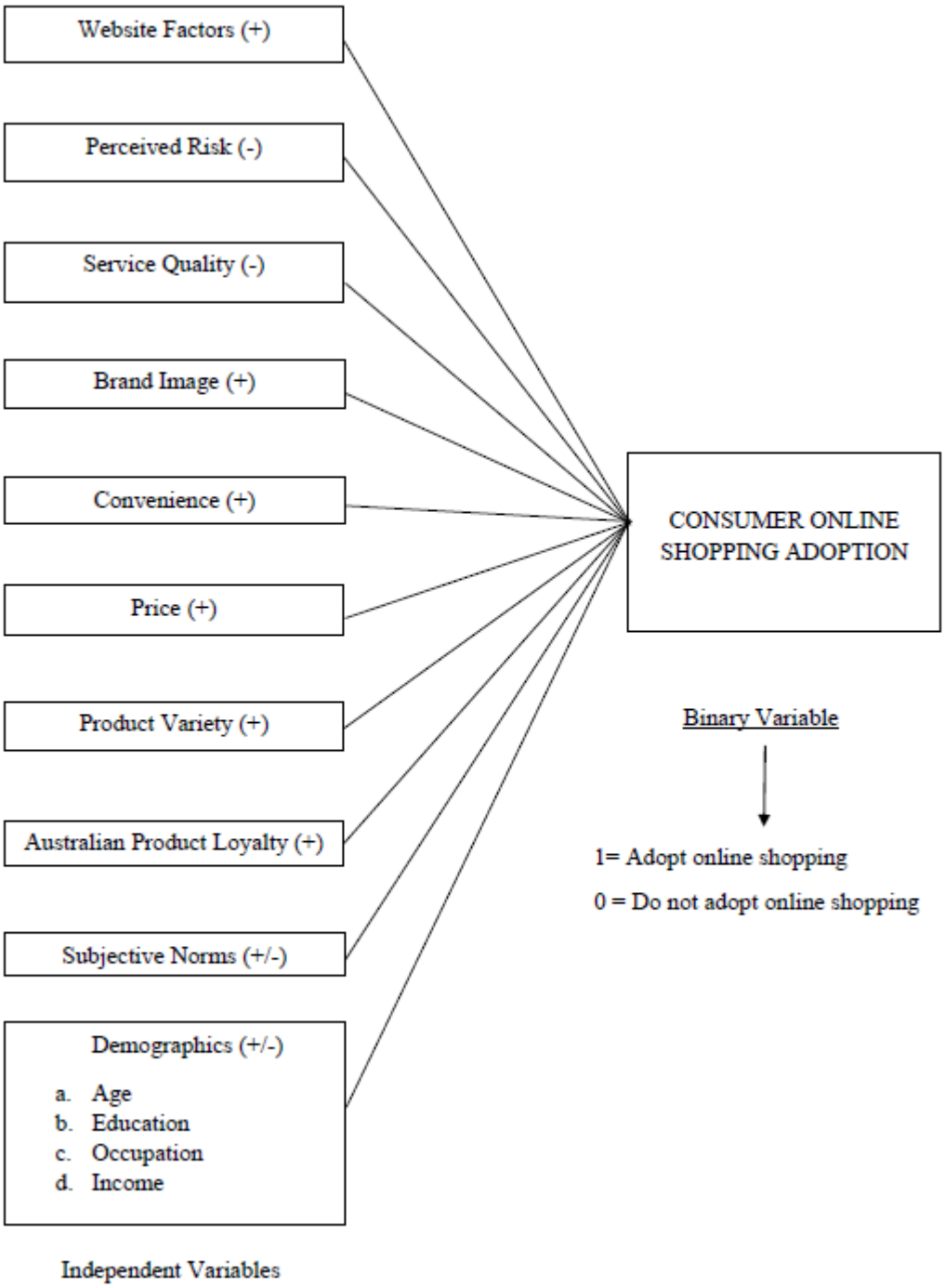

Figure 1. Conceptual Model

3.2 Logistic Regression

Logistic regression, commonly used to predict the occurrence of a binary outcome based on variables that are hypothesised to be related to that outcome, was used to estimate the conceptual model. Within the current context, consumers may either choose to engage in online shopping, or they may not. Following standard neoclassical theory, consumers are

assumed to choose the option that results in a higher level of satisfaction, given the attributes of the online shopping experience, and the demographic characteristics of the consumer.

3.3 Data

Primary data was collected using an intercept approach to distribute self-administered surveys to a convenience sample of individuals 18 years old and over. The survey was conducted in shopping centres in Sydney, Australia from 17th October to 28th October, 2016. Two mini-focus group interviews were conducted in Sydney to refine the concepts and to ensure that the survey questions were context-appropriate prior to pretesting the instrument (Clemes et al., 2014). The groups were provided with information derived from the literature review and the participants were encouraged to list all of the factors that influenced their online shopping decisions and to provide comments on any factors mentioned by the other participants.

The survey instrument was pre-tested on a random sample of 20 Australian consumers intercepted in the Ashfield shopping centre, Sydney. The respondents were encouraged to comment on any questions or statements they felt were ambiguous or difficult to answer. Minor modifications were made to the survey instrument based on the suggestions obtained from the pre-test. Ultimately, the questionnaire items used to capture the latent constructs hypothesized to influence consumer attitudes towards online shopping in the factor analysis were based on a standard seven-point Likert scale ranging from Strongly Agree (1) to Strongly Disagree (7).

4. Empirical Results

Five hundred and fifty questionnaires were distributed in shopping centres, and 494 were returned. Thirty-one of the questionnaires were incomplete, resulting in 463 usable questionnaires. Eight items had a very small proportion of missing values. However, the frequencies of all the missing items were less than one percent of the useable responses, so the mean of each item was substituted for the missing value (Hair et al., 2010).

4.1 Descriptive Statistics

Descriptive statistics for the demographic characteristics were obtained using SPSS (Table 1). The majority of respondents (65.9%) were online shoppers, and they were fairly evenly split between the genders. The dominant age groups were between 18-25 years (30.2%) and 26-35 years (33.5%). The majority of the participants were university educated, and the dominant occupational groups were professional (31.5%) and manager (11.7%). The majority of participants' monthly income was over AUS$3000.

Table 1. Descriptive Statistics of Demographic Characteristics

		Online Shoppers		Non-online shoppers	
		Frequency	**Percent**	**Frequency**	**Percent**
Gender					
	Male	148	48.5	89	56.3
	Female	157	51.5	69	43.7
	Total	305	100.0	158	100.0
Age					
	18-25	114	37.4	26	16.5
	26-35	123	40.3	32	20.3
	36-45	42	13.8	35	22.2
	46-55	18	5.9	27	17.0
	56-65	4	1.3	19	12.0
	66+	4	1.3	19	12.0
	Total	**305**	**100.0**	**158**	**100.0**
Education					
	Primary	1	0.3	0	0
	Middle School	1	0.3	5	3.2
	High School	55	18.1	41	26.0
	Diploma /Certification	26	8.5	39	24.6
	Bachelor	148	48.5	43	27.2
	Postgraduate	74	24.3	30	19.0
	Total	**305**	**100.0**	**158**	**100.0**
Occupation					
	Professional	105	34.4	41	26.0
	Manager	45	14.8	9	5.7
	Government Officer	12	4.0	5	3.2
	Company Employee	33	10.8	20	12.6
	Self-employed	23	7.5	20	12.6
	Labourer	8	2.6	15	9.5
	Farmer	1	0.3	8	5.1
	Student	34	11.1	12	7.6
	Sales/Service	42	13.8	9	5.7
	Unemployed	0	0	1	0.6
	Retired	2	0.7	18	11.4
	Total	**305**	**100.0**	**158**	**100.0**
Income					
	500 AUS$ or Under	18	6.0	16	10.1
	500-1000 AUS$	20	6.6	5	3.2
	1001-1500 AUS$	26	8.5	5	3.2
	1501-2000 AUS$	26	8.5	17	10.8
	2001-3000 AUS$	52	17.0	28	17.7
	3001-5000 AUS$	90	29.5	44	27.8
	5001 AUS$ +	73	23.9	43	27.2
	Total	**305**	**100.0**	**158**	**100.0**

When differentiating respondents based on their online versus offline shopping behaviour, the two groups were similar in income and education. However, the gender, age, and occupation characteristics were different. Females were more likely to shop online than males. Non-online shoppers were older, on average, than online shoppers. Although the majority of the respondents in both groups were professionals, the percentage of labourers, farmers and

retired respondents who shopped online was much lower than the percentages for non-online shoppers

4.2 Exploratory Factor Analysis

Bartlett's Sphericity Test and the KMO index were computed before the EFA was conducted. Results indicated that the data set was appropriate for factor analysis. The results of both the latent root criterion and a Scree plot indicated that the 36 variables submitted for factor analysis could be extracted to form nine dimensions. These nine dimensions explain 69.739 percent of the variation in the data. A VARIMAX rotation was used in this analysis as it produced a clearer structure in terms of content validity of the factors, and resulted in orthogonal factors to use in the subsequent regression analysis (Hair et al., 2010). With a cut-off criterion of ±0.50 for factor loadings (Hair, et al, 2010), one variable was excluded from the factor structure as it did not load on any of the nine identified factors post-rotation. The rest of the 35 variables were sorted into the nine anticipated factors: (1) service quality, (2) perceived risk, (3) website factors, (4) Australian product loyalty, (5) price, (6) convenience, (7) product variety, (8) subjective norms, and (9) brand image.

Table 2. Factor Identification

Factor	Item	Cronbach α
Website Factors	Internet retailers' websites are easy to navigate. The website designs of Internet retailers are aesthetically attractive. The Internet retailers' websites provide in-depth information to answer my questions. The links within the website allow me to move back and forth easily between pages. It is quick and easy for me to complete a transaction through the websites.	0.804
Perceived Risk	I am confident that the information I provide to an Internet retailers is not used for other purposes. I feel secure about providing my bank card details to a payment platform. I am confident that my personal information is protected by an Internet retailer. Online shopping is just as secure as traditional retail shopping.	0.824
Service Quality	Internet retailers honour their guarantees. The quantity and quality of the products I receive from Internet retailers are exactly the same as I order. The products I ordered are delivered to me within the time promised by the Internet retailers. Internet retailers promptly respond to my inquiries. It is easy to receive a personalized customer service from an Internet retailer. Internet retailers encourage me to make suggestions. Internet retailers offer good after sales service.	0.837
Brand Image	I like to buy products from well-known brand official websites. I feel safe when I purchase products from well-known brand official websites.	0.678
Convenience	It is more convenient to shop through the Internet when compared to traditional retail shopping. It only takes a little time and effort to make a purchase through the Internet. Online shopping saves me time by allowing me to multi-task with ease. It is easier to compare alternative products when I shop using the Internet.	0.737
Price	Online shopping allows me to buy the same, or similar products, at cheaper prices than traditional retailing stores. Online shopping offers better value for my money compared to traditional retail shopping. I think the Internet offers lower prices compared to retail stores. Online shopping allows me to save money as I do not need to travel anywhere.	0.749
Product Variety	Online shopping offers a wide variety of products. I always purchase the types of products I want from the Internet. I can buy products that are not available in retail shops through the Internet.	0.765
Australian Product Loyalty	I prefer to buy Australian products because they are of high quality. I prefer to buy Australian products because of their well-known and trusted image. I prefer to buy Australian products because they are made in Australia	0.827
Subjective Norms	Family/friends encourage me to make purchases through the Internet. The media (e.g. television, radio, newspaper) influences my decision to purchase online. Advertising and promotion influences my decision to purchase online.	0.635

Cronbach's Alpha was calculated to measure the internal consistency of each factor. In this research, all the factors have a Cronbach's Alpha value greater than 0.60 (Table 2), suggesting an acceptable degree of reliability. In the subsequent logistic regression analysis, these factors were combined with the demographic factors for the marginal effects analysis.

4.3 Results of the Logistic Regression Model

The conceptual model identified in Figure 1 above was estimated with maximum likelihood techniques to identify the factors which influence online shopping behaviour in Australia. According to the usual evaluation criteria (Chi-square = 437.23; p-value 0.000; Pseudo R-squared = 0.7356), the model fits the data well. The statistical results are summarized in Table 3, and the summary results for the hypothesized relationships are shown in Table 4.

Table 3. Logistic Regression Results

Number of Observations:		463
Log likelihood function:		-78.565
	χ^2	437.23
	p-value	0.0000
	McFadden R^2	0.7356
	Coefficients	Std Error
Website Factors	1.179	0.258***
Perceived Risk	-1.628	0.244***
Service Quality	-1.583	0.328***
Brand Image	0.974	0.207***
Convenience	-0.326	0.221
Price	0.251	0.241
Product Variety	0.728	0.192***
Australia Brand Loyalty	0.539	0.184***
Subjective Norms	-0.312	0.188
Young Age	1.065	0.484**
High-level Education	1.139	0.529**
Professional	1.836	0.646***
Manger & Company Employee	0.989	0.638
Student & Sales/ Service	1.485	0.729**
Middle Income	0.727	0.741
High Income	-0.134	0.805

Note: *** significant at the 0.01 level; ** significant at the 0.05 level.

The results indicate that website factors, perceived risk, service quality, brand image, product variety and Australian product loyalty, are statistically significant, providing support for Hypotheses 1, 2, 3, 4, 7 and 8. However, the coefficients associated with convenience, price and subjective norms are not significant predictors of Australian consumers' choice of online shopping. Hence, Hypotheses 5, 6 and 9 are rejected. The coefficients for young age and higher education are positive, and significant at the 0.05 level, indicating that younger, more educated individuals are more likely to shop online. The regression results also show professional, student and sales/service characteristics are all significantly (positively) related to online shopping adoption. However, the coefficients associated with income classes are not significant, leading to a rejection of the hypothesis that online shopping is positively related to income.

Table 4. Results of the Hypothesis Tests

Hypothesis	Supported	Not Supported
H1: Website Design	✓	
H2: Perceived Risk	✓	
H3: Service Quality	✓	
H4: Brand Image	✓	
H5: Convenience		✓
H6: Price		✓
H7: Product Variety	✓	
H8: Australian Product Loyalty	✓	
H9: Subjective Norms		✓
H10: Age	✓	
H11: Education	✓	
H12. Occupation	✓	
H13. Income		✓

The factors which affecting consumers' adoption of online shopping were ranked by order of importance. Tables 5a (decision factors) and 5b (demographic factors) present the results of the marginal analysis, upon which the ranking is based. The marginal effects can be interpreted as a unit change in the probability of shopping online, given a unit change in the selected independent variable, evaluated at the sample means and holding all other variables constant. The value of -0.17 for perceived risk, for example, indicates that a unit increase in perceived risk is associated with a 17 per cent decrease in the probability that a consumer will shop online.

Table 5a. Marginal Effects of the Decision Factors

Factors	**Marginal Effect**	**Ranking**
Perceived Risk	-0.170	1
Service Quality	-0.165	2
Website Factors	0.123	3
Brand Image	0.102	4
Product Variety	0.076	5
Australia Brand Loyalty	0.056	6

Perceived risk ranked as the most important factor influencing online shopping adoption in Australia, followed closely by service quality and then factors specific to the website. The marginal effect results also reveal which demographic characteristics are associated with online shopping. Online shoppers are more likely to be professionals with a higher level of education (bachelor degree or above).

Table 5b. Marginal Effects of the Demographic Characteristics

Factors	**Marginal Effect**	**Ranking**
Professional	0.157	1
High-level Education	0.136	2
Young Age	0.126	3
Students and Sales/Service	0.115	4

5. Implications

The findings in this research offer valuable insights on the links between a range of decision factors and e-shopping in Australia. Six decision factors have been identified that are all associated with an increased propensity to shop online: perceived risk, service quality, website factors, brand image, product variety and Australian product loyalty. The empirical results obtained from this study can help online retailers increase their competitive advantage by developing marketing strategies that are more likely to attract and retain customers. In the rapidly changing world of e-commerce, organisations need to effectively and continuously improve their tactical and strategic marketing initiatives to remain profitable. The results of this research also provide organisations with a strong benchmark for longitudinal studies on online shopping behaviour and the marginal effects provide a clear measure for current resource allocation in what is a dynamic and growing shopping medium.

Perceived risk ranked as the most important factor influencing online shopping decisions. Previous research also indicates that a high degree of perceived risk discourages internet purchasing (Clemes et al., 2014; Doolin et al., 2005; Kuhlmeier & Knight, 2005; Rajamma et al., 2006). These results suggest that privacy and security of personal information, security of online transactions, and product risk, are all key determinants of risk perception for Australian consumers. Online retailers interested in the Australian market should make transaction and product security a top priority. In particular, online retailers must take all care to protect consumers' personal details as this is becoming a major issue worldwide with rapidly advancing technology.

Online retailers should also ensure that they have formal privacy policies in place for their online security systems and cooperate with encryption technology companies to inform consumers about their security measures. To mitigate the risk of incorrect product choice, online retailers should consider offering product warranty policies, money back guarantees, and the right to exchange the product without additional shipping charges (Heiman et al., 2015). The inability to physically inspect the product prior to an online shopping transaction means that online retailers should strive to provide detailed product information on their official website page, ideally supported by interactive three-dimensional graphics (Hasan, 2016).

Service quality is the second most influential factor affecting online shopping adoption. This finding is consistent with previous research illustrating the link between high quality services and positive word-of-mouth endorsement, which can increase consumers' adoption of online shopping. The service quality items, guided by the literature and refined during the focus groups, included reliability, maintainability, responsiveness and empathy, suggesting that consumers value the 'human' dimensions of service, even when shopping online. The results also indicate that online retailers focusing on customer engagement and committed to delivering a functional product in a timely manner are more likely to maintain loyal customers. Online service failures may also cause customers to discontinue purchasing from an organisation's offline channels (Piercy & Archer-Brown, 2014).

Online retailers must respond to consumers' complaints promptly and efficiently to close the

consumers' complaint circle. Online retailers can also offer 24-7 live customer service in addition to traditional consumer communications channels such as e-mail. If an online retailer lacks the resources to build their own distribution channel, a specialised third party in logistics management may help to optimise the transportation route and ensure timely and accurate product deliveries.

Consumers' decisions to purchase online can be affected by website design factors, such as page loading time, website navigation, and access to product information. This result is consistent with previous findings indicating that the design elements of the online virtual store have important effects on consumers' beliefs and attitudes (Liang & Lai, 2002). Traditional design features like colour, font and photo images can be enhanced by various types of image interactivity technology (IIT) that provides more information or otherwise improves the shopping experience. Online retailers can use close-up pictures or zoom-in functions, mix-and-match functions, and 3D virtual models to enhance consumers' online shopping experience and increase the purchase probability (Kim et al., 2007).

Brand Image was ranked as the fourth strongest factor influencing consumers' online shopping decisions. This result is consistent with Beldona and Wyson's (2007) finding that a strong brand can help consumers differentiate the quality of a product to offset a sense of insecurity they may feel with a remote purchase. A strong brand image may be particularly important for specialised online shops such as fashion apparel, where reducing product risk may even be more important than reducing financial risk.

Product variety was also a significant predictor of online shopping adoption, a result that is consistent with the findings of Sin and Tse (2002). Given that product variety is attractive to consumers, particularly those with low choice-uncertainty, widening the selection of products should result in improved comparison shopping, and eventually, increased purchases.

Australian product loyalty has a positive influence on consumer online shopping behaviour. However, its marginal effect was small in absolute value relative to the factors discussed above. Although this factor may assist strategy formation for some online retailers, it is a difficult feature for individual marketers to control and maintain given the complexities of globalisation and wide-ranging government policies.

Previous research findings show that consumers with different demographic characteristic have different views regarding online shopping adoption. Thus, online retailers need to use segmentation matrices to clearly identify their target markets, the benefits they seek, and design strategies to satisfy consumers. Younger Australian consumers are more willing to engage with online shopping than older consumers. As a result, online retailers may see a relatively higher return using marketing promotions and endorsements from young celebrities that appeal to younger consumers.

Australian consumers with higher income levels are less likely to shop online. This result is consistent with the hypothesis that consumers with high incomes prefer to purchase from up-market retail stores where they can physically examine the products and receive exceptional supporting services. Online retailers may benefit if they do not overly resource

ways to attract high income consumers and instead focus on increasing purchases from budgeted minded consumers.

Finally, the marginal effect results indicate that older consumers are less likely to shop online. This result is consistent with Doolin et al. (2005), who found that older consumers may be discouraged from using the internet as a shopping medium due to low internet experience and risk concerns. Thus, promotional strategies targeted at older consumers that explain the numerous advantages of using the internet may encourage this segment to try an online shopping experience. In addition, this segment may perceive risk reduction strategies as beneficial and encourage them to try online shopping.

6. Plausible Implications of COVID 19 for the Online Shopping Environment

The coronavirus disease 2019 (COVID-19) pandemic has accelerated an existing trend towards online retail shopping globally, and Australia is no exception. The Australian Bureau of Statistics reported a significant increase in online sales beginning in April of 2020. The empirical results of Beck and Hensher's study (2020) indicate that the observed increase in online shopping in Australia reflects efforts by the Australian government to enforce social distancing measures beginning in mid-March. In China, Hallworth and Coca-Stefaniak (2020) reported a surge in online grocery shopping during the COVID-19 outbreak, as the Chinese government restricted the number of people that could be in a shop at a particular time. A study of online shopping for books in Viet Nam revealed that the onset of COVID-19 had a positive and significant impact on consumer intention to purchase books online (Nguyen et al., 2020).

Research to date suggests that consumers will continue to do their retail shopping online, even after the ‘COVID-19 effect’ has dissipated. Market analytics conducted in 11 countries by GlobalData indicates that the behavioural shift towards online retail shopping is likely to persist (Manitoba Analyatics, 2020). Research by Sheth (2020) concluded that consumers will be less likely to go back to their old retail purchasing habits if the online shopping environment brings sufficient benefits. A key implication of Sheth’s investigation is that service quality should be a priority for businesses making the shift to marketing their products online.

The implications of COVID-19 on the future online environment for Australia in general and our results in particular were investigated using information obtained from two additional focus groups held in October of 2020. Each group consisted of five participants who were either present or past residents of Australia. Notable results from these focus groups include observations on three of the constructs that were significant in the empirical work presented above: risk, website design and Australian product loyalty.

Perceived risk was highly significant in the logistic regression, and it had the largest marginal effect on consumer’s intent to engage in internet shopping. Focus group participants were concerned that the COVID-induced increase in web traffic may bring with it additional opportunities for unlawful internet practices or ‘scamming’. Even if scamming or phishing do not intensify, retailers need to be aware of the fears and perceptions of their consumers, and

take steps to protect and reassure them.

Focus group participants also anticipated that website design (a significant factor in the logistic regression and ranked third in the marginal effects) would become increasingly important as the online environment becomes more competitive and technologically sophisticated.

Finally, the focus groups felt that COVID was also responsible for sparking a renewed interest in buying local. While the marginal impact of Australian brand loyalty was low, it was significantly associated with an intention to shop online. This increase in the desire to shop locally is entirely consistent with emerging trends identified by market analysts across the globe (Global Data cited in Manitoba Analytics, 2020)

7. Limitations and Future Research

This research provides an improved understanding of online shopping adoption in Australia. Future researchers may want to consider additional factors such as discrete purchases, advanced logistics and geographic extension discussed recently as possible influences on shopping online.

Data collection focused on a geographically limited area. The likelihood of shopping online and the profile of consumers may vary, depending on geographical location, and there would be value in extending the survey to other states within Australia.

Finally, older consumers, labourers and farmers were underrepresented in this research. These groups may have different preferences and different constraints that influence their online shopping decisions. Future researchers may want to target these segments to fill the information gap in the online shopping market.

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