SOURCES AND ANTECEDENTS OF BRAND EQUITY FOR ONLINE COMPANIES

Thesis Submitted in Candidacy for the Degree of Doctor of Philosophy

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September, 2007

DECLARATION

I, Rosa Elvira Rios, certify that with the exception of the due acknowledgement, the work presented here in this thesis is that of my own.

I also declare that the work of this thesis has not been submitted previously, in whole or in part, to qualify for any other academic award.

The content of this thesis is the result of my work which has been carried out since the official commencement date of the approved PhD research program.

ACKNOWLEDGEMENTS

I would like to acknowledge the people who helped me in developing this PhD research project. I would like to thank my primary supervisor Professor Dr Hernan E. Riquelme, for his vision, attitude and knowledge in the area of marketing who helped me to grasp this fascinating topic. His much appreciated guidance, therefore, was crucial in the completion of this thesis. I would like to thank Associate Professor Dr Booi Kam for advocating my work and providing me with timely guidance, enthusiasm, and resources. I would like to extend my gratitude to Professor Dr Kosmas Smyrnios for supporting my research proposal and championing it for financial assistance. I would have never accomplished this work without the assistance and encouragement of these three outstanding academics.

I would like to acknowledge Miss Prue Lamont at the RDU for her efficiency and prompt reaction to my PhD-related issues. I also thank library staff who helped me to obtain valuable material to complement my thesis work and answered to my constant queries. I appreciate the staff at the IT desk for their opportune assistance and I thank my fellow PhD students and colleagues for their warm words of encouragement. Finally, but not least important, I owe a great deal of gratitude to Sarah-Anne Morley and Harry Gaston (Southern Editorial Services) for skilfully managing the thesis in its final work through the detailed editorial and proof-reading process this thesis has demanded.

I would like to dedicate this thesis to my family members who have helped me throughout my exciting PhD adventure. I would like to thank my husband, my primary motivator, who always believed in my capacity to contribute in the area of branding. I would like to thank my kids for understanding that this work was important for me and sacrificed enormous quality time without mum. I also thank my son Eduardo, who came to my rescue whenever his computer skills were needed. I thank my daughter Valentina and

her incredible cups of coffee that kept me awake through tough sleepless nights. I thank my dog ‘Canito’ for keeping me company during my long-lasting writing-up nights. Thank you family, I would have never been at this stage without your trust, support and empathy.

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SUMMARY

The area of brand equity has received considerable attention during the past twenty years. The importance of a brand emanates from the fact that brand recognition and positive associations with it create value for companies and consumers. This value is called brand equity and translates into monetary value. It can account for about 90 per cent of the value of an online business.

However, up to now, there is little research to test whether theoretical frameworks developed for offline companies apply to online businesses, more specifically online retailers. The study is an attempt to bridge this gap by developing and testing a comprehensive brand equity model with selected drivers of brand equity sources and brand equity outcomes.

In keeping with existing marketing theory, brand equity outcome is measured as willingness to pay a price premium and brand purchase intention. Following Aaker's (1991) brand equity framework, four major brand equity sources are identified in this study: brand awareness, brand associations and attitude related to value, trust, and loyalty. Three company web-marketing efforts (drivers) are selected (customer support, functionality and fulfilment) to test for their influence on the sources of brand equity.

A total of 503 observations were collected from consumers who had bought from the online businesses under study. Another 292 customers that had not yet bought products or services from the online retailers under scrutiny were used as the validation sample. The data analysis involves two major phases, one at the aggregate brand level and the other at the individual level.

In the first phase, exploratory factor analysis was conducted to investigate the number of constructs and their reliability. Then a confirmatory factor analysis was used to confirm the previously found constructs. Seven constructs were confirmed, namely awareness, value,

trust, loyalty, brand equity, and only two company web marketing efforts: customer service and functionality. The various items of functionality and fulfilment did not appear to discriminate; therefore they were reduced and mixed under the title of functionality. Both the brand equity measurement model alone and the overall measurement (all seven constructs) model resulted in reasonably good fit according to conventional indices such as RMSEA, CFI, NNFI, and SRMR. In addition, all measures obtained from these models are found to be reliable and valid.

Once confirmatory analysis established the soundness of the measurement models, the next step consisted in testing the nomological validity of the hypothesised brand equity model. A total of 18 hypotheses were tested. Of the four brand equity sources only three have a direct and statistically significant effect on brand equity outcome: awareness, trust, and loyalty. Loyalty is the source of brand equity with the highest direct influence (standardised weight = 0.73), followed well behind by trust (weight = 0.15) and awareness (weight = 0.12). However, the calculation of only direct effects underestimates the importance of the sources of brand equity. If indirect effects are omitted, the relationship between variables of interest may not be fully understood.

When indirect effects are considered, all four sources of equity are statistically significant. Perceived value, an equity source that does not have a direct effect on brand equity, manifests its importance by influencing loyalty. On the other hand, the source trust, with a relatively low direct influence on brand equity, increases its importance by influencing loyalty. The total effect of trust on brand equity is almost the same as the direct effect of loyalty.

Hierarchical effects of the brand equity sources were also tested and confirmed previous theoretical speculations: awareness of the branded website influences significantly, in a statistically sense, perceived value, in turn, value influences loyalty. The perception of trust, as stated before, also influences loyalty. All these relationships are in the expected direction.

The drivers of brand equity sources were also examined. The drivers selected were customer support and a mix of functionality and fulfilment marketing efforts. Results support statistically significant effects of functionality – fulfilment marketing efforts in creating awareness and trust. On the other hand, customer support proves significant in influencing perception of value and trust. Indirect effects also support the importance of customer service and functionality – fulfilment in creating brand equity through their influence of value and loyalty in the case of functionality – fulfilment, and through loyalty only, in the case of customer service.

To conclude this phase, the final best-fitting (calibrating) model derived from the subjects that had bought from the online businesses under study was validated across a sample of subjects that had not bought from these online businesses. Simultaneous model comparison using structural equation (by means of Chi square difference) confirms the tenability of the calibrating model. Furthermore, to test for the probability than an incorrect model will be rejected, power analysis was calculated. The results indicate that the likelihood of rejecting the hypothesis of exact and close fit equals 1.0. Thus, one can rest assured that serious misspecifications would be detected given the sample size.

The second phase of the study involved brand analysis at the individual level. The consumer-based brand equity for each brand was calculated by first multiplying the average value of each brand equity source by the weight of the source of equity. The source of equity was derived from the final structural equation model.

According to the calculations Amazon obtains slightly higher brand equity than eBay and puts it in first place, eBay is in second place, followed by Dell in third. CDNow is the worst performer and obtains consumer-based brand equity below average.

Finally, using the pool data, Pearson correlation between the three sources of brand equity (awareness, trust and loyalty) and brand equity outcome measures (e.g. willingness to pay a

premium price) was conducted to test for the consistency of the respondents' assessments. The resulting correlation obtained was 0.77 indicating that the assessments were highly consistent with brand equity predictions. Finally, individual analysis of the various items comprising the sources of brand equity support the conclusion that eBay is perceived as offering more value (from the price perspective) than the rest of the online businesses, perhaps due to its business model, and a slight superiority in terms of awareness and recognition vis-à-vis Amazon and Dell. However, in terms of loyalty, Amazon has a higher percentage of "bonded" loyal customers (14.1%) compared to eBay (11.8%), Dell (6.7%) and CDNow (4.8%). In terms of the percentage of respondents who would be willing to pay a premium price, eBay is slightly above Amazon with 26.6% and 25.5% respectively. Dell follows with a 19.3 % and finally CDNow with only 4.8 per cent. From the hierarchy of effects perspective, the study shows that eBay, although holding more presence than the rest of the competing online firms, has not been able to leverage it to create higher level of trust, or as much "bonded" loyalty as Amazon. Amazon, on the other hand, has a higher proportion of customers who think the online business is trustworthy by those that are aware of the branded website and is able to achieve the highest level of "bonded" loyalty. Dell, although with a high percentage of consumers that recognise the business and also with a relatively high proportion of customers that trust the online business, still does not have substantially more "bonded" loyal customers. Overall, CDNow, at the time this research was conducted, suffered from low levels of awareness and trust. These undoubtedly had an impact in moving customers to the next levels of truly and "bonded" loyal.

The study offers contributions to both academia and business in several ways. To date there has been speculation that this theoretical framework could apply as well to online businesses as it does to traditional ones; however, few research studies have tested the model explicitly. Secondly, while many studies have identified and ratified the importance of brand

equity dimensions among traditional firms and have hinted at the hierarchy of effects, few have identified these dynamics. Third, this research not only supports earlier studies that argue that trust is central to exchange but, more importantly, it adds support to those who contend that trust may be even more important in a computer-mediated environment. Fourth, given the importance of trust in creating brand equity, this study may also contribute by providing an avenue to explore brand equity outcomes from a relational perspective. While a number of studies have begun to highlight the importance of trust, especially in the relationship marketing paradigm, there is little evidence of this effect in relation to brand equity and more in creating brand equity for online companies. Finally, the rise of the retailer as a brand is one of the most important trends in retailing and this may be more so on the Internet. This research contributes in an understanding of the image of the online business as a brand and its value. Finally, but not least important, this research contributes by building an integrative brand equity measurement model linking drivers to sources of brand equity and these sources to brand equity outcome. Individual brand analysis is performed that identifies the importance of each source and driver of brand equity for decision-making purposes.

CHAPTER 1.0 INTRODUCTION

Corporate attention to branding and product brand equity has increased significantly and steadily since the publication of Aaker's (1991) work on the power of the brands.

Notwithstanding the large number of publications recognising the importance of brand names and the value that accrues as a result of the name, marketing executives of online businesses are still left with little guidance as to how to create brand equity for Internet-based companies.

1.1 Importance of the Research Topic

The power of brands is of utmost importance to all firms. Since its appearance in the 1980s, it has been a priority for both marketing research academics and practitioners. The importance of brand equity emanates from the fact that brands create extra value to companies and improves marketing productivity by providing an understanding of consumer behaviour in relation to brand recognition. Brand equity in general is defined in terms of the marketing effects uniquely attributable to the brand. Keller (2003, p.60) , in particular, defines brand equity as "the differential effect of brand knowledge on consumer response to the marketing of the brand"

The definition implies that brand equity is conceptualised from the perspective of the individual consumer. In other words, brand equity valuation involves consumers' reactions to a particular element of marketing efforts for the brand in comparison to their reactions to the same marketing efforts attributed to a fictitiously named, or unnamed, version of the product or service (Keller, 1993).

Organisations of all types, including privately and publicly held traded companies, could realise the value of branding and devise marketing activities to achieve it. Hoeffler and Keller

(2002) even describe how organisations can benefit by developing and implementing corporate societal marketing programs (CSM). For example, the authors note that CSM can generate various types of feelings and judgments that can be linked to brands; CSM can give the brand credibility and recognition. But the value of the brand does not only remain at the level of judgment, it translates into a monetary value in the form of sales, market share, or premium price. Different products that serve fundamentally the same function sell for a difference in price of up to 20% on the supermarket shelf because there is a belief in the brand or there is an experience with the brand that creates trust (Rooney, 2007). The price premium a brand commands cannot be under-estimated; the effect of a one percent price premium is said to create eight percent operating profits. This is particularly significant when compared to a similar decrease in variable costs that generates only four percent in operating profits, or a similar increase (1 percent) in sales volume that generates only a 2.67% increment in operating profits (Roll, 2006).

On average, brand equity developed largely through marketing, accounts for about 8.5% of the market capitalisation of the 1,000 companies CoreBrand tracks (Neff, 2006), an increase of 3.5% since its creation of the index in 1990. Interbrand reports that brand value constitutes 37% of a company's market capitalisation (Roll, 2006). That is billions and billions of dollars in value for these companies.

A different perspective to assess the importance of the brand can be inferred by the number of brand discussions. In the US 1.5 billion brand impressions per day or 32 million "conversation catalysts" are influencing others on deciding whether to buy a particular brand or another (Hughes, 2007).

1.2 Reasons for Dearth of Online Brand Equity Studies

Among the research deterrents of online business brand equity are perhaps the belief that the key principles of how to develop the brand remains the same on the Internet (Rubinstein and Griffith, 2001) and that the Internet would make brands irrelevant since consumers would have a costless access to lot of information about product characteristics, including prices that tend to convert products into commodities (Chen, 2001, Dussart, 2001). Some specific online business models like "name your price", reverse auction and group buying are said to contribute to brand dilution by focusing the attention on the price only (Dussart, 2001).

A limited amount of research on online businesses and their impact on brand equity suggests that the Internet is not eliminating the power of the brand and that companies operating on the Web need to differentiate even more given the large number of companies online.

A study conducted by Lynch and Ariely (2000) on a simulation of wine purchases on the Internet demonstrated that this is not the case and that consumers pay a premium for wines that are differentiated. Similarly, Smith, Bailey and Brynjolfsson (2000), found that consumers were willing to pay a premium price of 6.8% even for commodity products such as books and CDs when they bought from Amazon.com rather than from CDNow. Furthermore, it is reported that price dispersion for a commodity product like a CD or a book online could be up to 33% thus signalling the importance of the online business brand name (Riquelme, 2001). Consequently, the Internet, although a new and distinctive way of conducting businesses, has not invalidated conventional economic principles and may still affect product brands similarly, online and offline (Koch and Cebula, 2002).

The importance of a brand name online has been confirmed in a pan-European study where 71% of respondents who are ready to buy cars online consider the brand name to be important

(Strauss, Schoder and Gebauer, 2001). Murphy (1992) drew on a census of the world's top brands to understand the value of domain names as a contributor to brand equity. The author concluded that almost all of the world's top brands (96%) had a live .com site at an obvious version of their name. In a later study of the world's top 75 brands, Murphy, Raffa and Mizerski (2003) concluded that most companies register their brand name both globally with the .com suffix and locally by using the country extension such as .au or .fr (Australia and France respectively). In addition, they found these top companies had less presence in .net and .org global domains as well as in typographical variations of their name. Many of these names do not necessarily reflect what companies do on the Internet, contrary to the old belief that names should say something about what a company does (Billings, 2001). In fact, names like Yahoo! and Amazon, considered "open-ended" names, have greater opportunity to expand into new markets than eToys or Drugstore.com (Regan, 2001).

1.3 Summary of Main Finding from Previous Research

Few researchers have attempted to develop theoretical frameworks to measure the impact of brand for online companies, let alone developed measurement scales and empirical tests of the same. Among the exemptions are Christodoulides et al. (2006), Page and Lepkowska-White (2002), Kim, Sharma and Setzekorn (2002) and Na and Marshall (2005).

Page and Lepkowska-White (2002) proposed a theoretical framework to measure brand equity for online companies which they called web equity. The framework, based on Keller's (1993) offline brand equity model, therefore assumes that brand equity resides in two dimensions, namely image and awareness of the brand, and propose loyalty as an outcome of web equity. Their web equity model seems to imply, in the use of the dimensions awareness and image, that traditional dimensions of brand equity can apply to gauge online businesses' brand equity (or to use their terminology, web equity) and that the main difference is in the

drivers of the sources of equity. However, in using loyalty as an outcome of brand equity, it is not clear if the model explains loyalty rather than brand equity. Loyalty has been considered a source of equity rather than an outcome (Aaker, 1996a).

Similarly to the assumption of Page and Lepkowska-White's (2002) model, Kim, Sharma and Setzekorn (2002) proposed to apply Keller's model to measure online brand equity by considering awareness and brand knowledge as the dimensions. The authors seem to imply that the difference between online and offline brand equity resides mainly on the builders of the sources of brand equity.

Perhaps one of the first studies to empirically determine the factors that drive brand equity in the Internet space is one conducted by Ilfeld and Winer (2002). Although initially the main thrust of their study was to understand and model how a consumer goes through the hierarchical stages of cognition, affection, and conation, they conceptualised brand equity as preference for the website. Brand equity was hypothesised to be driven by loyalty, quality, advertising, website visits, and whether the site was publicly traded. The data was analysed by using three-stage least squares (3SLS) and the results show that an individual's Internet browsing behaviour is best captured by a process involving awareness, then action (website visit) and finally effect (brand equity or preference). The most significant factor in building brand equity was website visits. Marketing activities such as advertising, publicity, and partnerships only produced an increase in brand equity through awareness and website visits. This study provided useful insight about the value of marketing efforts, however these may be controversial in light of the unconventional measure of brand equity (preference) and also the mix of drivers and services of brand equity.

Another empirical attempt to measure the power of an online brand business was conducted by Na and Marshall (2005). The authors used seventeen independent measures (all single items) and web visit and preference as dependent variables to derive what they call a

"cyber-brand power". Respondents from Korea and Singapore assessed several portal names like Yahoo!, Altavista, Lycos, AOL, and Infoseek. Three factors accounted for 60 % of the variance of the data-predicted web visit and brand preference. They were named experiential (with items like enjoyment, sociability, character, layout, user friendly), informational (defined in part by globalisation, web interface, richness of information), and familiarity. The Korean data was explained by all three factors; however, the Singaporean data was only explained by the first two.

The cyber-brand power model developed by Na and Marshall (2005) assumes the factors experiential, informational and familiarity constitute brand equity as they represent image, which is a source of brand equity. However there is no major justification to relate these factors to brand equity. Furthermore, the regression model is not the most appropriate model to develop or test theory, although it may be for predictive purposes.

Much of the success of regression (linear) models comes from the fact that the tasks in which they have been used involve cues that are conditionally monotonic with some criteria (Yntema and Torgerson, 1961). Under this condition linear models are very robust

Secondly, although for predictive purposes a simple linear model will suffice, non-linear processes play an increasing role in our understanding of judgment despite their limited ability to out-predict linear models (Slovic et al., 1977).

An alternative model of brand equity for retail Internet companies called Online Retail/ Service (ORS) has been proposed by Christodoulides et al. (2006). The Online Retail/Service model is the only study to date that developed measurement scales and empirically tested them to measure online retailing brand equity.

The ORS brand equity model is based on five dimensions: emotional connection, online experience, responsive service nature, trust and fulfilment. The authors define online (ORS) brand equity as "a relational type of intangible asset that is co-created through the interaction

between consumers and the e-tail brand" (Christodoulides et al. 2006, p. 803). This conceptualisation of retail brand equity is at odds with the widely accepted view that "a retailer's brand equity is exhibited in consumers responding more favourably to its marketing actions than they do to competing retailers" (Ailawadi and Keller, 2004, p. 332), or the alternative highly consensual definition of brand equity as the marketing outcome that accrues to a branded product compared with those that would accrue to an unbranded alternative (Keller, 2003), or a premium price consumers are willing to pay for a branded product versus a less known brand or "no brand name" (Ailawadi, Lehmann and Neslin, 2003). Since their definition of retailing equity differs from the more consensual one, it is doubtful that the model is actually measuring online retailing equity. There is no explanation as to how the discovered factors or observable variables relate to brand equity apart from suggesting that equity is based on a chunk of information. In addition this model does not provide a test of nomological validity that could relate the definition to other constructs expected to be related to brand equity. Moreover, there is no test of effects of marketing efforts on the formation of brand equity and its dimensions.

Considering the previous summary literature review in this introduction, it remains unclear whether the existing consumer-based brand equity frameworks mainly developed on product branding are applicable to online businesses for several reasons. First, given that brand equity denotes the differences in customer responses to marketing activities, a study that relates some of the company marketing efforts on brand equity and its dimensions is needed. Secondly, given the unorthodox outcome measure of brand equity in the ORS study, it is contentious if the model actually explains the main construct under study. Thirdly, the application of multiple regressions as a statistical technique to explain online brand equity is questionable. Hence, the present research is more than justified in addressing these issues.

The contention in this thesis is that traditional consumer-based brand equity measures and concepts for online companies differ in degrees, not kind, from a packaged-goods brand equity point of view. The degrees of difference may for some be considerable but for others it may not. One of the differences is that online businesses are mainly services and in such type of business "the source of the experience is the locus of brand formation" (Berry, 2000, p. 130). Secondly, in a computer-mediated environment the company's website *is* the experience (Dayal, Landersberg and Zeisser, 2000; Taylor 2003), which is different from the experience a consumer has in offline business environment where they can interact with people rather than technology. Third, it is also argued that brand equity would have some specific and differentiated antecedents for online retail brands for example related to the website design (security assurance, accessibility, navigationally) and wider product assortment among other features (Page and Lepkowska-White 2002). Fourth, given that online businesses are mainly intangible and that it is difficult for a consumer to judge them from tangible cues, an association with trust must be created. Trust plays a critical role in this type of business and much more than with offline businesses where consumers can interact with physical tangible features to infer trust (Berry 2000). Finally, if we conceive the online businesses as retailers, "retailer brands are sufficiently different from product brands that the actual application of the branding principles can vary" (Ailawady and Keller, 2004, p. 332). All together, it is possible to conceive that, on the internet, it is not only more difficult to create brand equity but also there are differences to create it. These points are developed further in the literature reviewed.

1.4 Research Objectives and Contribution

To recapitulate, the first attempts to measure brand equity for online companies have been scarce and the proposed frameworks rarely tested. Consequently, further research is needed to

understand the applicability of the consumer-based brand equity framework developed from packaged-branded products.

The main objective of this research study is to empirically test if a traditional brand equity model is applicable to online companies and to ascertain its nomological validity. Some specific research questions guiding this research are: (1) Is a traditional model of brand equity applicable to predict brand equity for online businesses? (2) Which brand equity sources have stronger relatively effect on brand equity? (3) How do the brand equity sources interact among each other to produce an indirect effect on brand equity? and (4) How do selected web-marketing efforts (customer service, web functionality, and fulfilment) contribute to create brand equity directly and indirectly through the brand equity sources?

The contributions of this research are several. The first is in testing a traditional theory of brand equity for online companies. To date there has been speculation that this theoretical framework could apply as well to online businesses as it does to traditional ones, however few research studies have tested the model explicitly.

Secondly, while many studies have identified and ratified the importance of brand equity dimensions among traditional firms, and have hinted at the hierarchy of effects, few have identified these dynamics. Third, this research not only supports earlier studies that argue that trust is central to exchange but, more importantly, it adds support to those who contend that trust may be even more important in a computer-mediated environment.
Fourth, given the importance of trust in creating brand equity, the study may also contribute in providing an avenue to explore brand equity outcomes from a relational perspective.

While a number of studies have begun to highlight the importance of trust, especially in the relationship marketing paradigm, there is little evidence of this effect in relation to brand equity and more so in creating brand equity for online companies. Finally, the rise of the retailer as a brand is one of the most important trends in retailing (Grewal et al., 2004), and

this may be more so on the Internet. This research contributes in an understanding of the image of the online business as a brand and its value.

1.5 Scope of the Research Study

This research is a cross-sectional study that covers the period of 2003 when the data was collected. In terms of geographical area the sample selected comes from Australia, and is comprised of a great majority of young people, male and female that were studying an undergraduate or post graduate degree at an Australian university.

The bibliography collected in this study contains early articles on consumer-based product and retailing brand equity up to 2007. Only literature that was written in English was accessed and included in this study.

Various perspectives have been developed to study brand equity, some of these are proprietary others are public, however three approaches are often cited namely a financial perspective, a consumer-based approach and finally a combination of the two. The approach adopted in this thesis is the consumer-based brand equity. It spans an aggregated and individual level of analysis.

The remainder of this thesis is divided as follows:

Chapter Two presents a review of the (traditional) product brand equity literature and the most relevant theoretical and empirical studies of consumer-based brand equity for online companies are highlighted. The review of the traditional literature (i.e. for offline companies) serves among other purposes: to establish the definitions entertained by researchers and to identify the dimensions, the inter-relationships among them, and outcome measures of brand equity in use. A critical analysis of online brand equity studies is also conducted in this Chapter.

Chapter Three presents the theoretical underpinnings of the proposed consumer-based brand equity model for online businesses to be assessed. It develops and justifies the hypothetical structural relationships, (a) among the various sources of brand equity, (b) between sources and brand equity outcomes, and (c) between selective brand equity antecedents (company marketing efforts) and brand equity sources.

Chapter Four describes the process to arrive at the sources and antecedents of brand equity, and the scale items for the measurement and structural model. This section is followed by the selection of the stimuli (online businesses) to be assessed, characteristics of the sample used, the survey instrument to collect the data and the statistical techniques applied to process the data.

Chapter Five presents the main results of the study only. Given the large amount of results presented in the chapter, it does not discuss any of the findings. It starts by describing the pilot study findings and continues with a presentation of statistical tests to prove the validity and reliability of both the measurement and structural models. A summary of the hypothesised relations and the results are presented in tabular form.

Chapter Six recapitulates on the main objectives of the study and embarks on analysis and discussions of the findings reported in the previous chapter. The analysis and discussion are conducted at the aggregated-level and individual brand level. The chapter continues with the analysis of the effect of web marketing efforts on brand equity sources. Next, it highlights managerial implications and addresses specific brand management issues.

Chapter Seven describes overall conclusions of the study and ends with a discussion of possible limitations of the research study.

CHAPTER 2.0 LITERATURE REVIEW

This chapter reviews existing research and theories associated with brand equity. First, it presents an historical background including concepts of brand and brand equity. Secondly, it discusses different conceptual frameworks of brand equity. Third, several measurements of brand equity commonly described for offline companies are presented. The chapter concludes with a review of the emerging literature of brand equity for online companies.

Historically, brand equity as a marketing tool is about 120 years old (Murphy, Raffa and Mizerski, 2003). The concept of brand equity has been largely studied and in general refers to the value added to a product given by its brand name (Farquhar, 1989). Notwithstanding its importance, this concept has rarely been applied to assess online companies.

Research interest in brand equity and branding has been an important topic of research in the marketing area judged by the prolific number of articles published throughout the 80s and 90s and continues to be strong with new insights (Winters, 1991, Aaker, 1991, Leuthesser, 1988, Pitta and Katsanis, 1995, Keller, 1993, Alden, Steenkamp and Batra, 1999, Ambler, 1992) (Mayer, Davis and Schoorman, 1995, Ambler, 1992, Low and Lamb, 2000, Mackay Maio, 2001).

Its importance arises because companies are well aware that capitalising on one of the most important assets they own, the brand, may help them to achieve their longer term growth objectives, not only more quickly but also in a more profitable way (Davis, 2000).

Much of the interest in brand equity was due to the mergers and acquisitions boom during the 80s where firms needed to know the value of their brands (Leone et al., 2006). This was basically due to the relationship that existed between the price paid for the firm and the value of their brands. Since then it became apparent, that when merging firms with popular brand names, the value of a brand was relevant to both the acquired and the acquiring firm (Winters,

1991). Later, some evidence was found to support a correlation between stock prices and brand equity which created a stronger interest among investors (Aaker and Jacobson, 1994).

More recently, Madden, Fehle and Fournier (2006) applied the Fama-French method, a common regression method in finance, to study the relationship between brand equity and firm performance. The method resulted in the creation of the World's Most Valued Brands portfolio (WMVB) comprising a group of 111 brands. The stock returns of these brands were observed monthly for four years and they appeared at least once in the Interbrand report. To assess whether branding creates shareholder value, the study compares the monthly returns of the branded WMVB portfolio with two benchmark portfolios: A reduced-market (RM) that includes all firms in the Centre for Research in Security Prices (CRSP) database except those in the WMVB portfolio and full-market (FM) portfolio that contains all firms in the CRSP database without exception. The CRSP database comprises of all stocks traded on major US stock exchanges, such as The New York Stock Exchange, the American Stock Exchange and NASDAQ. The returns of the WMVB portfolio were adjusted for risks and compared with the performance of the benchmark portfolios.

The firms in the WMVB and benchmark portfolios were brand value-weighted and re-balanced. The results showed that the WMVB portfolio significantly outperformed both benchmarks portfolios in terms of average monthly returns and also with less risk. Thus firms with strong brands create value for their shareholders by producing returns that are financially greater than a relevant market benchmark. This result offers grounds for marketers when justifying long-term investments while building brand equity. It also justifies the need to focus in value creation builders.

The previous empirical evidence provides a preview of the importance of creating brand equity. Several reasons have been advanced and tested to prove the importance of brand equity, not the least that companies need to know the value of their intangible assets like the

brand. To borrow from the just illustrated evidence, the importance of brand equity is reflected in higher stock returns. Companies with high stock returns are also known to enjoy larger margins (Aaker and Jacobson, 1994), more elastic (inelastic) prices and greater trade cooperation and support (Leone et al., 2006). Brand equity also empowers companies to negotiate lower costs of distribution, increased marketing communication effectiveness and expanded growth opportunities from brand extensions and licenses (Yoo and Donthu, 2001).

Other arguments relate to the escalating cost of introducing a new brand on the market, which more than a decade ago was estimated as much as US $100 million (Ourusoff, 1992, Ourusoff, 1993). Brand equity reduces the marketing costs in promoting the brand and attracting newcomers (Aaker, 1991). Since the cost of advertising and distribution of new products is increasing, the risk of obtaining success is slim; building brand equity to extend it to new products, on the other hand, it is a sure winner (Ourusoff, 1993, Keller, 2003).

Companies that enjoy high levels of brand equity are more likely to create higher levels of consumer preferences and purchase intentions than companies with less brand equity (Cobb-Walgren, Ruble and Donthu, 1995). This is because brand equity influences perceptions of product performance (Aaker, 1996b, Assael, 1998).

As a result of high quality perceptions, brands, and therefore companies, can be differentiated from others in a noisy, competitive and changing market (Aaker, 1996a). Brand differentiation is formed by loyal consumers who perceive some uniqueness about the brand they use that no alternative can provide (Jacoby and Chestnut, 1978). Loyal consumers, in turn, bring profits to the company because they may be willing to pay a price premium for their favourite brand (Aaker, 1996b). Price premium and market share have been constantly linked to brand equity as two outcomes, which in turn drive firm profitability (Chaudhuri and Holbrook, 2001, Aaker, 1996b). Brand loyalty leads to greater market share when the same

brand is repeatedly purchased by loyal consumers, irrespective of situational constraints (Assael, 1998).

Finally, brand equity also creates strong competitive barriers for a company, that leads to less vulnerability to competitive marketing actions and crises (Assael, 1998, Aaker, 1996b).

2.1 Brand Definition

Brand definitions are quite diverse and have been approached from the consumer's point of view, the company's perspective, or in terms of the purpose they serve.

A definition of brand suggested by the American Marketing Association (AMA) (1960, p. 404) refers to "a name, term, sign, or a combination of them, intended to identify the good of services of one seller or group of sellers and to differentiate them from those of competitors". Similarly, Kotler (2000, p. 396) defines a brand as "the name, associated with one or more items in the product line that is used to identify the source of character of the item(s)". AMA's definition has been severely criticised in the literature because, although it is a company-orientated term, it concentrates basically on the product and its visual features (Crainer, 1995, Arnold, 1992).

For a long time brands were only part of the physical product and most of the definitions for decades referred to them as a term, a name or a symbol (Urde, 1999).
Today brands are more than that; a brand represents a set of promises, it implies trust, consistency, and a defined set of expectations (Davis, 2000). A set of promises comprises a bundle of attributes that consumers buy and from which they get satisfaction.

The attributes that make up a brand may be real or illusory, rational or emotional, tangible or invisible (Ambler, 1992). While a consumer generally does not have a relationship with a product or a service, a consumer can have a relationship with a brand and its attributes (Webster, 2000). The relationship with the brand and its attributes are biased by the

customers' perceptions which are highly subjective (Wood, 2000) and these are said to be key determinant of long-term business, consumer relationships (Fournier, 1998). Indeed, perceptions of the brand, accurate or not, are the basis of the consumer's decision-making process (Bowker, 2003).

A brand that is constantly perceived as representing high standards of quality and integrity is a strong and valuable brand. Therefore, it is not difficult to understand why authors believe that brand is nothing more or less than the sum of all the mental connections people have around in their minds (Brown, 1992) or what we carry around in our heads about the brand (Ambler et al., 2002). The strongest brands in the world own a positioning in the consumers' mind that is unique to that brand and can universally be articulated by almost everyone (Uncles, Cocks and Macrae, 1995). For example, when you think of the brand FedEx the image of "guaranteed delivery" comes to mind. When you think of the brand 3M, "innovation" comes to mind and when you think of Volvo "guaranteed safety" comes to mind (Davis, 2000, Aaker, 1996a).

From these arguments, it is possible to understand why building strong brand perceptions together with building brand equity are a top priority for many firms today.

2.2 Brand Equity

The actual term brand equity began to be used ubiquitously by the US advertising practitioners in the early 1980s (Barwise, 1993) and was then taken up by the academics such as Leuthesser (1988), Farquhar (1989), Aaker (1991), Ambler (1992) and Keller (1993) to name a few.

The literature suggests there have been two primary perspectives related to brand equity, one based on the financial outcomes for the firm and the other on consumer-based perceptions

of firm performance. The following section describes how the concept of brand equity has evolved through time and shows different perspectives of its conceptualisation.

Brand equity has been defined by the American Marketing Science Institute as the set of associations and behaviour on the part of the brand's consumer, channel members and parent corporation that permits the brand to earn greater volume or greater margins than it could without the brand name (Leuthesser, 1988). A year later, Farquhar (1989, p. 24) defined brand equity as "the 'added value' to the firm, the trade, or the consumer with which a given brand endows a product".

The 'added-value' idea has been linked to a firm's success because once it is created, will bring greater profits and less costs to the firm than without this brand value (Myers, 2003, Na, Marshal and Keller, 1999, Aaker, 1996a, Agarwal and Rao, 1997, Keller, 2003). The added-value concept has nowadays covered a wider spectrum as it is associated to consumers' experiences, feelings, and what they learn about a brand over time. This term is what we know as consumer-based brand equity and it is the 'added value' endowed to a product in the thoughts, words and actions of consumers (Leone et al., 2006).

In terms of consumer-based brand equity, alternative view points are provided by Aaker (1991) and Keller (1993). Aaker (1991, p. 39) conceptualises brand equity as "a set of brand assets and liabilities linked to a brand, its name, and symbol that add to or subtract from the value provided by a product or service to a firm or to that firm's customers, or both". This concept appears broad; however, Aaker later specifies what he refers to as assets (and liabilities). These are product centric concepts like awareness, perceived quality, brand associations, loyalty and intangible assets like patents, R&D and channel availability.

Keller (2003, p. 60) conceptualises brand equity in terms of consumer knowledge about the brand. He defines it as "the differential effect that brand knowledge has on consumer response to the marketing efforts of that brand". This term only assumes meaning when the brand

interacts with the consumer (Taylor, Hunter and , Lindberg, 2007). An alternative, simple but insightful, definition is provided by Ambler (1992, p . 87) who states that brand equity is "what we carry around in our heads about the brand".

Keller's (2003) brand equity conceptualisation has been adopted by others who have extended the concept to customer equity which concentrates in customer's profitability (Taylor et al., 2007). Customer equity is conceived as the sum of lifetime values of all consumers (Rust et al., 2004). While the term consumer-based brand equity concentrates on how consumers see the characteristics of the firm's offering (product centric). A customer or consumer equity perspective focuses on the consumers' profitability, but that profitability is often driven by what consumers think about the brand (customer centric) (Taylor, Hunter, Lindberg, 2007). Both terms are different; however they share common bases: the consumers' feelings, thoughts and experiences.

The previous definitions are based on consumers' perceptions; however, others suggest a financially-based definition or are product-policy centred. From the product policy perspective, brand equity is the outcome of long-term investments designed to build a sustainable, differential advantage relative to competitors (Doyle, 1994). From a financial perspective, brand equity is linked to the sales and profit impact enjoyed as a result of prior years' marketing efforts versus a comparable new brand (Brodsky, 1991). Specifically, brand equity from the financial point of view is the incremental cash flows which accrue to branded products over and above the cash flows which would result from the sale of unbranded products (Simon and Sullivan, 1993). Incremental cash flows are taken from the value consumers place on branded products and on cost savings brand equity generates through competitive advantages.

In the same line, brand equity has been described as the financial outcome of management ability to leverage brand strength via tactical and strategic actions in providing superior

current and future profits and lower risks (Srivastava and Shocker, 1991). Accordingly, brand equity is the measurable financial value in transactions that accrues to a product or a service from successful programs and activities (Smith, 1991).

Although the brand equity concept is a well-researched endeavour, not every researcher ascribes the same importance.

Ehrenberg, Goodhardt and Barwise (1990) in their theory Double Jeopardy (DJ), argue that there is no need for anything called brand equity and that all marketers should concentrate on is market share. According to Ehrengberg and colleagues, brand equity is not so much wrong as unnecessary since factors such as repeat buying are directly related to market share (Mitchell, 1992). DJ will arise whenever competitive items differ in their popularity as a small brand attracts less loyalty among their buyers than large brands would do among theirs (Ehrenberg Goodhardt and Barwise, 1990).

The premises behind the theory are that less popular brands tend to suffer twice, once because they tend to attract fewer buyers than a larger brand does and secondly their consumers' purchases are fewer than the proportion of a popular brand (Ehrenberg Goodhardt and Barwise, 1990). Hence the notion that certain brands have greater potential than other brands in terms of equity, or value, or growth potential is misleading and market share is all that managers should try to increase (Mitchell, 1992).

Chaudhuri (1995) proposes a model that attempts to reconcile the theories of brand equity and double jeopardy. He suggested that both theories are correct and that consumer attitudes and repeat buying are both directly (double jeopardy effect) and indirectly (brand equity process) related to brand outcomes (market share etc.), with the direct process occurring through the concept of brand loyalty.

Given the integration between both theories, brand loyalty is a separate concept from either consumer attitudes or repeat buying and fulfils a crucial intervening function between

consumer-based outcomes and market-based outcomes for a brand such as market share and price premium (Chaudhuri, 1995).

Despite the discrepancies between brand equity and double jeopardy theories and the various definitions, scholars and professionals agree on a couple of issues surrounding brand equity. One is the concept of brand equity as the incremental utility or value of a product due to the brand name (Srivastava and Shocker, 1991). The second is that the power of the brand resides on two premises: one is consumers' perception of a brand and the other is the experience of the brand gained through time (Leone et al., 2006, Farquhar, 1989).

For all these, most of the published research in brand equity deals either with attempting to value brand equity or with trying to understand more about the structure and composition of the construct for marketing purposes (Farquhar, 1989, Na, Marshall and Keller, 1999). The following sections describe different brand equity approaches and measures reported in the literature.

2.3 Brand Equity Approaches

The relevance of brand equity brought a real challenge for scholars and practitioners: the need to develop measures of brand equity (Washburn and Plank, 2002). Three research approaches to measure brand equity have been proposed. The first, focuses on the monetary or financial value of the brand in the marketplace (Morris, 1996). The second refers to a multidimensional concept that involves the value added to a product or service by consumers' associations and perceptions of a brand name, normally conceptualised as consumer-based brand equity (Keller, 1993, Yang and Jun, 2002, Washburn and Plank, 2002, Aaker, 1991). The third approach is a combination of the financial (or market-based) and consumer-based approaches. These approaches are developed below.

2.3.1 Financial Approach to Brand Equity

Measuring brand equity from the financial point of view is normally referred to as brand valuation or brand value and concentrates primarily on the value of the brand assets (Feldwick, 1996). In this case the brand represents an asset and as such is included in the balance sheet for accounting purposes (Hong-Bumm, Woo and Jeong, 2003).

The most common financial approach focuses on movement in stock prices to capture the dynamic nature of brand equity, under the assumption that the stock market reflects future prospects for brands by adjusting the price of firms (Simon and Sullivan, 1993). This financial approach is useful when the potential value of a firm's brand names is in question by another company for merger, acquisitions and divestiture purposes (Keller, 1993).

Simon and Sullivan (1993) separate the value of a firm's securities into tangible and intangible assets, and then splits brand equity from the other intangible assets. This technique uses the financial market value of the firm as a basis for valuing brand equity based on two different approaches, the macro and micro. The macro approach is based on four firm-level estimates of brand equity: 1) current and past advertising expenditures, 2) age of the brand, 3) order of entry and 4) current/past advertising share. These estimates are of interest as they allow a firm to compare the effectiveness of its portfolio of marketing policies to others in the industry. Unfortunately, this method does not measure brand equity at the individual level.

The micro approach, measures the response of brand equity to major marketing decisions made by the firm or competitors. The major advantage of this approach is that it uses standardised market-based measures, which allows comparisons over time and across companies. Hence, it results in an estimate based on the firm's future cash flows. The sensitivity of the approach can be questioned since it depends on the amount of information required to cause an impact on brand equity. If the stock market data is too noisy the system cannot detect the impact of small events on brand equity (Simon and Sullivan, 1993).

Notwithstanding, this method is a direct way to calculate brand equity and may seem more objective because it uses market-related data. However, the approach suffers some limitations.

Although Simon and Sullivan (1993) estimated a firm's brand equity based on its financial market value, their method relies on data aggregated to the firm. Since many organisations offer a number of brands across a variety of markets, the financial approach is not very useful for a brand manager who manages an individual brand in a multi-brand firm operating in multiple product categories (Park and Srinivasan, 1994). Unlike the financial-based measures, some marketers argue that consumer-based measures allow the assessment of equity at the brand level and provide incentives for investments in brand building (Aaker, 1996a).

Another drawback is that financial information is difficult to obtain whereas consumers' information is accessible and easy to obtain from marketing research. Consumers' information is made readily available to marketing managers because they are constantly dealing with them. However, most customer-based approaches require time consuming and troublesome consumer surveys.

In terms of interpretability, marketing managers find that consumer information is easy to understand whereas financial information, necessary for financial evaluation procedures, is difficult and is aggregated. Hence, marketing managers are interested to learn different estimators that eventually would allow them to predict consumer-based brand equity, which it is the topic of the next section.

2.3.2 Customer-based Approach to Brand Equity

Brand equity in the consumer-based approach centred on the knowledge consumers have about the brand. This knowledge is reflected in awareness of the brand and associations, or images linked to the brand (Aaker, 1991, Keller, 1993). The power of the brand, then, is a

result of the knowledge and opinions that consumers have in their mind about the experiences with the brand and the marketing programs linked to the brand (Keller, 2003). The right consumers' experiences keep brands meaningful and relevant to them and subsequently develop into positive consumers' perception and behaviours of the brand that would allow it to enjoy a sustainable and a competitive advantage (Hong-Bumm, Woo and Jeong, 2003).

Marketers and researchers concentrate largely in the customer-based approaches because, unlike the financial-firm approaches that offer little usable information for brand managers, the consumer-based approach provides means of understanding consumer's needs and wants to devise future brand strategies to satisfy those needs (Keller, 2003). Please see Table 2.1, in Appendix 1 for an illustration of a selected offline literature and a more comprehensive online brand equity review.

Two of the most cited consumer-based frameworks are those suggested by Aaker (1991) and Keller (1993). Although they conceptualised brand equity differently their approach to brand equity relied on consumers' brand associations. These two methods are described next.

Aaker's (1991) framework of brand equity comprises five sources. Four sources are based on customer perceptions of the brand: brand awareness, perceived brand quality, brand associations/differentiation and brand loyalty. The fifth source is market related rather than customer-based. It incorporates the market value of proprietary brand assets such as patents and R&D investments. The benefits and value that these sources offer to the firm help to build up brand equity (Aaker, 1993), therefore they are better conceptualised as sources of brand equity.

Aaker (1996a) has later measured the five sources of brand equity into a set of variables called The Brand Equity Ten.

The first source of brand equity is brand awareness, representing the ability for a buyer to recognise or recall that a brand is a member of a certain product category. In other words,

brand awareness is the salience of the brand in the consumers' mind and the salience level relates to the brand and categories. The levels of brand awareness consist of recognition, recall (what comes to mind when the brand's name is recalled for the first time), brand dominance, brand knowledge and brand opinion. Consumers' perceptions and attitudes towards a brand are said to be driven by the level of brand awareness and thus it plays an important role in brand choice and loyalty (Aaker, 1996a, Keller, 1993).

The second source, perceived quality, is "the consumer's judgments about a product's overall excellence or superiority" (Zeithaml, 1988). These subjective evaluations of product quality are made by the consumers, not the managers or experts, after experiencing the brand (Yoo and Donthu, 2001). Perceived quality is an association that is usually related to price premium, price elasticity, brand usage and stock return and it can be measured across product classes (Aaker, 1991). In certain circumstances when, perceived quality is irrelevant or lacks sensitivity to the dynamics of the market, it is replaced by a more specific source named leadership/popularity (Aaker, 1996a). Leadership is tri-dimensional as it is governed by sales leadership, popularity and innovation (Aaker, 1996b). Interesting to note is that Aaker, although acknowledging that this source is also a type of consumer association, singled it out because of its importance on three grounds.

First, perceived quality is an association that is usually central to brand equity because it can be the motivation for programs designed to enhance brand equity (Aaker, 1991). Second, empirical research on 3,000 businesses has shown that perceived quality is the single most important contributor to return on investment among the variables measured in the Equitrend study (Jacobson and Aaker, 1987). Third, when asked to identify the sustainable competitive advantage of their firms, business managers' top-rated asset of the firm was perceived quality (Aaker, 1989). Therefore, perceived quality, Aaker argues, is a sufficiently important and accepted strategic consideration to merit including it as a separate source of brand equity.

The third source of brand equity, brand associations/differentiation, embraces a real concern for marketers: how to differentiate the brand in a crowded and competitive environment. If consumers perceive a brand as being different to the rest, it is because they perceive the value of a product conferred by the brand value proposition, which usually comprises of functional, emotional and or symbolic benefits (Aaker and Joachimsthaler, 2000). A brand that generates value has personality and enjoys organisational associations can differentiate itself from others and thus will stand strong against competitor brands (Aaker and Jacobson, 1997). Accordingly, brand associations/differentiation of brand equity includes image dimensions that are unique to a product or to a brand and they are brand value, brand personality and organisational associations (Aaker, 1996b).

The fourth and major component of the brand equity framework is loyalty. Aaker, (1991, p. 39) defined brand loyalty as the attachment that a customer has to a brand. Loyal consumers may use more of their preferred brand transforming this into financial performance and a larger market share (Assael, 1998, Clarke, 2001). Specifically, loyal consumers may be willing to pay more for a branded product because they perceive some unique value in the brand than no alternative can provide (Jacoby and Chestnut, 1978). Price premium and customer satisfaction have been closely related to brand loyalty (Aaker, 1991). Premium price is an indicator of brand loyalty and refers to the amount a customer will pay for the brand in comparison with another brand offering similar benefits (Aaker, 1996b). Customer satisfaction is a direct source of brand equity and it is normally linked to the cumulative result of the users experience and in turn improved perceptions of product performance (Aaker, 1996b).

A particular important concept for building brand equity, in Aaker's view, is brand identity. Aaker (1996) defines brand identity as a unique set of brand associations that the brand strategist aspires to create or maintain. These brand associations represent what the

brand stands for and imply a promise to the customer from the organisation members. Brand identity helps to establish a relationship between the brand and the customer by generating a value proposition involving functional, emotional, or self-expressive benefits (Aaker and Joachimsthaler, 2000).

The fifth source of brand equity is related to market behaviour rather than consumer perceptions. This source uses brand performance measures such as market share (and/or sales), market price and distribution coverage as indicators (Aaker, 1991). The advantage of these measures, compared with the other four brand equity sources, resides in their straightforward application. They do not require a time consuming and troublesome survey to obtain useful information but do use instead readily available financial information (Aaker, 1996a). In the case of market share, for example, when a brand has a strong position in the consumer's mind this is directly reflected on the market share (Aaker, 1996b). Unfortunately market share is sensitive to short-term strategies such as reduced prices or price promotions that often undermine brand equity (Aaker, 1996a). To overcome this ambivalence it is important to measure the relative market price at which the brand is being sold (Aaker, 1996a). The relative market price could be defined as the average price at which the brand was sold during the month divided by the average price at which all brands in that product class were sold (Aaker, 1996b). Market share (and/or sales) is also subjected to distribution coverage. In other words sales are directly affected when the brand wins or looses a market or expands into another geographic region (Aaker, 1996b). A measure of distribution coverage is thus a second logical companion to market share. Distribution coverage can be measured by the percentage of stores carrying the brand or the percentage of people who have access to it (Aaker, 1996b).

Aaker's four sources of brand equity have been widely accepted and used by many researchers (Keller, 1993, Yoo and Donthu, 2001, Na and Marshall, 2005). Although his

framework offers real measures to academics and practitioners, Aaker (1991, 1996a) agrees that a shorter version will be more convenient to effectively evaluate and monitor brand equity across products and markets. He also suggests that the measures are susceptible to change according to the brand context and task.

Keller (1993) offers an alternative brand equity framework to Aaker's; he coined it as consumer-based brand equity (CBBE) and aims to evaluate the differential effect of brand knowledge on consumer response to the marketing of the brand.

There are two basic approaches involved in Keller's CBBE framework, the direct and indirect approaches (Keller, 1993). The direct approach assesses the actual impact of brand knowledge on customers response to different elements of the firm's marketing programs (Keller, 2003). Keller (1993) recommends using both the direct and indirect approaches as they complement each other. The indirect approach deals with the identification of possible sources of brand equity by tracking customers' brand knowledge structures (Keller, 1993, Park and Srinivasan, 1994). Brand knowledge structures are normally conceptualised as the consumers' stored memory of brand information and concepts linked with a variety of associations (Keller, 2003). These structures are the central point to creating brand equity because they constitute the differential effect that drives brand equity (Keller, 2003).

Brand knowledge is composed of brand awareness and brand image and they are susceptible to change through time. Brand awareness relates to the strength of the brand node or trace in memory as reflected by customers' ability to recall or recognise the brand under different conditions (Keller, 2003). It has been assessed through a variety of aided and unaided memory measures that apply to test brand recall and recognition.

Brand image is described as customers' perceptions of preferences for a brand, as reflected by the various types of brand associations held in customers' memory. Both brand awareness

and brand image are driven by marketing programs that should aim at creating strong, favourable, and unique associations to the brand in memory.

Different steps representing a pyramid have been suggested by Keller (2003) to build brand equity. The starting point or base of the pyramid is brand salience. The next building block is divided into two: brand performance and brand imagery. Above these building blocks are consumer judgments and feelings. Finally, at the top of the pyramid is a brand resonance hat that reflects intense, active loyalty. The pyramid suggests that consumer-based brand equity occurs when the consumer is familiar with the brand and holds some strong, favourable and unique brand associations in the memory that resonate with consumers. Therefore, a brand has positive consumer-based brand equity when consumers react positively to a product and the way it is marketed because consumers identify the brand.

Empirical evidence of the relationship between consumer-based sources of brand equity and market-based outcomes has been reported throughout the literature confirming the validity of the conceptual framework.

Silverman, Sprott and Pascal (1999) conducted two studies using beverages and over the counter medicine as product brands. The first one aimed at determining the correlation between market outcomes and brand awareness. The three selected indicators of brand awareness are brand familiarity (i.e. brand recognition), usage (i.e. heard and used the product), and favourability (good-bad, like-dislike). Two market-based measures were used: sales and brand valuation figures for 92 brands presented by Financial World brand ratings.

The results from this first study concluded that the consumer measures most closely associated to market-outcomes of brand equity are favourability and usage. On average, Pearson correlation between usage and sales and usage and brand value are positive, statistically significant, but small (0.25) and (0.26) respectively. Average Pearson correlation for favourability and sales and favourability and brand valuation are slightly higher, positive

and statistically significant (0.27) and (0.28) respectively. Brand familiarity was not found statistically significant as related to any of the two brand equity outcomes. The second study related brand image (a second source of brand equity according to Keller's (2003) brand equity framework) with market leadership. Brand associations were obtained by asking participants to write all thoughts that come to mind when they think of the specific brand. Market leadership was derived from brand valuation reports as in the first study. An affinity analysis (similar to a mental map) was diagrammed to derive assessments of brand image strength and uniqueness. The product of strength times favourability gives Coca-Cola dominance on every dimension over its competitors. Similar results were found for Tylenol. The authors concluded that their findings support Keller's conceptualisation of brand equity and its components.

Cobb-Walgren, Ruble and Donthu (1995) measured consumer-based brand equity in the hospitality industry and among cleansing products applying conjoint and multiple regression analysis. Their approach considered consumer preferences and purchase intentions as an outcome measure of brand equity. Participants mentioned their brand usage intention by selecting their hotel choices. Brand awareness (unaided and advertising), brand associations (positive, neutral, negative) and perceived quality were considered as brand equity sources.

Awareness and the degree of familiarity were measured by asking participants to recall top-of-mind brand names. A list of brands and total brand mentions was collected. Advertising awareness was measured by questioning respondents if they had observed any advertising for a given brand.

Brand associations were aided by asking consumers what came to their minds when a particular brand was named. Brand associations in this case were interpreted as thoughts, images, feeling, features or symbols. Some examples of positive associations are: reputation (updated image, good reputation, famous distinctive pervasive), consistency (uniform

standards, no surprises) and service (excellent, caring, hospitable, caters for customers needs). Perceived quality was measured by rating different brands accordingly to price, room quality, cleanliness, staff quality and food quality. Conjoint analysis was used to determine the importance of each product/service attribute. In the hotel case, price was the feature most important (0.274) to customers, followed by bed size (0.254), pool (0.194), brand name (0.162) and finally times cleaned per day (0.116). For the cleansing products brand name was the most important feature, followed by abrasiveness (0.214), type (liquid / powder) (0.201), price (0.187) and number of surfaces (0.126). A brand equity index was calculated by multiplying the number of (positive, neutral, negative) associations by the importance of the attribute.

Cobb-Walgren, Ruble and Donthu (1995) conducted regression analysis to determine the relationship of product/service features and brand equity outcomes. They found that the brand with the higher equity in each category generated significantly greater preference and purchase intentions. Also the brand with greater advertising budget yielded substantially higher levels of brand equity.

Park and Srinivasan (1994), borrowing Keller's (1993) perspective of brand associations as the foundations of brand equity, developed a composite multi-attribute weighted-score scheme of brand equity. Their method divides brand equity sources into attribute-based and non attribute-based components, thus providing the brand manager with an indication of different plausible bases of brand equity.

Brand equity was measured as consumers' brand preference. Overall brand preference rating was captured in two parts. One part was obtained by asking consumers to rate a list of brands from the most preferred brand (10) to the least preferred (1) assuming that all brands have same price. Preference structure (attribute-based) was obtained by desirability ratings (1-10) for the different levels of each categorical attribute and importance ratings for all the

attributes. In the second part, consumers were asked to consider the price premium they were willing to pay for their preferred brand assuming the alternative was of similar quality and value. Non-attribute-based components were based on image-orientated elements for example brand personality (masculine/feminine and or youthful/old) as result of exposure to frequent advertising. They also obtained experts' opinions from dentists who provided objective ratings on the different attributes. Apart from overall preference, Park and Srinivasan (1994) validated their brand equity model against predictions of respondent-reported market share. Market share and price premium are suggested meaningful summary measures of brand equity because they are linked to a brand's profitability. The authors found a correlation of 0.35 between predicted individual choice probabilities for Close-Up mouthwash and choice probabilities based on the survey measure of preferences. Thus the proposed model appeared to have modest predictive ability considering it did not incorporate effects of other marketing mix elements such as retail availability, brand awareness, and advertising.

A subsequent study of cellular phones brands in Korea, conducted by Srinivasan, Park and Chang (2005) added brand awareness and retail availability to the previous sources of brand equity. Thus, their new brand equity model comprises the following sources: incremental brand awareness, incremental preference due to enhanced attribute (length, battery hours and price), non-attribute preference perceptions, (e.g. signal reception capability, durability) and brand availability. Srinivasan and his colleagues found that simple awareness generates the largest return, followed by consumers' responding to the prestige of owning the brand. Attribute-based equity trails in third place, concluding that brand image provides stronger incentive for buying and that greater awareness is the major component of brand equity.

Given the diversity of measures of brand equity outcome and sources, Agarwal and Rao (1996) proposed eleven indirect (e.g. awareness, loyalty) consumer-based brand equity measures and evaluated their convergence in the choice of chocolate bars. The authors argue

that, although direct dimensions (i.e. added value of the brand, market share) appear to be accepted, indirect dimensions were more managerially useful because they can be controlled.

The eleven measures represent the following sources: awareness, brand perceptions and attributes, brand preferences, choice intentions and actual choice.

Awareness was measured by brand recall and familiarity of the brand. Brand recall was measured by asking participants if they could recall the brand without the need of any aid (top of mind awareness). The familiarity dimension consists of items such as "heard of it", "heard of it but never used it" and "heard of but used it". This dimension was converted to an index by averaging the individual measures of the dimension.

Brand perceptions and attitudes were assessed in four different measures. A composite multi-attribute weighted score calculated by summing ten attribute ratings and multiplying them by their respective importance (weight). Two single-item measures reflecting value for money, two-single items reflecting quality of brand name, and an overall evaluation (poor-excellent) of the brand.

Consumers' brand preference was measured in two ways: a derived brand index, which is an aggregate-level only measure that uses pair-wise preference data. A second measure under brand preference uses price premium information where a price difference is computed for each pair of brands at which preference switches. This is measured as a dollar metric measure.

Choice intention was determined in two alternative ways: the first measure used a uni-dimensional purchase intention scale and the second used a brand specific choice coefficient derived from conjoint analysis. Lastly, actual choice consists of a self-reported past-purchase rate during 12 months. To calculate the predictability of the measures, Agarwal and Rao used the simple maximum utility rule which involves computing the percentage of times the brand that had the highest value according to a measure was chosen by each respondent.

The study findings indicate that with the exception of the brand recall measure, the rest of the measures converged in predicting actual choice, therefore they are appropriate as indirect measures of brand equity. Five measures were considered important predictors of market share (quality of brand name, derived brand index, purchase intention and brand specific-coefficient). All these brand equity dimensions were suggested to fully explain choice, and any one by itself may not be sufficient. Among the various measures of brand equity, two are single-item whereas three are multiple construct measures suggesting that it may not be necessary to subject respondents to difficult questions in order to obtain accurate measures of brand equity. Interestingly the various measures represent the hierarchical hypothesised consumer decision-making process that suggests perceptions influence preference and preference influence intentions.

While Argarwal and Rao's (1996) work offered the first step to a set of parsimonious measures, the psychometric properties of their measures have not been reported or fully analysed (Washburn and Plank, 2002). Furthermore, the parsimony comes at a cost; several measures consisted of single items, therefore assumed free of error when measuring a construct. As a result, these measures have been declared inappropriate to studies that examine consumer-based brand equity phenomena (Yoo, Donthu and Lee, 2000).

Mackay (2001) replicated Argarwal and Rao's (1996) study, using an expert panel, telephone and mail surveys, that reported on their choice of fuel outlet. To judge the relative importance of the different measures of brand equity, a multinomial logit regression was performed where the dependent variable was brand choice. The study confirmed Agarwal and Rao's (1996) previous finding, that is all measures appear to correlate highly and positively with market share except for brand recall.

Netemeyer et al. (2004) used 12 consumer products in three categories: colas, toothpaste, athletic shoes, and jeans, to measure the core sources of consumer-based brand equity. Two

models were hypothesised: one considered brand quality, brand value for the cost, and uniqueness as main determinant of willingness to pay a price premium. In turn this willingness was hypothesised to predict brand purchase intention and actual purchase. The alternative model posits that brand associations such as awareness, familiarity, popularity, organisational, and brand image consistency influenced brand purchase intention.

Results obtained from LISREL indicate that there was no discrimination between the constructs perceived value for cost (PVC) and perceived quality (PQ) therefore they were merged into one construct. The resulting model with uniqueness and the merged construct PVC and PQ explained between 50% and 68% of the variance in willingness to pay a price premium, and willingness to pay a price premium explained between 13% and 26% of the variance in purchase behaviour. All paths are statistically significant. To understand the significance of brand associations, Netemeyer et al. (2004) correlated these associations with the brand response variables of intent and past purchase. They concluded that the core or primary consumer-based brand equity constructs (PVC/PQ, uniqueness and price premium) had higher correlations than did the brand associations.

Some of the previous methodologies have relied mainly on multiple regression and single item measures. When some of these dimensions have been measured based on multiple items, they have not been validated in terms of their psychometric properties. In a response to these limitations, Yoo and Donthu (2001) developed and validated empirically a multidimensional consumer-based brand equity scale (MBE) drawing on Aaker's (1996b) conceptualisation of brand equity. Four of Aaker's (1991) five brand dimensions were adopted: brand loyalty, awareness, perceived quality, and brand associations. The fifth dimension (proprietary brand assets) was considered irrelevant as the focus of their study was consumer-based rather than market-based. The Yoo and Donthu (2001) multidimensional brand equity model (MBE) consisted of 22 items measuring the various constructs as follows: brand loyalty (5 items),

brand awareness (4 items), perceived quality (7 items), and brand associations (6 items). Brand loyalty was measured by the following variables (Beaty and Khale, 1988): “I considered myself loyal to [x brand]”, “[x brand] would be my first choice”, “I will not buy other brands if [x brand] is available at the store” .

Perceived quality items represented the overall excellence of a brand (Doods, Monroe and Grewal, 1991, Zeithaml, 1988) and was measured by variables like: “the likely quality of [x brand] is extremely high” and “the likelihood that [x brand] would be functional is very high”. Subsequently, through a series of factor and confirmatory factor analyses iterations, the model reduced to 10 items. These reflected three dimensions of brand equity instead of the four initially hypothesised: brand loyalty, perceived quality and brand awareness/associations. Brand awareness/associations combined construct was measured on the basis of brand recognition instead of brand recall and the overall perceptual strength of brand associations. This dimension was captured with the following items (Keller, 1993, Alba and Hutchinson, 1987, Srull, 1984, Rossiter and Percy, 1987): “I can recognise [x brand] among other competing brands”, “I am aware of [x brand]”, “some characteristics of [x brand] come to my mind quickly”, “I can quickly recall the symbol or logo of [x brand]” and “I have difficulty in imagining [x brand] in my mind”.

Brand associations and brand awareness were combined in a single dimension because of lack of discriminant validity determined by comparing the squared correlations of both constructs with the average variance extracted. This finding led Yoo and Donthu (2001) to suggest that brand awareness with strong associations formed a specific brand image and thus positively related to brand equity. It should be noted at this point that the literature recognised awareness and associations as two closely related dimensions but distinct (Aaker, 1991, Aaker, 1996a, Keller, 1993). According to Aaker (1991), a consumer must first be aware of the brand in order to develop a set of associations. In other words, a consumer can be aware of

a particular brand without having a strong set of brand associations linked in memory (Washburn and Plank, 2002) but not the other way around.

Yoo and Donthu (2001) also developed an overall brand equity (OBE) scale to evaluate the impact and validity of the MBE. The OBE was measured by the following items: "It makes sense to buy [x brand] instead of any other brand, even they are the same"; "Even if another brand has the same features as [x brand], I would prefer to buy x"; "If there is another brand as good as x, I prefer to buy x" and "If another brand is not different from x in any way, it seems smarter to purchase x".

A reasonable level of correlation between the MBE index and OBE was reported (0.60, 0.63, and 0.59) ($p<0.0001$) for American, Korean-Americans and Korean students respectively. This correlation level has taken to support the validity of the MBE. Hence they concluded that their MBE scale was reliable, valid, parsimonious, and generalisable across several cultures and product categories (Yoo and Donthu, 2001).

A warning is in place here, brand equity has been measured as a composite scale reflecting overall brand equity. However, the items incorporated as a measure of overall brand equity reflect very much the construct of loyalty rather that the more consensual definition as a premium price for a branded product. Perhaps it is for this reason that Yoo and Donthu (2001) found reasonable correlations with the MBE measures and overall brand equity, after all the MBE construct also contains measures of brand loyalty. This speculation may also be supported by the high influence of loyalty ($\beta = 0.69$) compared to perceived quality ($\beta = 0.10$) or awareness ($\beta = 0\ .07$).

Notwithstanding some limitations, Yoo and Donthu's study offers a set of parsimonious measures for a multi-dimensional brand equity model. This is useful for marketing practitioners as they can track brand equity of individual brands on a regular basis. The model can also be used as a diagnostic tool as it can indicate a brand's strengths and weaknesses.

This helps marketers to efficiently allocate resources where needed and to plan successful branding strategies. The properties of the MBE can be extended to brand name and brand extension as well as co-branding studies.

The psychometric properties of Yoo and Donthu's (2001) customer-based brand equity scales have been further investigated within the context of co-branded[1] products (Washburn and Plank, 2002).

Washburn and Plank (2002) in addition to the original 22 item scales contained in the MBE and OBE, incorporated attitude toward the brand and purchase intention as two additional measures. To determine if the dimension awareness was truly different from the construct association, Washburn and Plank (2002) proceeded to test the MBE model fit with four and also three factors.

Consistent with Yoo and Donthu's result, Washburn and Plank (2002) could not recognise brand awareness as a separate dimension from brand association. However, they obtained satisfactory fit of the model by re-incorporating items deleted in Yoo and Donthu's (2001) study which questions the consistency of the model. This is a critical turn on Yoo and Donthu's work as the lack of discrimination between the two dimensions is linked to the type of variables used to measure the dimensions. These variables appeared to be linked to the lowest level of both awareness and associations (Washburn and Plank, 2002). A further clarification is in order here in relation to the new label awareness/ association. This label may be misleading insofar as the concept of association refers to all knowledge linked to memory in consumers' minds. The only associations merged with brand awareness, and perhaps rightly so, relate to the construct awareness, namely brand recall and brand recognition. Other brand association consumers hold in their minds such as brand quality,

[1] Briefly, a company uses a co-branding strategy when it needs to quickly gain consumer acceptance of a new product by introducing the new product with not one, but two, familiar brand names (Washburn and Plank, 2002)

brand value, or organisational associations (e.g. trustworthiness) do not fall under the same label and should not be interpreted as if associations, in general, are undifferentiated from awareness. The confounding results of the brand awareness/association encouraged future research to re-assess the use of particular items selected for the scale and to find useful discriminating items of the dimensions.

Pappu, Quester and Cooksey (2005) re-assessed the consumer-based brand equity sources proposed by Aaker (1996b): brand awareness, brand associations, perceived quality and brand loyalty. The study included more discriminating indicators in the awareness construct than in the previous studies done by Yoo and Donthu (2001) and Washburn and Plank (2002). The thought behind this alternative was to support the notion of the differentiation between brand awareness and brand associations.

Their scale contained aided and unaided recall items to measure several levels of brand awareness. The dimension brand association was divided into two dimensions, namely organisational associations and brand personality. The inclusion of these two types of associations, according to the authors, resides in their importance to influence brand equity as suggested by Aaker (1996b) and Aaker and Jacobson (1997). Organisational associations were measured by eight items that referred to liking, price, and trust of the brand (Aaker, 1996b). Brand personality was measured using five items representing the five types of brand personality previously described by Aaker and Jacobson (1997): sincerity, excitement, competence, sophistication and ruggedness.

While perceived quality measures were borrowed from Aaker's framework (1991, 1996b) and Yoo and Donthu's (2000) MBE scale, loyalty measures were only adopted from Yoo and Donthu's (2000) MBE scale.

Pappu, Quester and Cooksey (2005) study confirms the multi-dimensional consumer-based brand equity constructs as conceptualised by Aaker (1991). That is brand awareness, brand

associations, perceived quality and loyalty are significant sources of brand equity. According to Pappu, Quester and Cooksey (2005), discrimination between brand awareness and brand associations can be obtained through more discerning indicators. Perhaps this study also ratifies the caveat presented by the author of the thesis in that insofar as association items are related to awareness (e.g. brand recall, brand recognition) they may justifiably come under one construct label: awareness. However, when associations are broader, this merge is unjustified.

Like Yoo and Donthu (2001), Pappu, Quester and Cooksey (2005) found brand awareness was among the weakest of the brand equity sources. This can be a true effect or simply a bias from the statistical reduction; Pappu, Quester and Cooksey reported that this construct consisted of only one variable which, as stated earlier, in terms of validations, poses problems. An additional limitation of Pappu, Quester and Cooksey's study is the use of a dichotomous rather than continuous scale in the measure of the constructs.

To summarise, in the process to clarify the value of the brand, studies recognised the importance of dividing brand equity into sets of dimensions. There seems to be enough evidence to conclude that it is safe and possible to measure consumer-based brand equity with a parsimonious, reliable, and low-cost collection of measures. Although several dimensions are widely used as brand equity sources, there is still no consensus as to which ones best describe brand equity. Sometimes what is considered a brand equity source (e.g. loyalty) others consider it an outcome of brand equity. Some include three sources of brand equity, others four and more. Some have used single items in measuring a construct and others composite ones to measure the same construct.

Moreover, the formulation and interpretation of the dimensions varies across studies. In some cases, the awareness and association dimensions (Yoo and Donthu, 2001) or perceived quality and perceived value dimensions (Netemeyer et al., 2004) are considered as one

dimension, whereas in others they are regarded as separate ones. Findings also seem to vary depending on the consumer-based framework approach adopted, whether Aaker (1996b), Keller (1993) or other.

The weights of the various dimensions used in a model also seem to vary from one study to another. Sometimes awareness is significant in one study, sometimes it is not. Notwithstanding the need of consistent scales, one must be careful in their application because there is empirical proof that brand associations differ across brands and product categories (Low and Lamb, 2000).

Consumer-based approaches have been deemed crucial in determining the potential wealth and health of a company, yet their usability has been declared by others as hard to pin down (Low, 2000). Although the literature recognises Aaker's and Keller's major contributions towards the understanding of brand equity, some have criticised the customer-based model.

Simon and Sullivan (1993) argue that brand equity can be measured using objective market-based variables better than consumer-based measures. They suggest that the use of consumer attitudes and preferences are subjective and bring conjectures rather than comparable information over time and across firms. In fact, managers' opinions about what makes a brand successful has nothing to do with the actual factors found in the study by Cap Gemini Ernst & Young (Low, 2000).

Others argue that understanding brand equity depends on credible measures of the construct and not consumer-based measures (Shocker 1993). The criticism resides in the fuzziness and subjectivity of the consumer-based measures and their lack of dynamic to changing sources of value and uses of knowledge. In consequence alternative approaches have emerged, especially from consulting firms. The Interbrand index is an example of the mix approach to brand equity, which is the topic of the next section.

2.3.3 Mix Approach to Brand Equity

The third approach to measuring brand equity emanates from the combination of consumer-based and financial (or market-based) brand equity approaches. These models stress the need to include not only consumer perspectives but also financial data and other market-based parameters. Several of these methods are commonly known as industry models and the majority of them are proprietary, therefore no full disclosure is provided.

The mix approach compensates to some extent for the weaknesses of either approach on its own. For example, companies that concentrate only on financial measures, focus on past results and therefore fail to see any further improvement in their prospective performance (Low, 2000). Contrary to financial-based measures, companies that centre their efforts on market-based or non financial-based measures (such as investments in R&D, alliances and environmental performance) may better reflect the health and wealth-creating potential of a company.

Many marketers, on the other hand, argue that while they acknowledge the importance and the value of hard data, ultimately the value resides on the consumers, because it is them who first determine brand equity (Farquhar, 1989). Other researchers compromise by acknowledging the importance of cash flow as a common measure of brand equity and by recognising, at the same time, that consumer-based dimensions, like perceived quality, brand loyalty, and brand association also contribute to a firm's performance (Baldauf, Cravens and Binder, 2003). This section reviews a few mix approaches to demonstrate their contribution to the advancement of brand equity valuation measures.

One of the major drawbacks of consumer-based brand equity approaches has been the lack of systematic means of assigning consumer-based equity a financial value that can be recorded in the financial statements.

To meet this challenge, Dyson, Farr and Hollis, (1996) report on a hybrid system composed of the Consumer Value model (CV) and the BrandDynamics™ Pyramid. The approach places a financial value on the consumer-based equity of brand images and associations. The CV model was created from survey data collected from U.K. consumers and calibrated against their actual purchasing behaviour recorded by a diary across 12 weeks. The variable predicted by the CV model is the value share of requirements, that is the proportion a consumer spends in a particular product category. This has been taken as an indicator of brand equity since it reflects both the proportion of volume sales and the degree to which people are prepared to pay a premium price (which in itself is a strong indicator of brand equity).

The CV is estimated by calculating a Consumer Loyalty score, which is basically the value share of requirements for each brand and for each respondent weighted according to the amount of purchase (consumption) in the category. In addition consumers are asked questions about their degree of satisfaction and influence of price discounts on their purchasing decision. Given this information, consumers are allocated between three categories: brand loyal, repertoire or price driven. Because of the importance of consumer loyalty in the CV model, attitudinal measures are collected from consumers (by a proprietary system called BrandDynanamics™) to understand the factors that explain consumer loyalty.

Results from these questions allow the researchers to discriminate between five levels of loyalty depicted in the Brand Pyramid. At the very bottom of the pyramid a brand will be noticed by its *presence* in the relevant market. The step up is *relevance*, that is the brand's promise must be relevant to consumers' needs and aspirations. Higher up is the *performance* level, which basically indicates the brand is delivering the intended benefits. Beyond performance, the brand must demonstrate some *advantage* over its competitors, and finally at the very top of the pyramid is bond, the ability of the brand to create a bond with its users. The ideal brand aims at achieving this last step in the pyramid. They further specify that about

76% of consumers, on average, are aware of packaged goods brands. A smaller percentage (43%) find the brands relevant, 35 per cent find that the brands live up to the claims in terms of performance, 34 percent find the brands provide an advantage, and finally only 7% are "bonded" to the brand.

Millward Brown International later expand that consumers who are aware of a brand (i.e. the brand has presence) are likely to spend about 13% of their category expenditures on the brand, whereas, consumers who are bonded are likely to spend, on average, 38%.

Both the Consumer Value model and the BrandDynamics™ Pyramid have been tested across countries and product categories and have demonstrated robustness, that is the results of the CV model match the actual market share figures (Dyson , Farr and Hollis, 1996).

A second well-known brand value approach has been developed by Interbrand. Interbrand (2006, p. 20) defines brand value as " the dollar value of a brand, calculated as net present value (NPV), or today's value of the earnings the brand is expected to generate in the future." According to the consultants, brand value is the only measure that looks at economic benefit of the brand. They consider, brand awareness and brand equity as means to an end, and highlight the weaknesses of these measures in that they are only measures of what customers think and, at best, do but they are not assessments of the economic value created by those thoughts.

In order to derive brand value for an individual company, Interbrand combines consumer-based measures and financial assessments to derive brand value. The approach consists of identifying revenues of products or services generated with the brand. From the revenue, all costs are deducted (e.g. operating costs, taxes, cost of capital used) to arrive at the intangible earnings. Intangible earnings are earnings generated by patents, R&D investment, management expertise etc. Since these earnings include all intangible earnings, the specific to the brand needs to be identified. This is done by calculating a percentage attributed to the

"role of brand" (Interbrand, 2006). The role of brand is said to vary according to the importance of the brand in the consumer decision. Forecast of the intangible earnings are performed for six years.

The calculated earnings are then discounted at a rate that reflects the risk of the earnings actually materialising and the time for which they are expected. The lower the strength of the brand the higher the discounted rate therefore the lower the net present value of the earnings. Brand strength is derived from observing brand's market position, customer franchise, image, and support that reflect the brand's ability to secure ongoing customer demand (loyalty, repurchase intention).

An alternative model to measure a company's intangible value is proposed by Cap Gemini Ernst & Young (Low, 2000). Unlike other models that rely on consumer attitudes and perceptions, the Value Creation Index (VCI) is constructed on the basis of nine non-financial (market-based) predictors: innovation, quality, customer relations, management capabilities, alliances, technology, brand value, employee relations, and environmental and community issues. Through regression analysis and other advanced statistical techniques, the value drivers are assessed to explain market values beyond what could be attributed by traditional accounting of assets and liabilities. The categories are then combined into the VCI. The index represents the relative importance of each value driver (Low, 2000). Of the nine factors, innovation as measured by R&D expenditures, number of patents and importance of the patents has the greatest impact on market value. Management quality and employee relationships follow closely behind in their impact on predictive market value.

The value drivers differ according to industry. For example, the VCI report indicates that the most important value drivers for e-commerce companies are number of alliances and alliance partners, next came investment in innovation. The number of "eyes" viewing a company's website also has a significant bearing on market value. Low (2000) indicates that

building brand awareness had no statistical associations with market value in the VCI. This is surprising since advertising spending may be influencing value indirectly by, for example, driving "eyes" towards the website. The three most important drivers for financial services companies are alliances, human capital and quality of management. If value has been estimated by investors' opinions, they would bet on strategy execution and innovativeness as the most critical performance drivers, demonstrating a disparity between perceptions and actual performance drivers.

The VCI has been validated by correlating it against actual market value (assets + liabilities) in several industries. For example, for the airline industry it was estimated to be 0.89 that demonstrates a good predictive power.

Several mix approaches have been presented to measure brand equity and value of intangible assets; they all claim to be more uniform, less subjective and more robust than consumer-based measures that rely on consumers' perceptions only. Whatever the claims, the approaches can be regarded as diagnostic tools which provide information to managers to build strong brands. Regardless of the approach sophistication, separating the value of a brand from the value of the rest of the firms is still a challenge. At the most, from the approaches reviewed here, consulting firms agree about the value of a brand but may disagree about the size of the intangible and its drivers.

2.4 Marketing Drivers of Brand Equity

In the process of building brand equity, managers, in every sector want every dollar spent to be well utilised, and they have little tolerance for investments that seem to be made more on faith than on facts. This point is particularly pertinent to marketing expenditures because of the lack of links between the revenue results and spending (Wise and Sirohi, 2005).

Managers need to allocate part of their assets efficiently in effective advertising, promotion, channels of distribution and other marketing programs (hereafter brand equity drivers). For this marketers need to have a clear understanding of brand equity drivers to pinpoint and reinforce the resources that can create brand equity.

Marketing programs may affect indirectly the potential of brand equity by influencing the brand equity sources. For example, high level of brand name recognition (awareness), high level of perceived quality and a good number of loyal consumers are the result of effective long-term accumulated investments in marketing activities. (Yoo, Donthu and Lee, 2000, Aaker, 1991, Keller, 2003).

Some empirical evidence of the relationship between marketing brand equity drivers and brand equity outcome has been found and is reported next.

Yoo, Donthu and Lee (2000) considered the influence of five marketing mix drivers in three product categories: athletic shoes, camera film, and colour TV. The marketing mix drivers studied were price, store image, distribution intensity, advertising spending and price deals promotions. Each of these drivers was hypothesised to influence brand equity sources, that is brand awareness/association, brand quality and loyalty. Their results reveal that high advertising spending, high-price, good store image and high distribution intensity influence consumers' perception of quality, awareness and loyalty. The marketing mix drivers are also statistically significant in their indirect influence on brand equity. On the other hand, low levels of brand equity were found to be related with frequent price promotions such as price deals. Frequency of price deals also influence negatively on the perception of quality.

Chu and Keh (2006) investigated the individual contribution of advertising, promotional, and R&D expenses to brand value. A three-stage least square estimation was used to regress the top 100 brand values ranked by Interbrand against the proposed marketing drivers. The results indicate differential effects of Research and Development, advertising and promotion

on brand value creation. Return of R&D spending increases for expenses below $200 million and reaches saturation point around $ 1 billion, beyond which it appears that R&D spending does not significantly increase brand value. Advertising was found to contribute most effectively to brand value in the spending range between $200 million and $4.6 billion. Beyond that level, promotional expenses seem to create more brand value.

Although marketing communication has been suggested as an important brand equity driver, it does not seem to act that way in the insurance industry. A study conducted by Herrmann et al. (2007) proposed that five performance areas, corresponding to an insurance company's marketing mix, influenced brand equity. Brand equity was measured with items representing cognitive (e.g. the management of the company is exemplary), emotional (e.g. the company is friendly) and conative focus (e.g. I would be pleased to buy products from this company). The marketing drivers were assumed to influence brand equity directly rather than indirectly, as normally conceptualised.

The five performance areas identified are product performance (including indicators such as price-performance ratio attractiveness, consideration of individual requirements), field personnel (interpreted as advisers' technical knowledge and friendliness), communications (company presence in relevant media), in-house personnel performance (measured by items as reliability of the administration) and company resources (measured like serious style of senior managers).

From the five marketing activities, product performance, field personnel and in-house personnel performance had a statistically significant effect on brand equity (Herrmann et al., 2007). Product performance is the most important according to the relative weight, followed by field and in-house personnel performance. The overall explained variance was relatively modest (0.32) indicating that there are many variables not included that can contribute to explain brand equity. Perhaps the concept of brand equity is not properly reflected in the items

used in its measurement. The items appear variables that could have been used in either of the marketing mix variables. Notwithstanding the study limitation, it does seem to illustrate that brand equity sources differ depending on the nature of the product or service.

In addition to the traditional marketing mix variables (advertising, price and promotion), Bravo, Fraj and Martinez (2007) aimed at identifying the effect of family influence in creating brand awareness, brand associations and perceived quality. Brand equity was measured as a global preference for the brand over similar alternatives. 349 respondents aged between 18 and 35 years were asked to answer questions related to their perceptions of the brand's advertising, price, promotions, and information provided by their families. Results from the structural equation model indicate that advertising, family, and price significantly (in a statistical sense) influence the brand equity sources, brand awareness, associations and perceived quality. In relative terms, family is an important factor to be considered in an indirect formation of brand equity. The information consumers receive from their families in relation to brands influence both the level of awareness and quality perceptions. In turn these sources of equity (quality and awareness) create brand equity directly and also indirectly through their impact on loyalty.

While most of the studies have assessed the impact of marketing mix elements used by manufacturers, Wulf, et al. (2005) have assed the importance of store brands (private labels) versus national brands on brand equity. The research involved blind taste (no identification of brand) and non-blind taste tests (i.e. product brand is shown). The dependent variable (brand equity) was measured as a preference for each of five orange juices. Results from the tests show that the national branded Minute Maid juice obtained statistically significantly higher taste preference when consumers saw the brand name than when it was tasted unbranded. This led the authors to conclude that Minute Maid has strong brand equity (because the same product is much more appreciated when it is branded) and that company marketing activities

had contributed to create a differentiation in the consumers' mind about the brand. Three, out of four store brands (private labels), were not statistically significantly different in taste scores when tasted blinded and non- blinded, leading the authors to conclude that private labels create no perceived positive difference, therefore lacking brand equity.

Results from the test of mediation of brand loyalty indicate that consumers are loyal to a particular store brand (Delhaize) and that consumers give a higher score to the branded product rather than the unbranded one, leading the researchers to conclude that store brands can achieve brand equity as a result of store loyalty, although Wulf et al. (2005) interpret this result as supporting the conclusion that store brands create equity. However, it may not seem the case. First, from the data reported in their study, Delhaize did not achieve statistically significant higher scores when branded ($p < 0.05$). Secondly, the store brand sells at a premium price above the national brand indicating to consumers that the product is of higher quality than the competition (including the national brand Minute Maid juice) therefore it may not necessarily be store loyalty that is driving equity to the brand (Delhaize) but the characteristics of the product themselves. This cannot be distinguished from the applied research method that requires controlling some variables while estimating the impact of the others.

To summarise, the section identifies several marketing drivers used offline, among others price, promotion, distribution, advertising, family, staff contact, R & D, store image. These various marketing activities perhaps should be viewed as a portfolio of investments, each of which has a different potential to create brand equity directly and indirectly. Research that links marketing drivers with brand equity sources and outcome can help marketers make the best tradeoffs by identifying the right mix of drivers and sources. Further studies are needed to determine what the right marketing-driver mix is.

Current changing market dynamics, such as the transition from product-based manufacturing economy to a service-based economy (Shugan, 1993), new business strategies, and new technologies (like the Internet) have forced marketers to quickly extend ways to measure the value of the brand in a different setting: the online world.

The following section reviews specific studies to measure brand equity for online businesses. The section starts by providing some reasons to explain the dearth of research in this field. Secondly, it describes some incursions from practitioners and academics to understand brand equity online. Thirdly, the section explains some limitations of the literature reviewed in relation to brand equity for online companies. Finally, it introduces the research technique and specifies some assumptions underlying the present research study.

2.5 Online Brand Equity Literature Review

Notwithstanding the growing importance of businesses online, there are scarce, specific empirical studies that have developed a measure of brand equity for online companies. Perhaps this is a reflection of the belief that the key principles of how to develop the brand remain the same on the Internet (Rubinstein and Griffith, 2001). Or perhaps that the Internet would make brands irrelevant since consumers would have a costless access to a great deal of information about product characteristics, including prices, which would tend to convert products into commodities (Chen, 2001, Dussart, 2001). Dussart (2001) suggests that some specific Internet business models like “name your price”, reverse auction, and group buying can contribute to brand dilution.

A study conducted by Lynch and Ariely (2000) on a simulation of wine purchases on the Internet demonstrated that this is not the case, and that consumers pay a premium for wines that are differentiated. Similarly, Smith, Bailey and Brynjolfsson (2000), found that consumers were willing to pay a premium price of 6.8% for even commodity products such as

books and CDs when they bought from Amazon.com rather than from CDNow. Furthermore, it is reported that price dispersion online could be up to 33% (Riquelme, 2001), illustrating that the Internet, although a new and distinctive way of conducting businesses, has not invalidated conventional economic principles and still may affect product brands similarly online as offline (Koch and Cebula, 2002).

The following section discusses two main streams of literature on Internet branding. One is practitioner oriented and based on anecdotal evidence on what works best in building a brand on the Internet. The second, and less prolific, is sometimes theoretically based and only occasionally empirically tested. Please see Table 2.1 in Appendix 1 for an illustration of a selected extant literature on brand building and brand equity offline but a comprehensive one for online. Only some of the many articles of brand equity offline have been reported in this Table, mainly to illustrate the variety of concepts, terminology, methods, and key findings. Also, note from the Table, the dearth of research in relation to brand equity online. The literature in this area is mostly anecdotal, and the scarce empirical research for online companies has been directed towards building brands on the Internet but they are not specific to measuring brand equity. Apparently these studies assume the same brand equity conceptual framework as for product brand equity.

Early attempts to investigate the importance of the brand name for online companies can be dated back to the early 90s. Murphy (1992) examined a census of the world's top brands to understand the value of online names as a contributor to brand equity. The author concluded that almost all of these (96%) had a live dot com (.com) website and an obvious version of their name. A pan European study confirms the importance of online brand names. The report indicates that 71% of respondents who are ready to buy cars online consider the brand name to be important (Strauss, Schder and Gebauer, 2001).

In a follow up study of the world's top 75 brands, Murphy, Raffa and Mizerski, (2003) concluded that most of these top companies register their brand name both globally with the .com suffix and locally by using the country extension such as .au or .fr (Australia and France respectively). In addition, they found these top companies had less presence in .net and .org global domains as well as in typographical variations of their name. Interestingly, many of these names do not necessarily reflect what companies do on the Internet, contrary to the old belief that names should say something about what a company does (Billings, 2001). Brand names like Yahoo! and Amazon, considered "open-ended" names, are said to have greater opportunity to expand into new markets than do eToys, or Drugstore.com (Regan, 2001).

Through an inductive method, Carpenter (2000) examined six online businesses to draw best practices. He pointed out that the online success depends on how companies use and apply e-commerce and branding principles. The businesses analysed were widely known and included: iVillage, CDNow, Barnsandnoble.com, Yahoo! Onsale, and FogdogSports. These outstanding companies, as suggested by the author, aim to build brand awareness, cultivate customer commitment, create reputation for excellence, and deliver outstanding value.

Nine practices are prescribed to build brand on the Web: 1) Building brand awareness through effective online and offline advertising, guerrilla marketing, and public relations. 2) Cultivate customer commitment by keeping close contact with the consumer, creating loyalty programs and online communities. These efforts will turn customers into friends and ambassadors of the brand. 3) Forge distribution and alliances with suppliers, Internet portals and competitors. 4) Move early /move fast as this will create the greatest barrier to entry for newcomers. 5) Develop and intimate knowledge of the market and consumer by knowing and understanding customers needs and wants and by learning how consumers interact with the brand and the website. 6) Deliver and add outstanding value to preserve the reputation. 7) Respect core brand elements. 8) Create a unique online version of the offline product by

including personalisation features, and 9) Leverage key offline assets by cross-promoting and linking online with offline marketing efforts.

From other quarters, McKinsey consultants suggest that in order to build digital brands, businesses must create a distinctive value proposition, create full-fledged Internet businesses, or digital brands, that can fulfil the expectations (Dayal , Landesberg and Zeisser, 2000). Other practitioners consider website design namely content, navigation, graphic design and functionality as drivers of brand equity (Johnson and Griffith, 2002).

Some of these practitioners' speculations have been to certain extent validated empirically. Ind and Riondino (2001) note, from their interviews of UK and Italian companies, that the look and feel of websites are important to consumers. In addition, features like an up-dated, interactive and dynamic website, embedding an organisation's personality and consistency in terms of communications, are all important in building a brand online.

Most of these practitioners have hinted at identifying the drivers of brand equity but there is no support as to how they relate to the sources of brand equity such as awareness, quality, loyalty, and more specifically to which ones. In other words, these drivers are assumed to create brand equity without actually providing a measure of brand equity let alone testing their relationship.

Few theoretical and empirical studies have tried to make inroads to identify sources of brand equity and variables that may influence online brand equity sources. A few of the conceptual models for online brand equity are described and discussed next.

In perhaps one the first brand equity frameworks developed for online companies, Page and Lepkowska-White (2002) posited that web equity can be created in a similar fashion as offline product brand equity, namely by influencing two main dimensions image and awareness, and propose loyalty as an outcome of web equity. To create web awareness, Page and Lepkowska-White (2002) suggest several marketing communication activities that can be

developed by marketers-and non-marketers (e.g. word of mouth). Content is one way marketers create awareness about the company together with more web-specific advertising tools such as interstitials and banners.

To build web image, the authors suggest four types of drivers: marketer and non-marketer communication activities, web design features, vendor (customer service, security) and product- related characteristics (quality, selection, and price).

Page and Lepkowska-White's web equity model seems to imply, in the use of the dimensions awareness and image, that traditional measures of brand equity can apply to gauge online business (or to use their terminology, web) equity and that the main difference is in the marketing mix drivers. However, in using loyalty as an outcome of brand equity it is not clear if the model is explaining loyalty rather than brand equity. Loyalty is considered by Aaker (1996a) a source of equity rather than an outcome.

The web equity conceptual framework also seems to assume that online the website is the brand, however, the authors do not provide any justification for this assumption.

Given the previous associations between store name and brand, it may not be surprising to see a link between corporate online retailers and brand equity.

Argyriou (2005) suggests three sources of corporate web equity: attitudes toward the website, company associations and reputation of the company. The brand association concept is similar to Keller's (2003) brand equity dimension; it refers to consumer associations about a website. Corporate reputation refers to the associations all stakeholders hold about the company. Attitudes, the authors concede, are similar to the concept as used in the attitudes towards an ad or brand. Previous studies offline indicate that reputation mediates the effect of advertising, brand familiarity and brand uniqueness vis-à-vis brand equity outcomes such as market share and relative price (Chaudhuri, 2002, Cambell, 1999).

Christodoulides et al (2006) propose an alternative model of retail brand equity for Internet companies called Online Retail/Service (ORS). The ORS brand equity model is based on five dimensions: emotional connection, online experience, responsive service nature, trust and fulfilment. The authors define online (ORS) brand equity as a relational type of intangible asset that is co-created through the interaction between consumers and the e-tail brand (Christodoulides et al., 2006). This conceptualisation of retail brand equity is at odds with a more traditional definition that says "a retailer's brand equity is exhibited in consumers responding more favourably to its marketing actions than they do to competing retailers" (Ailawadi and Keller, 2004, p. 332), or the alternative highly consensual definition of brand equity as an outcome that accrues to a branded product compared with those that would accrue to an unbranded alternative (Keller, 2003). Christodoulides et al's (2006) concept of retail equity does not, in any way, relate to the before mentioned definitions of brand equity. Interestingly, awareness is not a dimension among the sources of brand equity for the retail and online services. Unfortunately there is no explanation as to why this could not be the case given that traditional models include awareness, recall and recognition associations.

An empirical attempt to measure the power of an online business was conducted by Na and Marshall (2005). The authors used seventeen independent measures (all single items) and web visit and preference as dependent variables to derive what they call a "cyber-brand power". Respondents from Korea and Singapore assessed several portal names like Yahoo!, Altavista, Lycos, AOL, and Infoseek. Three factors-that accounted for 60 % of the variance of the data-predicted web visit and brand preference. The factors were named experiential (with items like enjoyment, sociability, character, layout, user friendly), informational (defined in part by globalisation, web interface, richness of information), and familiarity. The Singaporean data was only explained by the first two factors.

2.6 Limitations of Current Consumer-based Equity Measurement Approaches

Previous frameworks and empirical studies provide preliminary useful guidelines to identify dimensions and measures to build brand equity online. However, some comments about these studies in terms of their methodology and thrust are pertinent at this point.

First, with the exception of Page and Lepkowska-White's (2002) framework, there is still a lack of conceptual brand equity models for online companies. Even in this case the model seems more appropriate to explain loyalty than brand equity and assumes that a product brand equity model can apply to explain brand equity of online businesses.

Ailawadi and Keller (2004) suggest that this can be the case but not without some potential challenges. One, for example, is the selection of a benchmark for assessing a retailer's brand equity. A second is related to the definition of brand equity itself (price premium), however, Ailawadi and Keller (2004) note that several of the strong offline retailers charge lower prices than their competitors. On the other hand, according to Arnett, Laverie and Meiers (2003) retailer equity is a multi-dimensional construct akin of brand equity thus comprising: name awareness, retailer associations, service quality and store loyalty.

There is perhaps some empirical evidence that suggests structural similarities between offline retailer's equity and product brand equity. For example, Yoo and Donthu (2001) found that brand awareness/associations, product quality and loyalty were main sources of brand equity among a sample of offline retailers. Pappu and Quester (2006), in an empirical study of Australian offline retailers, confirmed that the brand equity model can be extended to retail branding as well.

Christodoulides et al. (2006) ORS model is the only attempt to measuring online retailing brand equity. However, since their definition of retailing equity differs from the more consensual one, it is doubtful that it is actually measuring online (retailing) brand equity. There is no explanation as to how the discovered factors or individual variables relate to brand

equity apart from suggesting that equity is based on a chunk of information. In addition this model does not provide a test of nomological validity that could relate the definition to other constructs expected to be related to brand equity.

The cyber-brand power model developed by Na and Marshall (2005) seems to assume that the factors experiential, informational and familiarity constitute sources of brand equity as they represent image which is a source of brand equity**.** However there is no major justification to relate these factors directly to brand equity.

Furthermore, the regression model is not the most appropriate model to develop or test theory, although it may be for predictive purposes. Much of the success of linear regression models comes from the fact that tasks in which they have been used involve cues that are conditionally monotonic with some criteria (Yntema and Torgerson, 1961). Under this condition linear models are very robust. Secondly, although for predictive purposes a simple linear model will suffice, non-linear processes play an increasing role in our understanding of judgement despite their limited ability to out-predict linear models (Slovic, Fischoff and Lichtenstein, 1977). For all these reasons, it has been suggested that future research changes the methodological orientation from techniques towards theory development. For this, Bagozzi (1984) has proposed a more rigorous methodology for theory construction and testing based on structural equation modelling.

Given the existing discrepancies and similarities in the adoption of a consumer-based brand equity model for retailers, and the lack of empirical evidence for online businesses, it is even more necessary to test if this model applies to retail businesses online.

The structural model developed and tested in this thesis is an attempt to discover theory-based constructs that measure online brand equity and their relationship with outcomes and antecedents of brand equity. This research assumes the company's (website) brand name (e.g. the brand name Amazon) rather than a product or service brand since online companies sell

different products. It is also assumed that the online business website is considered as representative of the business, and there is a relationship between the website and the user. Arguments supporting this assumption are as follows: First, in a computer-mediated world, a consumer's main interaction is with the website. The interaction with a website is important because of its influence on the consumer's perception of the company, and on the Internet this experience *is* the brand (Dayal, Landersberg and Zeisser, 2000, Taylor, 2003). Secondly, most Internet companies as well as the world's great brands are corporate names (Argyriou, Kitchen and Melewart, 2005). Thirdly, previous studies seem to suggest that consumers do not perceive the website as a separate entity from the business behind it (Li, Browne and Wetherbe, 2006) and fourthly, there are stores with such strong names that consumers do not make the distinction between the store and the brand (Grewal, Levy and Lehmann, 2004).

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the primary offer (as in the case of online retailers) the company becomes the primary (service) brand.

CHAPTER 3.0 RESEARCH FRAMEWORK

Three different perspectives have been taken by academics to study brand equity: customer-based, financial-based, and a combination of these two. The present research is guided by the consumer-based approach. From the customer's point of view, brand equity is part of the attraction to or separation from, a particular product from a particular company generated by the non-objective part of the product offering; in other words, not by the product features per se (Keller and Lehmann, 2006). In this perspective, the value of a brand and its brand equity ultimately derives from the words and actions of consumers.

Although there have been different approaches to measuring brand equity as per the previous chapter, they all tend to share a common aspect: all are based on brand knowledge consumers hold in their minds. This knowledge can be awareness, images or associations with a brand.

The conceptual framework adopted in this study, in a reduced form, relates to a stimulus-response style: (1) An online company takes action by developing web-marketing efforts that lead to (2) customer mental responses towards the brand in the form of perceptions, beliefs, etc. (3) These perceptions lead to attitudinal responses of preference, liking, and attitudinal behaviour such as willingness to pay and purchase a product. Finally, these attitudes are expected to transform in (4) actual customer behaviour expressed in the form of sales, which ultimately generates financial value for a company.

To capture customer-based brand equity, this research takes Aaker's (1996) multi-dimensional framework of brand equity. Brand equity is taken to be the premium price a consumer is willing to pay for a particular brand based on a comparison to another brand. According to David Aaker (1996; 1991) creating brand equity involves the identification of

customer associations with a brand, customer awareness, and loyalty. The key associations are related to image dimensions that are formed around the uniqueness of the brand to create some favourability for it. In this study, the favourability (attitudinal predisposition) of the dimension is emphasised because of its strong relationship in influencing behavioural intention and choice behaviour (Keller, 1993, Agarwal and Rao, 1996). The attitudinal predisposition is exemplified in items such as: "I prefer [online business] because it offers value for money" or "I like [online business] because it feels safe to conduct transactions on its website".

Aaker (1996) suggests associations with the brand can relate to value, quality, personality (type of person who would use the brand), and organisation (e.g. trustworthiness, credibility). The proposed hypothetical theoretical measurement model is illustrated in Figure 3.1.

Following a conventional schematisation, the constructs (or latent variables represented by ovals) consumer awareness, associations of value and trust related to the branded website, and loyalty, are the main sources of brand equity. Each of these constructs are inter-related as indicated by the bidirectional arrows and are defined by the observable variables depicted in boxes. Each of these boxes receives an arrow that indicates there is measurement error in the observable variable.

3.1. Online Brand Equity Dimensions and Hypothesised Relationships

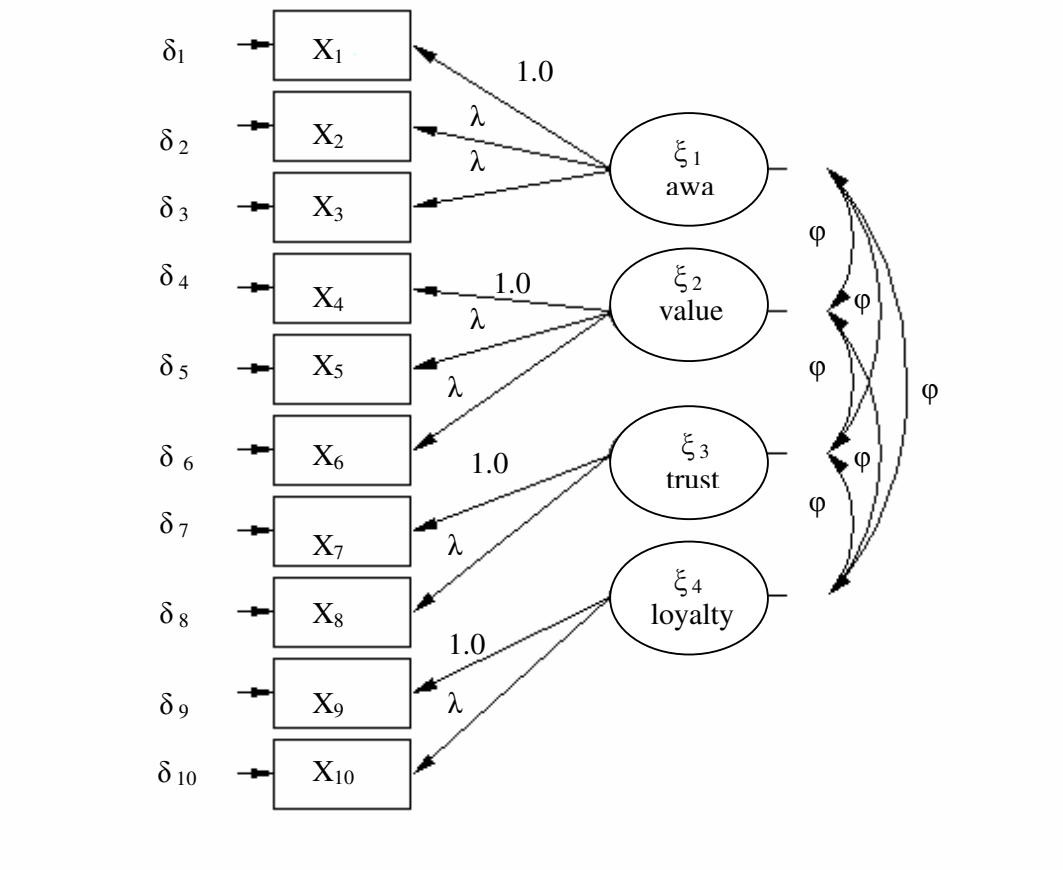
The following section outlines the justification of the traditional brand equity dimensions and the selection of the constructs to model online brand equity.

3.1.1 Awareness

Does consumer awareness play as an important role for online companies as it does for offline ones? A study by Smith, Bailey and Brynjolfsson (2000) found that three unbranded

retailers, that had the lowest prices, made up only 26% of consumer choices. Even more, 51% of price-minded shoppers did not choose the shopbot's (price comparison website) cheapest offerings and shoppers were willing to pay a 3.1% premium for a brand name.

FIGURE 3.1: HYPOTHESISED ONLINE BRAND EQUITY MEASUREMENT MODEL



Nomenclature: awa = Awareness

Furthermore, consumers were willing to pay a 6.8% premium price when purchasing products from the online store where they had shopped before. Brand equity, whether online or offline, cannot be created unless consumers recognise and recall the brand forming associations in their minds. Brand recognition relates to the consumer's ability to confirm

prior exposure to the brand when given the brand as a cue (Keller, 2003). Brand recall relates to the consumers' ability to retrieve the brand from the memory when given the product category, the needs fulfilled by the category, or purchase or usage situations as a cue (Keller, 2003). It is no surprise, therefore, that online companies spent millions of dollars advertising in the early days of the Internet commerce. Recently, Woodside and Walser (2007) have confirmed that ready mental access to a brand is associated strongly with building strong retail brands. It has been suggested that brand awareness and brand associations are highly related, and influence one another to create a more robust meaning (Yoo, Donthu and Lee, 2000).

Web awareness/association helps consumers to remember the site, encourages them to re-visit it and buy from it (Page and Lepkowska-White 2002) and also helps to simplify the decision-making process for buyers or users of the net (Page and Lepkowska-White, 2002, Bergstrom, 2000, Dayal, Landersberg and Zeisser, 2000). Moreover, a brand with strong consumer awareness and positive association will differentiate itself from its competitors in a crowded cyberspace (Bergstrom, 2000). From the previous justification the following hypothesis is proposed:

H_1: The differential in brand equity is related positively to the extent to which consumers are aware of the online business brand.

3.1.2 Brand Association – Value

Unlike Aaker (1996) that treats associations of quality separate from consumer associations related to the value and trustworthiness products and companies create, the proposed model in this thesis singles out the associations of value and trust because of the relevance to online businesses as will be explained below. Also note that, rather than using quality as a source of brand equity, this thesis uses value instead. There is some literature suggesting that consumers

are not likely to draw a distinction when making quality and value judgments (Netemeyer et al., 2004, Holbrook and Corfinan, 1985). Zeithaml (1988) suggests that perceived quality reflects an overall judgment, others feel the other way around, that is, quality (as an attribute and benefit) results in an overall perceived value judgment (Keller, 1993).

Aaker (1996a) himself, although he conceives brand quality associations as a separate construct from value associations, warns of the existing high correlation (80% according to Equitrend study) between perceived value and perceived quality as sources of brand equity. Finally, it has been suggested that the manner in which value judgments are formed are theoretically similar to the way in which quality judgments are formed, therefore the two constructs can be combined to form an overall summary construct of brand attitude (Aaker, 1996a). In addition to the previous arguments and because structural equation modelling is sensitive to high correlation between latent variables, only perceived value is used in this research (Aaker, 1996a).

Several authors highlight the importance of a company's value proposition and its relationship with brand equity (Kleindl, 2001, Lassar, Mittal and Sharma, 1995, Lee and Overby, 2004, Leuthesser, 1988, Aaker, 1996a). In a study where 167 undergraduate students reported on measures of perceived quality/value and uniqueness in relation to willingness to pay a premium and purchase from any of three fast-food retailers, Netemeyer et al. (2004) found that perceived quality/value and uniqueness were statistically significantly related to price premium for all three fast-food retailers. The study thus confirmed what Yoo, Donthu and Lee (2000) had found but among different brands of athletic shoes, camera film and TV sets.

The above evidence suggests that if a brand does not generate value to consumers, it will be vulnerable to competitors. Value is not only a lower price but represents other attributes that keep consumers coming back to the websites (Ind and Riondino, 2001, Lewis, Dickey

and Perrich, 2003, Page and Lepkowska-White, 2002). A value proposition is a multidimensional construct conceived in different ways: a competitive price, convenience, accuracy and quality of product information (Burke, 2002, Ward and Lee, 2000), value for money (Zeithaml, Berry and Parasuraman, 1996), shopping convenience, customer service, broad or specialised product assortment (Anckar, Walden and Jelassi, 2002) and after-sales care (e.g. customer returns). This last dimension of value cannot be underestimated: managing Internet customer returns is a significant factor determining whether or not a person will continue to buy from an online company. About 30% of purchases made online are returned (compared to only 10% offline) (Saenz, 2001).

Value is also achieved by allowing customers to readily compare information so they can make wiser decisions about their purchases (Page and Lepkowska-White, 2002).
From the above evidence, the following hypothesis is proposed:

H_2: The differential in brand equity is related positively to the extent to which consumers perceive brand value in the online business.

3.1.3 Brand Association – Trust

Among his measures of associations, Aaker (1996) considers trust as a characteristic of organisation associations as many others, thus de-emphasizing its importance. In this research study, given that trust is a critical factor for online businesses (Ha, 2004, Tan and Sutherland, 2004, Pennanen, Tiainen and Luomala, 2007), the concept of trust is emphasised and used as a distinctive source of equity.

Consumers' inability to trust websites has been one of the main deterrents to conducting transactions online. This lack of trust emanates from three sources: security/privacy, electronic fraud, and disreputable new merchants (Gorriz, 2003). Grazioli and Jarvenpaa (2000), in an experimental design, demonstrated that even relatively Internet experienced

individuals fell for the deceptive website manipulations; no wonder a remarkably low trust percentage (26%) for websites that offer products and services for sale was recorded in a national survey of Internet users (Princeton Survey Research Associates 2002).

Data privacy is another unresolved issue in e-commerce because the Internet makes data compilation and transfer easier but more vulnerable at the same time. Shopping behaviour does not remain in the anonymity either, with the advent of technology, behaviour is tracked through a number of devices (Caudill and Murphy, 2000).

The literature on consumer privacy on the Internet indicates that consumers are primarily concerned about improper use of the data companies collect online (Rohm and Milne, 1998, Miyazaki and Fernandez, 2001) and therefore consumers restrict their purchases via the Internet (Berman and Mulligan, 1999, Brown and Muchira, 2004). Given the importance of privacy, a number of studies have been addressing the issue from different perspectives, among others: willingness to provide personal information, awareness of privacy protection in direct marketing, determinants of consumer trust, privacy concerns and customer relationship management (Pollach, 2006). Because consumers need to trust merchants to purchase online, websites that give consumers peace of mind will create more brand equity and patronage. The following hypothesis is proposed:

H_3: The differential in brand equity is related positively to the extent to which consumers trust the online business brand.

3.1.4 Loyalty

Customer loyalty has been deemed the foundation of brand equity (Clarke, 2001, Aaker and Joachimsthaler, 2000) because a brand's value is worth as much as the number of consumers willing to pay the price asked. Loyalty involves a behavioural and attitudinal

component (Keller, 1993, Jacoby and Chestnut, 1978) the former is measured in terms of repeat purchase and the latter as a positive attitude disposition towards the brand reflected in active engagement of word of mouth about the company (Clarke, 2001). Not surprisingly, loyalty has been defined as a favourable attitude toward a brand resulting in consistent purchase of the brand over time (Assael, 1992). Loyalty online has proved to be significantly related to word of mouth and willingness to pay more (Srinivasan, Anderson and Ponnavolu , 2002). More recently, Rafiq and Fulford (2005) confirmed the influence of loyalty on word of mouth and the transference of offline loyalty to online. Customers who bought from a brick and mortar supermarket in the UK tended also to use its online store and recommended their grocer's website to others. The following hypothesis derives from the above:

H_4 : The differential in brand equity is related positively to the extent to which brand loyalty is evident in the online business.

In addition to the above hypothesised relationships, there are suggestions in the literature that the dimensions could have a potential causal order (Agarwal and Rao, 1996). Aaker (1991) indicates that loyalty can be influenced by the other dimensions of brand equity namely perceived quality. Similarly, Yoo and Donthu (2001) note that the hierarchy of effects models posits that awareness and associations precede perceived value and that in turn will influence attitudinal loyalty. The relationship of familiarity (in this case the associations and awareness consumers have about the business website) has been said to reduce social uncertainty and complexity, as a result consumers are more inclined to trust an online business (Chau et al., 2006). Yoon (2002), who studied the antecedents of trust among Korean students, found that awareness and reputation are significantly associated with website trust. This research therefore suggests that:

H_5: brand awareness is positively related to association of brand value, and

H_6: positively related to association of trust.

The relationship of customer value to trust has been claimed theoretically (Singh and Sirdeshmukh, 2000, Graebner-Kraeuter, 2002, Urban, Sultan and Qualls, 2000), but infrequently demonstrated empirically. In an empirical study that involved online bookstore and travel agencies, Harris and Goode (2004) concluded that trust is significantly influenced by perceived value and perceived value also influences loyalty. Therefore it is hypothesised that:

$H_{7:}$ perceived value is positively associated with trust.

Trust has been at the centre of studies that aim at explaining loyalty. Pitta, Franzak and Fowler (2006) note that in a perfect world, trust is unnecessary but in the real world it reduces the perceived risk by decreasing the possibility of incurring a loss, Rauyruen and Miller (2007) cite Reichheld and Schefter saying that to gain loyalty of customers, one must first gain their trust. This relationship between consumer trust and loyalty has been supported in several studies (Mayer, Davis and Schoorman, 1995, Morgan and Hunt, 1994, Harris and Goode, 2004). In the online world, trust has been found even more important to create loyalty because of the absence of physical stores or physical touch with the product (Reichheld, Markey and Hopton, 2000).

Recently Chiou and Droge (2006) found that trust had a direct effect on attitudinal loyalty and an indirect one through satisfaction. Floh and Triblmaier (2006) corroborate that satisfaction and trust were statistically significant influencers of loyalty in the online banking sector and that age moderated positively the relationship between trust and loyalty. Hence this research posits:

H_8 : Trust is positively related to loyalty.

The relationship of perceived customer value to loyalty has been theoretically claimed in the literature by several authors, too (Peterson, Balasubramanian and Bronnenberg, 1977, Cronin, Brady and Hult, 2000). Pitta, Franzak and Fowler (2006), using the consumer pyramid concept, propose that to build loyalty and trust (the top of the pyramid) companies need to offer value and create relationships.

Sirdeshmukh, Singh and Sabol (2002, p. 32), in a study of the role of value in the trust-loyalty relationship, found that the effect of trust on loyalty is conditional on its ability to create value for consumers. Moreover, "value emerges as the consistent, significant, and dominant determinant of consumer loyalty". Loyalty for an online bookstore and travel agency is significantly influenced by the perception of value customers entertain about these online businesses (Harris and Goode, 2004). Therefore the following hypothesis is proposed:

H_9: loyalty is positively related to perceived value.

3.2 Validity Assessment of Online Brand Equity measures

The validity of brand equity measures can be assessed by examining the relationships or correlation of the constituting measures of online brand equity with other measures of brand equity, their correlation with antecedents and outcomes of brand equity (Ailawadi, Lehmann and Neslin, 2003). This has been referred to as nomological validity. A proposed model has nomological validity if it relates as expected with other theoretically associated constructs (Churchill, 1995).

There are many antecedents of brand equity sources as suggested by practitioners and academics that have the potential to affect any of the constituting elements of brand equity (Page and Lepkowska-White, 2002, Carpenter, 2000, Lindstrom and Andersen, 1999). However, given the importance of consumer experience when transacting online, this research

study has focused on two aspects of the experience, namely with the website functionalities and the customer service support. Consumer experiences are important because they affect various decision-making processes and outcomes as well as the organisation knowledge in memory that can influence easier recall of a brand name (Hutchinson, 1983, Waymond, Negash and Suk, 2005, Hoffman and Novak, 1996). A point of clarification is in order here. Some literature has discussed these web marketing features from service quality point of view rather than as measure of consumer experience. Several authors point to the argument that online companies should move beyond specific dimensions and consider the broader consumer experience as their objective (Hoffman and Novak, 1996, Dayal, Landesberg and Zeisser , 2000, Mohammed, et al., 2003).

Furthermore, online companies are devoting significant attention to ensure customers' interaction with the web are convenient and effective (Piccoli et al., 2004, Saeed, Grover and Hwang, 2005). These antecedents of online brand equity dimensions are explained and the hypothesised relationships discussed below.

3.2.1 Functionality

Functionality refers to the website design elements that make the interaction a fun and enjoyable web experience, where the consumer may be offered various options such as speed of download, graphics, 3-D images, video, audio and availability 24/7 (Heeter, 2000). Some authors refer to this concept more broadly as user interface including website design, ease of use, ease of navigation (Kaynama and Black, 2000, Zeithaml, Parasuraman and Malhotra, 2002, Dabholkar, 1996). Functionality also refers to the order process, as the web experience is affected positively by allowing consumers to easily place an order while still browsing displayed items (Choate, 2000). The different functionalities have the capacity to create a

memorable experience in consumers' minds that will generate greater brand awareness (Berry, 2000) and affect sales by creating loyalty (Ranganathan and Grandon, 2002). A positive web experience may occur when online firms store consumers' credit card and shipping information, allowing for subsequent purchases to be expedite and easy (Page and Lepkowska-White, 2002).

For users not to abandon a website or to create interest, navigation must be easy and intuitive (Leung, 2003). Providing navigation aids on a website has proved useful to computer users because it reduces cognitive load, searching steps, and confusion, thus creating value to consumers (Chou and Lin, 1998, Chiu and Wang, 2000, Trumbull and Gay, 1992). This relationship has been confirmed empirically among online consumer purchases of different online products such as CDs, books, computer hardware, etc. (Semeijn and van Riel, 2005). Given the above evidence it is proposed:

H_{10}: Perceived awareness is positively influenced by the functionality of the business website and

H_{11}: Perceived value is positively influenced by the functionality of the business website.

Some evidence suggests that functionality does create loyalty. When consumers encounter technical difficulties 52 per cent have split loyalty, that is, consumers will seek an alternative online business. In interviews conducted to determine website functionality, one of Piccoli et al.'s (2004, p. 445) interviewees reports that: "Ease of use enhances loyalty in our customers; designing it the way they want it to function makes them more loyal to our services.". This relationship has been tested empirically and confirmed statistically significant in some studies (Yoo and Donthu, 2001, Wolfinbarger and Gilly, 2003, Roy, Dewit and Aubert, 2001); therefore it is hypothesised that:

H_{12}: perceived loyalty of a brand is related positively to the extent to which the brand is perceived as functional.

A relationship between trust and functionality is posited in this study because consumers obtain cues from the functionality of the business website to infer evidence of the online business competence to provide the service (Gummerus et al., 2004, Chau et al., 2006). It has been noted in personal interviews that some consumers need to pre test e-services to determine how they are functioning before they trust them (Pennanen, Tiainen and Luomala, 2007). This influence of functionality over trust is stronger among security-minded consumers than excitement-minded individuals. Finally, it is intuitively true that to develop trust companies must keep or fulfil their promises. Hence it is proposed that:

H_{13}: perceived trust of a brand is related positively to the extent to which the brand is perceived as functional.

3.2.2 Fulfilment

Simply put, refers to the delivery-related aspects of the purchasing process (Maltz , Rabinovich and Sinha, 2005), it has also been referred to as the "last mile" (Lee and Whang, 2001). From the consumers' perspective, fulfilment means online businesses deliver the product as they promised. This concept relevance is best observed in the context of relationship marketing where it refers to the processes of enabling, facilitating, keeping and supporting promises (Gronroos, 1996). These processes are part of the back-end infrastructure in online businesses and are normally oblivious to consumers.

Fulfilment is considered to span both the online and offline world and provides connections between the online and the offline experiences (Christodoulides and Chernatony,

2004). Ariely and Carmone (2000) note that the last part of the shopping experience customers face will be determinant in deciding whether these consumers will repeat a purchase. It has been determinant in explaining many online failures of the dotcom debacle (Harrington, 2000). In many respects companies did not live up to consumers' expectations and this influenced the trust they had placed in the online business. Tarn et al (2003) quote Krueger to illustrate the importance of fulfilment over some aspects of functionality: "What good is a well-designed website if it can't deliver the goods?" Also, as obvious as it may read, strong negative associations can be formed if the product received does not match the order, if it is delivered late or if it is not delivered at all. "Delivery is everything. If your courier lets you down it can spoil all the hard work it takes to get customers to order from you," says Peter Bowman founder of BuyWineOnline.com (Vernon, 2001).

Some online companies, knowing that some fulfilment problems can lead to dissatisfaction, mistrust, or relationship extinction, have adopted levels of service guarantee (Pitta, Franzak and Fawler, 2006). Toys "R" Us realised that it could not deliver all its orders before Christmas, closed down its website and issued $100 certificates to customers whose deliveries would be late (Lee and Whang, 2001). After the consumers' disappointing experience of 2000, when many online businesses could not satisfy orders, it comes as no surprise that those sellers who come up with creative ways to deliver, are the ones that will secure enormous consumer loyalty.

Wolfinbarger and Gilly, (2003) in the development of their e-tail quality index (eTailQ) concluded that website design, fulfilment, privacy/security and customer service are strongly predictive of satisfaction, customer loyalty and attitudes toward a website. The eTailQ study supports findings derived from focus group interviews where fulfilment along with other features were determinant in creating trust and loyalty (McCole, 2002). Fulfilment of expectations (keeping promises) is central to relationship marketing and more specifically to

service relationships, and it has been found to create value for consumers and companies (Brodie, Glynn and Little, 2006, Gronroos, 1996, Davis, Buchanan-Oliver and Brodie, 2000). Consequently, it is hypothesised:

$H_{14:}$ the more a website fulfils the promise, the more consumers will trust it. And

$H_{15:}$ perceived loyalty of a brand is related positively to the extent to which the brand is perceived as fulfilling the promise.

3.2.3 Customer Service Support

If a business website is taken as an Internet store from the standpoint of building online brand equity and extending the Jarvenpaa, Tractinski and Vitale (2000) metaphor of the Internet store as a sales person, then it could be expected consumer service to influence online brand equity sources. This metaphor may not be too far fetched since it has been reported that most of lost sales in a store result from poor salesperson customer service (Kim and Stoel, 2005). Customer service in its more general conception means a business's ability to meet consumers' wants and needs. Sometimes the design of an online business website is not intuitive for all customers, therefore it is necessary to have an alternative way of supporting consumers throughout the different stages of the purchasing process. Links to "Frequently Asked Questions" and, more importantly, linked to "live" representatives whether via a toll free number or online are useful in order to assist customers in the process.

Customer service has been posited to reduce the insecurity among consumers when buying on the Internet (Gommans, Krishnan and Scheffold, 2001). In an information-rich environment as the Internet, information load may be also overwhelming, hence providing a contact with a real person to dissipate doubts can create a bond with the online company thus decreasing the trust barrier and create loyalty (Pitta, Franzak and Fowler, 2006).

Perceptions of customer service performance have proved to be statistically significant in previous studies when related to online loyalty, purchase intention and trust (Kim and Lee, 2006, Tih and Ennis, 2006, Zeithaml, Parasuraman and Malhotra, 2002). Gummerus et al. (2004) found that responsiveness (i.e. a quick response to requests from consumers) was a direct influence on trust and indirect with satisfaction and loyalty.

Consequently, this study hypothesises that:

H_{16}: perceived loyalty of a brand is related positively to the extent to which the brand is perceived as providing customer service support.

H_{17}: perceived trust of a brand is related positively to the extent to which the brand is perceived as meeting customer service support demands.

H_{18}: perceived value of a brand is related positively to the extent to which the brand is perceived as offering customer service support.

Please see Figure 1.2 for an illustration of the hypothesised structural model. The figure shows three exogenous variables (Functionality, Customer Support and Fulfilment) denoted by the Greek letterl ξ (Xi). The variables are assumed to be correlated as indicated by the bidirectional arrows and depicted by the Greek letter Φ (Phi).

These company-marketing efforts are assumed to influence directly (as indicated by the directional arrows) four endogenous variables denoted by the Greek letter η (Eta): Awareness of the branded business website, associations of value and trust developed around the branded website and loyalty. These four endogenous variables are assumed to be the sources of brand equity. The figure also indicates the hierarchical effects of the sources of brand equity indicated by dotted lines. Awareness influences value and trust association consumers make. In turn value influences trust and loyalty, and finally, trust influences loyalty.

Each of the endogenous variables receives a directional arrow representing the disturbance or error term denoted by the Greek letter ζ (Zeta) indicating that an endogenous variable may not be fully explained by all proposed direct antecedents. In other words, the disturbance indicates that the relationship between exogenous and endogenous variables is not perfect, such that some portion of the variance in the endogenous variable is due to forces other than the exogenous variable (Edwards and Bagozi, 2000).

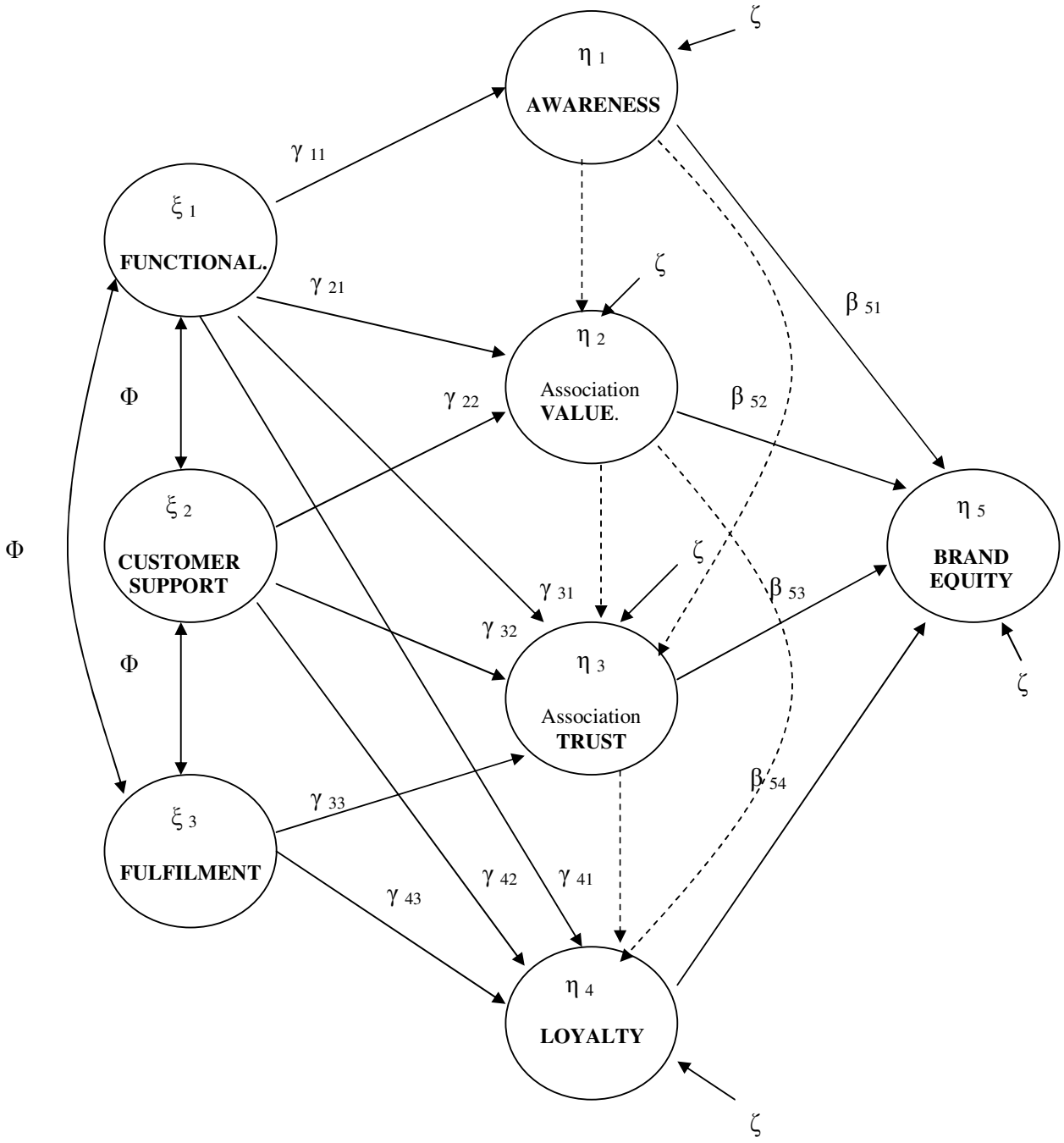
In summary, a brand equity model derived from substantive theory is developed and tested for its applicability to online businesses, in particular online retailers. The model conceives four brand equity sources namely **awareness** of the branded website, associations with the branded website in terms of **value** and **trust**, and finally **loyalty**. In addition, **three web-marketing efforts** (customer service, web functionality and fulfilment are tested for their contribution to create brand equity either directly or indirectly. Based on the literature, the following research questions and hypotheses have been devised and are described in Table 3.1.

TABLE 3.1 RESEARCH QUESTIONS AND HYPOTHESES

Variable Relationship	Research Question (RQ) / Hypotheses
	RQ (1) Is a traditional model of brand equity applicable to predict brand equity for online businesses?
	RQ (2) Which brand equity sources have stronger relatively effect on brand equity?
	RQ (3) How do the brand equity sources interact among each other to produce an indirect effect on brand equity?
	RQ (4) How do selected web-marketing efforts (customer service, web functionality, and fulfilment) contribute to create brand equity directly and indirectly through the brand equity sources?
Awareness → Brand Equity (BE)	H_1: The differential in brand equity is related positively to the extent to which consumers are aware of the online business brand
Value → Brand Equity (BE)	H_2: The differential in brand equity is related positively to the extent to which consumers perceive brand value in the online business
Trust → Brand Equity (BE)	H_3: The differential in brand equity is related positively to the extent to which consumers trust the online business brand
Loyalty → Brand Equity (BE)	H_4: The differential in brand equity is related positively to the extent to which brand loyalty is evident in the online business.
Awareness → Value	H_5: Brand awareness is positively related to association of brand value
Awareness → Trust	H_6: Awareness is positively related to association of trust
Value → Trust	$H_{7:}$ Perceived value is positively associated with trust
Trust → Loyalty	H_8: Trust is positively related to loyalty
Value → Loyalty	H_9: Perceived value is positively related to loyalty
Functionality → Awareness	H_{10}: Perceived awareness is positively influenced by the functionality of the business website.
Functionality → Value	H_{11}: Perceived value is positively influenced by the functionality of the business website
Functionality → Loyalty	H_{12}: Perceived loyalty of a brand is related positively to the extent to which the brand is perceived as functional

Variable Relationship	Research Question (RQ) / Hypotheses
Functionality → Trust	H_{13}: perceived trust of a brand is related positively to the extent to which the brand is perceived as functional.
Fulfilment → Trust	$H_{14:}$ The more a website fulfils the promise, the more consumers will trust it.
Fulfilment → Loyalty	H_{15}: perceived loyalty of a brand is related positively to the extent to which the brand is perceived as fulfilling the promise.
Customer Service → Loyalty	H_{16}: perceived loyalty of a brand is related positively to the extent to which the brand is perceived as providing customer service support.
Customer Service → Trust	H_{17}: perceived trust of a brand is related positively to the extent to which the brand is perceived as meeting customer service demands.
Customer Service → Value	H_{18}: perceived value of a brand is related positively to the extent to which the brand is perceived as offering customer service.

FIGURE 3.2 THEORETICAL STRUCTURAL MODEL



CHAPTER 4.0 METHODOLOGY

This chapter describes the approach followed to test the proposed conceptual framework specified in the previous chapter. The chapter starts by describing the process to arrive at the sources or dimensions of brand equity, the antecedents of brand equity and the scale items for the measurement and structural model. This section is followed by the selection of the stimuli (online businesses) to be assessed, characteristics of the sample used, the survey instrument to collect the data and the statistical techniques applied to process the data. Results from the pilot study are also reported in this chapter.

4.1 Multi-Scale Development of Measures

Following Churchill's (1979) paradigm, the initial step in scale development was to clarify the domain of the online brand equity dimensions.

Guided by the identified dimensions in the literature and more influenced by Aaker' s (1996a) brand equity framework, four dimensions or sources of online brand equity (OBE) are recognised: online business website ***awareness***, customers' ***associations of value,*** ***associations of trust,*** and ***loyalty.*** In addition, three main company-generated web marketing activities were considered as drivers of the brand equity sources. These web marketing activities that companies develop to influence awareness, value, trust, and loyalty are web functionalities, customer service support, and fulfilment. Finally, two brand equity outcome measures were used: the inclination to pay a premium price from buying in a particular online business website and the intention to repurchase from the website. The items used to measure these constructs came from previous research studies both offline and online and are described in the next section.

4.1.1 Web Awareness

Briefly, web awareness is the consumer's ability to quickly recall and recognise a company's branded website. The observable variables used to measure the web awareness dimension were based on the work of Yoo, Donthu and Lee (2000) and Washburn and Plank (2002). These variables are: "I know what [X online business] looks like", "I can recognise [X online business] among other competing online businesses", "I can quickly recall the name of [X online business]", "Some characteristics of [X online business] come quickly to mind" and "I have difficulty in imagining [X online business]".

4.1.2 Value Associations

Value associations refer to "customer's perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer's goals and purposes in use situations (Woodruff, 1997, p. 142)". This definition is broader than definitions that focus on "give-versus-get" such as price/value trade-off (Parasuraman, 1997).

Perceived customer value can be derived from many sources among others as competitive price (price is not only perceived as cost but also a benefit), superior shopping convenience, superior customer advice and breadth and depth of product/service availability (Alba et al., 1997, Anckar, Walden and Jelassi, 2002). The construct of perceived value was purposefully built with many more items than the rest constructs due to its multifaceted nature.

4.1.2.1 Competitive Price

Value derived from a competitive price was measured with five observable variables using an adaptation of Burke (2002) and Zeithaml (1988). The observable variables are described in

the following statements: “I prefer [X online business] because price deals are frequently offered”, “I have a preference for [X online business] because it frequently offers an updated list of product promotions (sales), “In [X online business] I can make the most for the least money”, “In [X online business] I can find the lowest prices for a quality brand” and “I cannot find quality products at an affordable price in [X online business]”.

4.1.2.2 Shopping Convenience

Value associated with shopping convenience refers to access to price information for product comparison, forms of payments as well as tracking orders and inventory capabilities (Burke, 2002). Three observable variables measured this dimension: “I have a preference for [X online business] because it allows the comparison of product prices across online stores”, “I like [X online business] because it allows me to track my orders” and “I like [X online business] because it offers alternative forms of payment: cash on delivery, credit cards, money order”.

4.1.2.3 Breadth and Depth of Merchandise

Value associations with breadth and depth of merchandise were assessed by two variables adapted from Arnold, Oum and Tigert (1988) and Alba et al. (1997): “I like [X online business] because one can find the broadest range of products” and “I have a preference for [X online business] because it provides the deepest specialised assortments”.

4.1.2.4 Compensation

One item related to the value associated to compensation (or recovery cost) when the service goes wrong was also included: “[X online business] is good because it allows returns to be shipped back at retailer’s cost”.

4.1.3 Trust Association

In this study we refer to online trust, which differs from offline trust. Online the object of trust is the business website itself and includes consumer perceptions of privacy, security and overall consumer confidence in the online business (Bart et al., 2005). The items adapted to measure this construct are: “It feels safe to disclose personal information in [X online business]” and “It feels safe to conduct transactions in [X online business]” and “[X online business] has my confidence” (Yilmaz and Hunt, 2001), (Burke, 2002) and (Wang, Beatty and Foxx, 2004).

4.1.4 Loyalty

Loyalty is interpreted as the customers’ commitment to a particular online business in regard to choosing and buying products from it and no-one else (Washburn and Plank, 2002). Loyalty was also explained by customers’ preference to buy in a particular online business despite the fact that other websites offer products of similar features and monetary value (Wang, Beatty and Foxx, 2004). The majority of early studies conceptualised loyalty behaviour as a form of repeat purchasing, however this practice has been criticised on the grounds that behaviour-based loyalty alone does not distinguish between true loyalty and spurious loyalty (Day, 1969). Hence, Day suggests the incorporation of an attitudinal dimension, thus stressing the conscious evaluation process leading to loyalty.

Following the previous advised, three observable variables were adapted from the literature to measure the construct loyalty: “It makes sense to buy [X online business] instead of any other online business, even if they are the same”, “Even if another online business has same

features as [X online business], I would prefer to buy from [X online business]" and "I would definitely recommend [X online business] to friends, neighbours and relatives" (Sirdeshmukh, Singh and Sabol, 2002, Yoo and Donthu, 2001, Suppehellen and Nysveen, 2001).

4.1.5 Brand Equity Outcome

To capture the multidimensionality of the brand equity construct two measures were used: "I am willing to pay a premium price of up to 10% when purchasing from [X online business] as opposed to a less well-known online business". Ailawadi and Keller (2004) have pointed out that several researchers (Aaker, 1991, Ailawadi and Keller, 2004, Aaker, 1996a, Chaudhuri and Holbrook, 2001, Park and Srinivasan, 1994) have considered price premium as a measure of brand equity[2]. The premium price mentioned in the question (10% as a maximum) was derived from Smith, Bailey and Brynjolfsson (2000) findings that consumers were willing to pay a premium of 6.8% when buying from an online store where they had shopped before. Although the 10% is slightly higher than the findings, it may still be in the low range considering that price dispersions online have been reported of up to 33% (Riquelme, 2001). The second outcome measure of brand equity is reflected in the statement: "I would definitely buy from [X online business] again". Intention to purchase and re-purchase intention have also been used as brand equity outcomes since they both manifest themselves in terms of market share (Agarwal and Rao, 1996, Simon and Sullivan, 1992) which is a benefit accrued to firms from brand equity.

[2] An interesting observation to bear in mind when deciding on price premium as a measure of Brand Equity is raised by Ailawadi and Keller (2004). They observe, "Several of the strongest retailers today, e.g. WalMart, Target and Aldi, are built squarely on a low price positioning (p340)". This presents a complication when studying brand equity for these types of retailers that obviously have brand equity regardless of lower (rather than premium) prices than the competition. In these cases brand equity must be assessed in a different way.

4.1.6 Company-Web Marketing Efforts

The proposed model in this research suggests that brand equity can be created, maintained and expanded by influencing the sources of brand equity. There are many marketing efforts that companies can develop on the Internet to strengthen the sources of brand equity. Some of these are, for example, the way customer service staff answer queries, whether on the phone, via email, or personally; the speed at which the products and services are delivered to a customer; the ease of returns; the lack of technical glitches, the user friendliness of the business website, etc. This study will investigate the relationships between some web marketing efforts that are classified under three main categories: website functionality, customer service support, and fulfilment. The definitions and observable variables used to assess these different marketing efforts are described below.

4.1.6.1 Web Functionality

This refers to the site attributes that affect consumers' conduct when working online. The web functionalities relates to easy of use, navigation and speed when using an online business website. Functionality was measured by the following observable variables which have been adapted from the work of Szymanski and Hise (2000), Suppehellen and Nysveen, (2001) and Abels, White and Kahn (1999): "I do not like [X online business] because it is particularly slow in downloading pages", "I like [X online business] because it is easy to navigate (i.e. content organised around user's needs)", "I like [X online business] because it offers consistent accessibility (i.e. it is up and running at all times)", "I have a preference for this [X online business] (because it is easy to order products from"), "I like [X online business] because it saves a list of purchases for returns and warranty repairs", "I like [X online business] because it offers consistent navigation (links on each web page)", "I have a

preference for [X online business] because it provides interactive, fun experience (graphics, 3-D images, animation, video and audio capabilities)", "I like [X online business] because it remembers my preferences" and I prefer this [X online business] because it saves shipping/billing information".

4.1.6.2 Customer Service

This relates to the extent of assistance available to consumers in facilitating the transaction. This was measured using three observable variables adapted from Burke 2002; Lennon and Harris, 2002, Kleindl 2001: "I have a preference for [X online business] because it responds quickly to customers", "I like [X online business] because it offers alternative customer support (call centre, toll-free email, "live" individuals), and "I have a preference for [X online business] because it offers specialised customer support".

4.1.6.3 Fulfilment

Fulfilment spans both the online and the offline environment because it involves aspects of the website and also the physical distribution of the product. The overall fulfilment of the website was captured by five variables based on the work of Bart et al. (2005), Chow (2004) and Christodoulides and Chernatony (2004): " I like [X online business] because it offers the consumer choice of carrier", "I like [X online business] because items are delivered in the time expected", "I have a preference for [X online business] because items delivered match the order", "I like [X online business] because items delivered match the product description" and "I like [X online business] because it sends email order confirmation.

4.2 Online Stimuli Selection

This research focused on online business companies which derive all of their revenues from e-business and are relatively easy to identify using publicly available descriptions of their major lines of business. Online businesses selected in the study belong to the retailing sector and they are commonly named as e-tailers; however, this study uses both terms interchangeably as well as the term 'website'. It centres on e-tailers because they have doubled in size in the last two and a half years and are expected to grow to a US$144 billion market by 2010; this is three times more than what is observed in any other sectors (Tarn et al., 2003).

The stimuli selection excluded all web media or portal sites such as Yahoo.com, AOL, and MSN.com because although some media sites sell products and services, their business models are different from that of e-tailers. More importantly, media sites aggregate their revenues from sales and various services fees; thus revenues due only to e-tailing cannot be tracked utilising publicly available data (Min and Wolfinbarger, 2005).

After the initial consultation of the literature, which included academic journals, press, business and Internet reports, a list of 75 e-tailers was created from March until May 2004. The enlisted online businesses were the most commonly known by the public as they were constantly referred to in businesses press reports such as Business Week, Interbrand, Financial Times, Wall Street Journal and Fortune.com (ACNielsen, 2003).

They were mentioned in the financial sector and won different Internet awards as shown in different ranking reports (BizRate, Internet retailers Top 50 websites, Shoppers' Choice Award, Forbes Ranks, Power Rankings, Forrester and Gomez.com.) It was assumed, that by

selecting the most commonly mentioned e-tailers, respondents would be more familiar and aware of the selected companies thus increasing the rate of responses.

Given that the list was too extensive to test the brand equity model in a pilot study, a sub-classification was obtained using the following criteria: First, companies were publicly traded, therefore there was access to additional information, if needed, from different sources (e.g., www.sec.gov and www.hoovers.com). This limited the scope of the analysis, as the preliminary list contained many successful private e-tailers. In the case of Onsale.com and CDNow.com, they had joined forces with big giants like Egghead and Amazon respectively and therefore their information could be collected.

Second, the enlisted e-tailers were the most commonly mentioned and visited by the online consumer as registered in the financial and website reports (Business Week, Interbrand, Financial Times, Wall Street Journal, Fortune.com, BizRate, Internet Retailer, Shoppers' Choice). The third criterion referred to the amount of sales each e-tailer had achieved. This was taken as an indicator of the various levels of awareness, loyalty and trust consumers have about the online business.

The purge of the original 75 online companies left a group of ten business websites as brand stimuli: Amazon.com, BlueNile.com, Buy.com, CDNow.com, Dell.com, eBay.com, eCost.com, Egghead.com, Onsale.com and Redevelop.com. The list of e-tailers and their descriptions are given in Appendix 2.

4.3 The Pilot Study

This section reports on the pilot study methodology. The results of this trial study are shown in Chapter 5 under Findings and Discussion.

The specific goals of the pilot study were to purify the measurement scales (i.e. to identify the best items in each scale), and to identify the best stimuli as candidate for the survey of the main study.

4.3.1 Subjects: The Pilot Study

To determine the tenability of the research model, we tested the instrument with 185 responses obtained from students in a large university in Australia.

The use of students as participants is a highly debated issue, and some marketing researchers argue that students are not good surrogates for adult consumers (Lamb and Stem, 1979, Burnet and Dunne, 1986). While this may be a relevant consideration in traditional marketing venues there are others that contend that for theory-testing research, a homogeneous sample (student sample), can be acceptable and even desirable as it has advantages for theory-validation research (Calder, Phillips and Tybout, 1981). More importantly, students have been accepted for theory-testing research in which the multivariate relationships among dimensions (which is the case in this study), not the univariate differences between samples, are being investigated (Calder, Phillips and Tybout, 1981). In fact, Ferber (1977) argues that as long as the nature of the research is exploratory and the focus of the study is relevant to the convenience student sample, such a sample is valid for consumer research. This study complied with these two prerequisites. First, the pilot study was part of the exploratory phase of this research focusing on the tenability of the research model of OBE. Second, university students have been considered by others as avid online buyers (Yoo, Donthu and Lee, 2000, Wang, Beatty and Fox, 2004) and therefore may adequately reflect a relevant portion of the online consumer population.

Finally, students have been effective surrogates for non-students or adults in various empirical studies that have examined, for example, brand equity and online retailers

(Washburn and Plank, 2002, Wang, Beatty and Fox, 2004). For the above reasons, participants were thought to be familiar with e-tailers and therefore, potential or current buyers from an online business. This familiarity was considered to enhance reliability and validity of the responses to the questionnaire.

4.3.2 Instrumentation: The Pilot Study

The instrument (a self administered questionnaire) contained 41 items designed to measure the different identified constructs described in section 2.1. (Please see Appendix 3 for the full list of constructs and corresponding items).

Respondents were asked to indicate their perception on the 41 observable variables on any one of the ten online retailers, provided they had bought from the online business. The research relies on respondents' perception rather than the actual features of an online business such as its website for several reasons. First, the perception of an online business measures a consumer's subjective judgment about a brand's overall excellence, superiority or value. Second, it is impossible to control actual online variables to build online brand equity because of the continuous changes in their websites carried out by the online businesses. Third, perception plays a pivotal role in explaining an individual's behaviour (Yoo, Donthu, and Lee, 2000). Fourth, perceived variables such as price, that deliver certain value, plays a more direct role in the consumer psychology than the actual price itself (Olson, 1977). Actual variables such as price and product range cannot influence consumer behaviour unless consumers perceive them to exist (Dickson and Sawyer, 1990). Fifth, there is evidence that what a consumer perceives is not necessarily the actual nominal value (e.g. price) but it is encoded by a consumer as more general category: "expensive" or "cheap" (Olson, 1977).

Furthermore, it has been demonstrated that consumers are not likely to know or remember actual prices, even at the point of purchase (Dickson and Sawyer, 1990). Hence, perceived variables have a stronger meaning and explain consumer behaviours more effectively than actual nominal values (Yoo, Donthu, and Lee, 2000; Yoo and Donthu 2001).

Participants were told that the objective of this study was to investigate the perception of several online retailers on a number of attributes to assess the overall brand value of the business. The questionnaire also stressed the fact that only a subject who had bought on the Internet from any of the listed vendors was encouraged to answer. It was presumed that by asking respondents who had actually bought from any of the vendors, the information provided would be more accurate than the data obtained from subjects who did not have an experience with the e-tailers. Respondents assessed only one of the listed online businesses to avoid some potential common method biases and to encourage the completion of the questionnaire.

All 41 observable variables were measured on 7-point Likert-type scales, with anchors of 1= *very strongly disagree* and 7= *very strongly agree*. This scale was used instead of a five-point scale because it has been suggested in the literature that a 7-point scale increases the variability of the responses (Washburn and Plank, 2002).

To minimise possible response bias, the questionnaire's instructions emphasised that "there is not right or wrong answer; only the perception you have of the online business is what matters". In the introduction section of the questionnaire, the purpose of the study was described and the importance of a respondent's conscientious help was stressed.

Apart from the measures of the research model, further responses were captured in the last section of the questionnaire in regard to usage, access, and the length of time using the Internet. Accordingly, respondents were asked how frequently they had used and how they accessed the Internet in a specific period. These operationalisations of experience through

frequency and length of interaction with the net were also intended to give the researcher an indication of the participants' response validity. It is assumed the further the interaction with the net and e-tailers, the more credible are their responses.

In addition to the Internet related variables, the questionnaire included demographic measures such as gender and age.

4.3.3 Assessment of Factor Structure and Reliability: The Pilot Study

The data on the full 41-item battery was analysed using an iterative scale purification process consistent with Churchill's paradigm (1979) and similarly used by others (Parasuraman 2000).

Two methods namely Exploratory Factor Analysis (EFA) and Cronbach's alpha coefficient were used to purify the measurement scales and to explore the uni-dimensionality of the items. The iterative reduction and refinement of both methods did not only eliminate redundant items, but at the same time, identified the best stimuli as candidate for the main survey.

Pool data was subjected to the above methods. The purpose of the pooled data was to produce a general scale that would be appropriate for assessing online brand equity of a variety of online businesses. The pooling of the data is considered appropriate when developing scales of brand equity (Yoo and Donthu, 2001). The resultant observable variables from the above assessments were then further used for hypothesis testing in the main study.

4.3.3.1 Exploratory Factor Analysis: The Pilot Study

Exploratory factor analysis (EFA) was conducted to investigate whether the data reflected the constructs, dimensions or factors[3] and whether individual items were loaded on their appropriate constructs as intended. The data was subjected to iterative EFA using SPSS v.12 software. EFA was used to identify patterns, structure and purify the scale measures on the pooled sample.

A combination of methods and criteria were used to identify items and factors for inclusion in the final factor solution which had been discussed elsewhere (Conway and Huffcutt, 2003). First, to establish construct validity, *maximum likelihood* factoring was used as the extraction method because it represents a high quality decision to understand latent (unobserved) variables that account for relationships among measured variables (Heeler, Whipple and Hustad, 1977). This factoring analysis shows parameters which are most likely to have resulted in the observed correlation matrix (Conway and Huffcutt, 2003).

Second, the *oblique factor rotation* (promax) over orthogonal rotations was chosen, as it is deemed to produce a better structure and better interpretable solution (Hair, et al., 1992, Conway and Huffcutt, 2003). It also reflects a correlation that may be present among the variables (Conway and Huffcutt, 2003). Therefore, oblique rotation is more desirable than orthogonal because it is theoretically and empirically more realistic (Hair et al., 1992).

The factor pattern matrix resulting from the exploratory factor analysis consists of factor loadings that are analogous to partial standardised regression coefficients (betas) in a multiple regression analysis, whereas the factor structure matrix consists of zero-order correlations between each indicator and the factors then behave as in an orthogonal rotation (Hair et al.,

[3] The terms construct, factors or dimensions are used interchangeably

1998, Garson, 1998). Third, *eigenvalue* criterion (one or close to 1) was used to guide the initial number of factors to retain (Conway and Huffcutt, 2003).

Fourth, the percentage of variance criterion accounted by each factor was also observed. Fifth, those items with low *communalities* (<0.6) were considered for deletion. *Communalities* are the proportion of variance of a particular item that is due to common factors (shared with other items). *Communalities* are computed for each variable, that is the proportion of variance that each item has in common with other items (Hair et al., 1998).

Overall, the previous criteria were guided by the judgment about the expected factor structure contained in the scales and their items. Considering these criteria, the most representative and parsimonious set of factors was obtained.

A series of iterations of factor analysis were then conducted, each, involving the elimination of items based on the value of factor loadings and the cut-off value of 0.50 (Hair et al., 1992). This value was assigned such that only items with loadings of at least 0.50 were retained and items with loadings exceeding 0.50 on two or more dimensions were eliminated (Sangit, Linda and Frederick, 1991). Final factors were separately measured for reliability; that is to say, items in each factor were summed to create a composite measure of $\geq$0.70. The coefficient Cronbach's alpha was estimated as an indicator of inter-item reliability or consistency.

4.3.3.2 Cronbach's Reliability: Measure Reliability Check.

The data was subjected to Cronbach's reliability analysis using SPSS v.12. In general, reliability refers to the reproducibility of a measurement. In addition, internal reliability is the estimation based on the correlation among the variables comprising the set (Garson, 1998). However, in profound terms, reliability is the assurance that the items posited to measure a

dimension are sufficiently related considered as a set of items to be reliable (Cronbach, 1951). The literature shows different methods to test reliability (Straub, Gefen and Boudreau , 2004) and this study used the alpha reliability method. Cronbach's reliability of the variable is derived by assuming that each item represents a retest of a single item however, it is not a test-retest reliability (Hopkins, 2000). Though widely interpreted as such, strictly speaking alpha is not a measure of uni-dimensionality either (Garson, 1998). Alpha reliability should be regarded instead as a measure of internal consistency of the mean of the items at the time of administration of the questionnaire (Hopkins, 2000). The analyses of reliability were performed on the pool data after performing EFA for each of the sets of items representing the dimensions of online brand equity, and their antecedents.

The study followed the conventional minimum cut-off reliability level of 0.70 (or close) that is recommended for theory testing research (Nunnally and Bernstain, 1994). This value is suggested because it presumes that an item will explain at least half of the variability of the latent construct. Items were selected for each dimension until no higher reliability could be achieved. The iterative reliability of the analyses was carried out until similar items were obtained across the sample. Higher levels of Cronbach's alpha were obtained by deleting some items from the scale as they were not tapping the same construct as all of the other items (Garson, 1998).

4.4 The Main Study

The principal purposes of the main study were to: 1) develop a measurement model of brand equity for online businesses; 2) validate empirically the measurement scales using a variety of reliability and validity criteria; 3) test the nomological validity of alternative online brand equity models; 4) test the effect of web marketing efforts on brand equity source; and 5)

validate the brand equity model against data from consumers who have bought from other online companies than the selected in this study.

This section reports the methodology carried out to accomplish the above objectives. It explains the selection of the stimuli, sample subjects, instrument, and statistical tools employed. The main study scrutiny concludes with the scale purification by means of Exploratory Factor Analysis, Cronbach Reliability, Confirmatory Factor Analysis (CFA), and Structural Equation Modelling (SEM).

4.4.1 Online Stimuli Selection: The Main Study

From the pilot study information, four online companies were selected as stimuli: E-bay, Amazon, Dell, and CD Now. The reasons for choosing these four companies are: first, subjects in general were more familiar with them, thus increasing the response rate. Second, independent measures of brand equity exist that could be used to relate to the model in this study. Third, these online businesses were commonly mentioned in the brand equity report by Interbrand. Fourth, these online companies were different in terms of familiarity to consumers, CD Now being the least familiar of them according to the number of respondents who rated this website in the pilot study, thus creating variability in terms of the measures of online brand equity.

4.4.2. Subjects: The Main Study

Subjects for the study were under graduate and graduate students from a large university in Australia. 1026 students were contacted in various classrooms to participate in the survey. The use of student samples has sometimes been questioned on grounds of external validity because of its unique characteristics and unrepresentativeness of “real” population (Wells, 1993, Lamb and Stem, 1979, Burnet and Dunne, 1986). However, the following reasons

suggest that the sample used in this study may not represent, significantly, a threat to external validity. Students are usually considered poor surrogates for the actual people because they are asked to take a position "as if" they were other subjects (e.g. a CEO). This study does not require subjects to take an imaginary position. A further argument regarding the lack of external validity in the use of students is that these subjects are put in situations unfamiliar to them. In this study, subjects were asked to be familiar with the process of purchasing on the Internet. Finally but not least important, for theory-testing research, a homogeneous sample is deemed acceptable and desirable because it has important advantages for theory validation research (Calder, Phillips and Tybout, 1981). Finally, a report on Australian Internet demographics[4] indicates that there has been significant normalisation of the online population since 1997 - which now has similar demographics to those of the population at large - but 'power users' are still predominantly young males. Furthermore, the website declares: "we are moving from a world of Internet wizards to a world of ordinary people routinely using the Internet as an embedded part of their lives."

4.4.3 Instrumentation: Main Study

The instrument (a self administered questionnaire) contained 27 items that measured the four sources and outcomes of brand equity and the three antecedents of brand equity sources. Please see the final questionnaire in Appendix 4. The items were assessed on a 7 -point Likert scale where 1 stands for "very strongly disagree" and 7 for "very strongly agree". Other data included demographic characteristics of the sample, gender, age and access to Internet. Thinking in advance that some potential respondents may not have purchased products from the presented online businesses, an extra line was added with the possibility to assess "Other"

[4] http://www.caslon.com.au/metricsguide3.htm. Accessed 17 April 2008.

online retailer. The potential respondents, was thought, could be used as an alternative sample for validation purposes in case split validation was not possible. Respondents were told about the purpose of the study. It was emphasised in the questionnaire that there were no right or wrong answers and that the investigators were interested in his/her perceptions. The survey complied with University's ethics requirements and regulations.

4.4.4 Assessment of Factor Structure and Reliability: Main Study.

To assess both the measurement and structural models hypothesised in this research, the full measurement model was defined as comprising eight dimensions. OBE was hypothesised as a first-order factor manifested in four related dimensions. Company web marketing efforts considered influencers of brand equity sources were represented in three constructs: customer service support, web functionality and fulfilment. Finally, the brand equity outcome measures were assumed to constitute a construct on their own. All together, the measurement model tested comprised eight dimensions.

In a first stage, the data containing the 27 item battery developed in the pilot study was subjected to successive steps of theoretical modelling, exploratory factor analysis and statistical testing, as suggested by Churchill (1979) and expanded by Straub (1989). These statistical tests have already been explained in section 4.3.3.1 and 4.3.3.2 in the pilot study therefore they will not be repeated here. A priori specification of a CFA model allowed all observable variables to be free to load on their expected dimension (latent variable), but restricted to have zero loading on the remaining ones**.** Thus an observable variable that purports to reflect awareness is related to the awareness dimension and not to any other one. The model would then be evaluated by statistical means to determine the adequacy of its goodness of fit to the sample data.

Based on the CFA fit assessment, the measurement model was further refined and then fitted again. Constructs and associated observable variables (items) entered in the measurement model in the main study are listed in Appendix 4 (in shade).

Data was subjected to a CFA, using the algorithm of maximum likelihood estimation (MLE) as the method of parameter estimation for the model. MLE was chosen because it has been shown to be robust to departures from normality assumptions (Bollen, 1989). The raw data was used as input to PRELIS (Joreskog and Sorbom, 1996b) to obtain the covariance matrix that was subsequently run in LISREL V8.72 (Joreskog and Sorbom, 1996a). This model was evaluated according to a selected number of goodness of fit indicators. Each step of the measurement model's assessment is disclosed in the following sections.

4.4.5 Uni-Dimensionality Check

Uni-dimensionality has been described in the literature as evidence that a single dimension or construct underlies a set of measures (Gerbing and Anderson, 1988).

Uni-dimensionality is demonstrated when the observable variables of a dimension have acceptable fit on a single-factor (one-dimensional model) (Hair et al., 1992). Uni-dimensionality tests were done on all the dimensions before assessing their reliability. Examination of the estimated loadings and assessments of their statistical significance were performed on each. In some cases, statistical significance was not met on the observable variable and was eliminated for better fit. This uni-dimensionality check is important because it underlies the calculation of reliability. A reliability check does not ensure uni-dimensionality but instead assumes it exists (Hair et al., 1998). The model's measure of reliability was assessed by means of composite reliability and average variance extracted.

4.4.5.1 Composite Reliability Assessment

Composite reliability, also called in the literature construct reliability, is a measure of internal consistency and does not ensure validity (Fornell and Larcker, 1981, Hair et al., 1992). The interpretation of the composite reliability is similar to that of Chronbach's alpha, except that it also takes into account the actual factor loadings rather than assuming that each item is equally weighted in the composite load determination (Bollen, 1989).

Composite reliability is also used as a measure of construct reliability, that is the degree to which items are free from random error and therefore render consistent results (Schwab, 1980). When reliable measures exist there is an indication that the items are consistent with their appropriate factors (Hair et al., 1998). An acceptable standard value of composite reliability is 0.70, which gives great confidence that the observable variables are all consistent with the dimension of the model (Schwab, 1980, Hair et al., 1992, Nunnally and Bernstain, 1994).

It is advisable to produce separate composite reliability and variance extracted for each dimension in the model. Unfortunately, LISREL does not compute either of these directly, however all the necessary information is readily available from the output.

The composite reliability of a dimension was calculated as follows (Hair et al., 1998).

$$\textbf{Composite Reliability} = \frac{(\Sigma \text{ Standardised loading})^2}{(\Sigma \text{ Standardised loading})^2 + \Sigma\, \varepsilon j}$$

The standardised loadings were obtained directly from the LISREL's output, and εj is the measurement error for each observable variable and $\Sigma\, \varepsilon j$ is the sum of error variances (Fornell

and Larcker, 1981). The measurement for error is 1.0 minus the reliability of the observable variable, which is the square of the indicator's standardised loading (Hair et al., 1998).

4.4.5.2 Average Variance Extracted (AVE) Assessment

Average variance extracted has a dual complementary function when assessing structural equation models; one is towards composite reliability and the other to convergent validity. High variance extracted values (≥ 0.50) are indicative that the observable variables truly reflect the dimension in question. This will be the case when observable variables have a high loading (≥ 0.70), indicating a high level of reliability as well (Hair et al., 1992).

The average variance extracted is calculated as follows (Fornell and Larcker, 1981).

$$\textbf{Average Variance Extracted} = \frac{(\Sigma \text{ Standardised loading}^2)}{(\Sigma \text{ Standardised loading}^2) + \Sigma\, \varepsilon j}$$

The difference between average variance extracted and composite reliability resides only in the fact that in the former the standardised loadings are squared before summing them.

After comparing model-fit indices with common acceptance levels suggested by previous research and the model modification, psychometric properties of the measurement model were evaluated in terms of convergent validity, discriminant validity and nomological validity.

4.4.6 Model's Goodness-of-fit Assessment

The purpose of assessing a model's fit is to determine the degree to which the hypothesised model as a whole is consistent with the empirical data of the study. The literature offers a wide range of goodness of fit indices. Unfortunately, the literature is

unequivocal as to which represent a good estimation of fit (Diamantopoulos and Siguaw, 2000). In part this might be due to the fact that some indices of fit are affected by the sample size, estimation method, model complexity, violation of the underlying assumptions of multivariate normality and variable independence (Byrne, 1998).

As a result, since there is no agreement in the literature as to which are the best , multiple descriptive indices of fit were used to further assess the goodness-of-fit of the model (Raykov, Tomer and Nesselroade, 1991). It has been suggested that the assessment of model adequacy must be based on multiple criteria that take into account theoretical, statistical, and practical considerations (Byrne, 1998).

Two considerations in the selection of best fit indices were kept in mind. These involved a reference of most cited indices in the methodological literature on CFA and the extent to which these indices are less affected by sample size, estimation procedures, violations of assumptions or some combinations of both (Chaudhuri, 1995, Diamantopoulos and Siguaw, 2000, Byrne, 1998).

The first measure of fit included in the LISREL output is the chi-square value (χ^2). The chi-square statistic is the traditional measure for evaluating overall model fits in covariance structure models and provides a test of perfect fit in which the null hypothesis is that the model fits the population data perfectly (Diamantopoulos and Siguaw, 2000). A statistically significant χ^2 causes rejection of the null hypothesis, implying imperfect model fit and possible rejection of the model (Byrne, 2003). Thus the aim in confirmatory analysis and structural equation modelling, contrary to conventional hypothesis testing procedures, is not to reject but to accept the null hypothesis. By consensus, large values of χ^2 indicates that the model fit poorly with the population and subsequently small values of χ^2 correspond to good fit (Joreskog and Sorbom, 1996a). Despite its importance in providing a formal significance test of the covariance structure hypothesis, χ^2 had led to problems of fit. The Chi-square

statistic has been found to be very sensitive to both normality (particularly excessive kurtosis), and the size of the sample, and it also assumes that the model fits perfectly well in the population. This last point has an unrealistic impact in the empirical analysis since the model might fit well the sample but it is very unlikely to happen in the population. For the above reasons, instead of regarding χ^2 as a test statistic, the literature considered it as a goodness (or badness)-of-fit measure (Diamantopoulos and Siguaw, 2000).

Among the common indicators used to judge a good fit of the model to the population were the standardised root mean square residual (SRMR) and the root mean square error of approximation (RMSEA). These indices based on their discrepancy function and have been considered as important to supplement an investigator's judgment. RMSEA is recognised as one of the most informative criteria in covariance structure modelling and considered the first goodness-of-fit to be reported in the study (Byrne, 1998). In addition, whenever using maximum likelihood as a unique method of estimation, RMSEA needs to be reported because it has been found to yield consistent results across estimation procedures when the model is well defined (Sugawara and MacCallum, 1993) and also is not biased by sample size (Widaman and Thomson, 2003).

Furthermore, RMSEA is particularly important when determining the number of constructs because it decreases when an additional construct reduces the F (minimal population discrepancy function) substantially, but increases if including the additional construct only reduces F slightly (McNight, Choudhury and Kacmar, 2003). Values less than 0.05 are considered of a good fit, and values as high as 0.08 represent reasonable errors of approximation in the population (MacCallum and Austin, 2000). It is also recommended to report the 90 percent interval around the RMSEA values to assess the precision of RMSEA estimates as such information helps the assessment of model fit (MacCallum, Browne and

Sugawara, 1996). A good precision of the RMSEA value is indicated by a narrow confidence interval reflecting how well the model fits the population covariance matrix (Byrne, 1998).

The Standardised Root Means Square Residual (SRMR) represents the average residual value derived from the fitting of the variance-covariance matrix for the hypothesised model to the variance-covariance of the sample data and a value of 0.05 or less is considered of a good fit (Chaudhuri, 1995). Although, RMR values are highly regarded, they are difficult to interpret due to their residual susceptibility to the sizes of the observed variances and covariances (Byrne, 1998). Additional information regarding the fit of the model was obtained from the values of the following indices of fit which were first introduced by Joreskog and Sorbom (1982).

Goodness-of-fit index (GFI) is an indicator of the relevant amount of variances and co-variances accounted for by the model and thus shows how closely the model comes to perfectly reproducing the observed co-variance matrix (Diamantopoulos and Siguaw, 2000). Acceptable fit is obtained when values of the GFI are greater than 0.90 (Jöreskog and Sörbom, 1993). The GFI can be classified as an absolute index of fit because it basically compares the hypothesised model with no model at all (Chaudhuri, 1995).

Information was collected from incremental or comparative indices that show the fitness of the default model compared to the independence model (null model). The incremental indices are considered better indicators of fit than the absolute indices because they exhibit relative independence from sample size (Widaman and Thomson, 2003). The study considered two indices under this category as suggested in the SEM literature (Bentler, 1990, Bentler and Bonnett, 1980). One is the Bentler-Bonnett's Normed Fit Index (NFI), regarded as practical choice. The second index, Comparative Fit Index (CFI) is a revised version of NFI that takes into consideration the size of the sample. The values for both indices range from 0 to 1 with values close to 1 representing a good fit (Bentler, 1990). A third Index recommended to be

reported among the incremental fit indices is the NonNormed Fit Index (NNFI) also called Tucker-Lewis Index (TLI) (Byrne, 1998). Normed and Nonnormed fit indices are recognised as very popular adjuncts to more traditional statistics in structural equation modelling to help assess the quality of a model (Bentler, 1990).

The final measure of fit is Hoelter's (1983) critical N (CN) that is very different to the previously mentioned indices as it relates to the appropriate size a sample must have in order to accept the fit of a given model on a statistical basis. (Hoelter, 1983). A CN value > 200 has been deemed an appropriate sample size (Hoelter, 1983). However, this cut-off value has been challenged as some considered higher CN values to yield an adequate fit of the model (Chaudhuri, 1995).

Once the selection of the goodness-of-fit measures are identified and applied to test the model fit, the next step is to improve any areas of misfit in the model (Joreskog and Sorbom, 1996a). In this case, LISREL offers indicators of model misspecification in two areas; the standardised residuals and modification indices. In relation to the former, each residual represents the discrepancy between the covariance matrix of the hypothesised model and the sample covariance matrix; therefore, there is one residual for each pair of observed variables.

There are two kinds of residuals: fitted and standardised and the difference between the two resides in their interpretation difficulty. Standardised residual are fitted residuals divided by their asymptotically (large sample) standard errors that makes them easier to interpret than the fitted residuals (Jöreskog and Sörbom, 1993). The standardised residual represents estimates of the number of standard deviations the observed residuals are from the zero residuals that would exist if model fit were perfect therefore, values greater than 2.58 are considered large (Byrne, 1998).

In the case that the hypothesised model contained various observable variables and large residuals it is very difficult to visualise possible modifications. However, more evidence of

misfit can be captured by the modification indices (MI) provided by LISREL. An MI shows the minimum decrease in the model's χ^2 value if a previously fixed parameter is set free and the model re-estimated, thus the largest MI indicates which parameter should be set free to improve the fit to its maximum (Diamantopoulos and Siguaw, 2000). Statistically, an MI can be interpreted by means of a χ^2 distribution with 1 degree of freedom; thus, MI larger than 3.84 are considered to be large since 3.84 is the critical value of the χ^2 statistic, with 1 degree of freedom at the 5% significance level (Diamantopoulos and Siguaw, 2000). An important consideration to bear in mind in relation to modification indices is to modify the model only where there is substantive justification.

4.4.7 Model Validation

It has been long suggested that a measure may be reliable but not valid, but it cannot be valid without being reliable (Hopkins, 2000). That is, reliability is necessary but not a sufficient condition for validity. A study is only valid if its measures actually measure what they claim to, and if there are no logical errors in drawing conclusions from the data. There are different types of validity methods, but this study concentrates on convergent and discriminant validity often cited in the literature when assessing the fit of the model (McDonald and Ho, 2002).

4.4.7.1 Discriminant Validity Assessment

Discriminant validity assesses the extent to which a construct and its indicators or observable measures differ from another construct and its indicators (Bagozzi, Yi and Phillips, 1991). It can be tested by calculating the average variance extracted (AVE) from each construct and comparing it with the square correlation (φ^2) between them (Fornell and Larcker, 1981). If the AVE of a construct is greater than φ^2 estimates involving that construct,

then there is empirical evidence that the two constructs are distinct from each other (Fornell and Larcker, 1981).

Although there is no firm rule for discriminant validity, an alternative test to the above is to calculate the correlations between constructs. A correlation of less than |0.7| are frequently accepted as evidence of discriminant validity (Anderson and Gerbing, 1988). In more detail, discriminant validity can be performed by comparing an unconstrained measurement model that "freely" estimates the correlation between two constructs of interest with a constrained model with that correlation fixed as unity (Dunkley, Zuroff and Blankstein, 2003).

4.4.7.2 Convergent Validity

Convergent validity tests whether the correlations between measures of the same construct are different from zero and large enough to warrant further investigation of discriminant validity. Significant *t* values support convergent validity. It occurs if all estimated standard loadings are significant ($p < 0.05$).

An alternative way to test validity is by calculating the correlations among observable variables. If observable variables are highly correlated with others belonging to the same construct that purport to measure it, and low with the rest of them, then it can be concluded that the observable variables and the constructs have convergent validity.

Once the overall model measures are evaluated for uni-dimensionality, reliability and validity an alternative or equivalent model was searched for that might provide same or an even better fit for the data. This is explained below.

4.4.8 Equivalent Measurement Models Assessment

After assessing the model's fit there is only confirmation that the proposed model is one of the several possible acceptable models. It has been pointed out that for any set of multivariate data there will always be more than one plausible model (McDonald and Ho, 2002). Thus, it is of paramount importance to test alternative models for scientific rigor (Hair et al., 1998). A commonly used approach is based on the work of Satorra and Saris and called parametric misspecification approach (MacCallum, Browne and Cai, 2006). Under this method, models A and B are defined as differing in the sense that the additional constraints in model A are defined as misspecifications in comparison with model B (a baseline model). If the difference in Chi square and degrees of freedom between model A and B is statistically significant then the models are supposed to be different. This procedure can be performed only for nested models; where the set of possible covariance matrices generated by model A is a subset of those in model B.

4.4.8.1 Power

An important issue in research is the effect of power for detecting when hypotheses are false. The question is then, is the sample size big enough to reject any sensible hypotheses about fit? If the power is low then there is a very low likelihood of rejecting a hypothesis. A guideline to consider a sample size powerful enough is to have a power of at least 0.80. MacCallum, Browne and Sugawara, (1996) provide tables to calculate the power given a

sample size and a method to calculate the ample size necessary to achieve a previously determined level of power.

4.4.9 Structural Equation Modelling

Nomological validity has been suggested as a stricter validity criterion when developing measurement models (Churchill, 1979). To provide evidence that a measure has construct validity, researchers need to develop a nomological network. This consists of incorporating the constructs under study (e.g. brand equity) in a theoretical framework and explaining how this construct is expected to behave among other theoretically-related constructs (e.g. brand equity sources and influencers) in the framework (Churchill, 1979). Nomological validity is achieved by proposing a series of hypotheses. The proposed hypotheses for the study were examined employing structural equation modelling (SEM), a statistical methodology that takes the confirmatory approach (i.e., hypotheses-testing) to the multivariate analysis of a structural theory-bearing on some phenomena (Byrne, 1998).

SEM was used because of its superiority to other multivariate techniques and its usefulness for theory testing (Bagozzi, 1984). SEM defines the links among the constructs or latent variables (to use the SEM nomenclature) and also specifies which latent variable(s) directly or indirectly influences (i.e. “causes” changes in) the values of other latent variables in the model (Byrne, 1998). It therefore serves not only to assess complex interrelated dependence relationships, but also to incorporate the effects of measurements error on the structural coefficients at the same time (Einwiller, 2003).

Structural Equation Modelling (SEM) also known as path analysis with latent variables (Bagozzi 1984), has become a regularly used method to represent dependency relations in multivariate data in the social sciences (McDonald and Ho, 2002). The development of SEM

has been mainly attributed to the work of Joreskog and his software called LISREL. However, several other software programs that model linear structural relations have been created such as EQS, CALIS, MPLUS, RAMONA, AMOS to name a few (McDonald and Ho 2002).

SEM is constituted by two parts: the measurement model that represents constructs or latent (unobserved) variables and their set of observable variables (measures). Contrary to the Exploratory Factor Analysis where the factors are unknown, in the measurement model the factors need to be specified before hand. For this reason, the measurement model has been referred to as Confirmatory Factor Analysis (CFA) (Anderson and Gerbing 1988). Because CFA is a theoretically-driven approach compared to EFA which is a data-driven (exploratory) approach, the former is preferred over the latter (Byrne 1998).

The second part of SEM is the path model that describes relations of dependency –usually accepted as an explanation of causal effects between the latent variables. It is this combined measurement and path models that is called SEM.

Several advantages have been ascribed to SEM over other multivariate analytical techniques. The SEM is theoretically-driven therefore has advantages with respect to simple regression analysis which is essentially predictive. The researcher first has to postulate a structural model and then the overall fit of the model is compared to the data by analysing specific parameters. Simple regression models use single item measures as independent and dependent variables. With single-item measures as explanatory variables it is not possible to test empirically reliability therefore the regression models assume there is no measurement error. This is erroneous in almost all cases (Hair et al., 1998).

Whereas traditional multivariate techniques are based on observed measurements, SEM procedures can incorporate both unobserved (latent) and observed variables (Byrne 2003).

4.4.9.1 Model Cross -Validation

The selected model of online brand equity obtained using individuals who had bought from the online businesses (eBay, Amazon, Dell, CDNow) was compared with consumers who had not used either of these e-tailers but had bought products from the Internet.

A procedure developed to test model invariance simultaneously across groups has been suggested by Byrne (1998). The procedure starts by comparing the equivalency of covariance structures, in other words by testing the null hypothesis, that covariance structures are equivalent among or between groups. If this hypothesis is rejected then subsequent tests are performed to identify where the differences lie. These invariances may be accounted for by differences in the pattern or factor loadings, factor variances/covariances, and measurement error (Kettinger and Lee, 1996). The parameters for all groups were estimated simultaneously, this is because in multiple group models the fitting function represents a weighted combination of model fit across groups (Byrne, 2003).

4.5 Brand Index Calculation

So far the unit of analysis has been consumers and their level of awareness/recognition of a branded website, their associations and attitude of value and trust, and relationship with the brand (loyalty). While each of the constructs constituting sources of brand equity is a good measure of the degree to which consumers know or possess and attitude towards an online business website, it does not indicate how this measure compares to other competing business websites under study. Hence the importance of developing an index of brand equity that shows the competitiveness dimension vis-à-vis other branded websites.

Given the sample size limitation (503 respondents), it was not possible to conduct structural equation analysis at the brand level. Therefore the elaboration of an index and test of means as alternative methodology is appropriate.

The index for each of the measurement is determined as follows. Take, for example, the construct awareness composed of three indicators namely reflecting awareness and recognition of a branded business website. The index is created by first, calculating the mean value of each indicator of the construct (e.g. awareness). Secondly, the three calculated means are averaged to obtain a grand mean value for the construct. Thirdly, the overall mean value for the particular business website is divided by the average grand means of all branded websites under study. Fourthly, the resulting value is multiplied by the weight of each of the brand equity sources. The weight is derived from the results of the structural equation modelling. The index is illustrated mathematically in the box below:

(AC) Awareness Construct $= \Sigma \{(\text{Mean item 1, 2, and 3}) /3\} * W$

(ACI) Awareness Construct Index:

$$\text{AWARENESS CONSTRUCT INDEX (ACI)} = AC_i /\{(\Sigma^{n} i=_1 ACI)/4\}$$

Where AC is the Awareness Construct as calculated above, the number 4 refers to the four online businesses under study, and the W stands for the Weight of the construct.

Similarly for the rest of the constructs:

(VC) Value Construct $= \Sigma \{(\text{Mean item 1, 2, and 3}) /3\} * W$

(VCI) Value Construct Index

$$\text{VALUE CONSTRUCT INDEX (VCI)} = VC_i /\{(\Sigma^{n} i=_1 VC_i)/4\}$$

(TC) Trust Construct $= \Sigma \{(\text{Mean item 1, and 2}) /2\} * W$

(TCI) Trust Construct Index

$$\text{TRUST CONSTRUCT INDEX (TCI)} = TC_i / \{(\Sigma^{n} i=_1 TC_i) /4\}$$

(LC) Loyalty Construct = Σ{(Mean item 1, and 2) /2} * W

(LCI) Loyalty Construct Index

$$\text{LOYALTY CONSTRUCT INDEX (LCI)} = LC_i / \{(\Sigma^{n} i=_1 LC_i) /4\}$$

The consumer-based brand equity index (BEI) was calculated in two ways: First, summing the calculated sources of brand equity (e.g. awareness, value, trust, loyalty) for a particular company.

$$BEI = \Sigma (AC + VC + TC + LC)$$

The alternative way of finding the consumer-based brand equity index is by obtaining it directly from the indicators of the construct brand equity for each company, thus:

$$(BEI) = BEi / \{(\Sigma^{n} i=_1 BEi\} /4)\}*100$$

Where BEi = brand equity of company i and the second part of the equation is the average brand equity of all companies in the set.

In summary, this chapter describes the development of multi-scale measures for each of the brand equity constructs: awareness, value, trust, and loyalty. Measures of brand equity outcome and company web-marketing efforts are also specified. A description of the

methodology applied to the pilot study, which serves in part to the main study (e.g. exploratory factor analysis), is reported.

The main study used a sample of 503 undergraduate and post graduate students and four online businesses: Amazon, Dell, eBay, and CDNow. The instrument to collect the data consists of a questionnaire. Data analysis involves three stages, the first stage consists in reducing the various measures to a limited number of factors by means of Exploratory Factor Analysis. The second stage uses Confirmatory Factor Analysis to verify the constructs unidimensionality and to develop a measurement model of brand equity. Unidimensionality checks included several measures of reliability and validity among others: average variance extracted (AVE) and composite reliability. The measurement model is assessed on the model goodness-of-fit indices such as Chi Square, Root Mean Square of Error of Approximation (RMSEA), Goodness-of-fit Index (GFI), Comparative Fit Index (CFI), and Standardised Root Mean Square Residuals (SRMR) among others.

The final stage consists in assessing the structural model goodness-of-fit. The purpose of this stage is to determine the degree to which the hypothesised structural model as a whole is consistent with the empirical data of the study. The model is assessed on several indices as specified for confirmatory analysis. It is further cross-validated with a sample of 292 subjects that had not bought from the online retailers under study but had bought from the Internet.

Finally, several measurement indices are calculated to determine the strength and weaknesses of each individual branded website in the consumers' minds.

The next chapter describes and interprets the results of applying the methodology just described.

CHAPTER 5.0 RESULTS

5.1 Pilot Study

The following section reports on the data analysis conducted in the pilot study. It starts by describing the sample used to purify the scales and continues with the main findings of this exercise.

To determine the tenability of the research model, we tested the instrument with 185 students in a large university in Australia. The instrument (a self administered questionnaire) contained 41 items measuring eight constructs. The items were assessed on a 7-point Likert scale where 1 stood for "very strongly disagree" and 7 for "very strongly agree". Respondents were asked to rate one of ten online businesses (listed in the questionnaire) from which they had made a purchase.

According to the demographic data obtained from the respondents, they represented Internet users who had bought goods or services from an online business. The sample contained 53 percent men and 47 percent women. More than 50% of the sample was between the age of 22 and 27 years which represents the online consumer's prototype, who are reported to be younger in age and well educated (Hair et al., 1992, Hair et al., 1998).

The sample included individuals who had considerable level of Internet experience, i.e. more than 7 years (42.2%); they have access to a high speed connection (75%) and use the Internet everyday. Ninety one percent of all respondents assessed Amazon.com, eBay.com and Dell.com. CDNow was assessed by fewer respondents than for the previous online retailers. It was the fourth most popular e-tailer among all retailers in the questionnaire. Given these frequencies, Amazon.com, eBay.com, Dell.com and CDNow.com were selected as stimuli for the main study.

The refinement of the 41-item instrument was carried out by analysing the pool data across all online businesses. The pooling data was appropriate at this refinement and reduction stage

because the purpose was to produce a general scale that would be appropriate for assessing online brand equity for a variety of online businesses.

5.1.1 Exploratory Factor Analysis (EFA)

The first step of the analysis was to examine the factor structure of the 41 items by applying SPSS v. 12 software. Maximum likelihood factoring was selected to understand the latent structure of the set of variables and its interpretation. Factors extracted were then rotated using the oblique (promax) method. This rotation allows for correlations among the dimensions.

The EFA outcome of the pool data resulted in an eight-factor solution, which accounted for 73.8 % of the variance. Out of 41 items, 27 survived the EFA and reliability checks, loading onto the following eight distinct factors. Please see Table 5.1 for a summary.

Factor one is labelled *web awareness*, summarised in three items: "I know what [X online business] looks like" and "I can quickly recall the name of [X online business]", "I can recognise [X online business] among other competing online business".

Factor two is *loyalty* and consists of two items: "It makes sense to buy from [X online business] instead of any other online business, even if they are the same" and "Even if another online business has same features as [X online business] I would prefer to buy from [X online business]".

Factor three represents the dimension *fulfilment* with the items "I like [X online business] because it sends e-mail order confirmation", "I like [X online business] because items are delivered in the time expected", "I have a preference for [X online business] because items delivered match the order" and "I like [X online business] because items delivered match the product description".

Factor four represents *trust associations* and is summarised in two items: "It feels safe to conduct transactions in [X online business]" and "[X online business] has my confidence".

Factor five represents *brand equity outcome* and two variables loaded in this factor: "I'm willing to pay a premium price of up to 10% when purchasing from [X online business] as opposed to a less well known" and I would definitely buy from [X online business] again.

Factor six describes the dimension *web functionality*. The items that loaded onto this factor were: "I like [X online business] because it is easy to navigate, "I like [X online business] because it offers consistent accessibility", "I have a preference for [X online business] because it is easy to order products from" and "I prefer [X online business] because it saves shipping/billing information".

Factor seven is represented by the following three items that fall under *customer service*: "I have a preference for [X online business] because it responds quickly to customers", "I like [X online business] because it offers alternative customer support" and "I have a reference for [X online business] because it offers specialised customer support".

Factor eight *value associations*, comprises seven items: "In [X online business] I can make the most for the least money", "In [X online business] I can find the lowest prices for a quality brand", "I like [X online business] because one can find the broadest range of products", "I have a preference for [X online business] because provides the deepest specialised assortments", "I have a preference for [X online business] because it allows the comparison of product prices across online stores", "I like [X online business] because it allows to track my orders" and "I like [X online business] because it offers alternative forms of payment".

In summary, the 27 items that remained for the main study are, according to the various dimensions, distributed as follows: web awareness (3 items), loyalty (2 items), fulfilment (4

items), trust associations (2 items), brand equity outcome (2 items), web functionality (4 items), customer service (3 items) and value associations (7 items).

The following items were removed because of the low communalities (values less than 0.60): "Some characteristics of [X online business] come quickly to mind", "I have difficulty in imagining this [X online business]", "I prefer [X online business] because price deals are frequently offered", "I cannot find quality products at an affordable price in [X online business]" and "I do not like [X online business] because it is particularly slow in downloading pages".

Other items were deleted to increase the uni-dimensionality of the dimensions because they had cross loadings on more than one factor. Items that had loading greater than 0.50 on two or more factors were deleted. As a result, the eliminated items in this category were: "I have a preference for [X online business] because it frequently offers an updated list of product promotions (sales)", "I like [X online business] because it offers consumers a choice of carrier, "I have a preference for [X online business] because it provides interactive, fun experience (graphics, 3-D images, animation, video and audio capabilities) and "I like [X online business] because it offers consistent navigation (links on each web page)".

Uni-dimensionality was also improved by deleting items with loadings less than 0.60 on all factors (Hair et al. 1998). Under this criterion, the following items were eliminated: "I like [X online business] because it saves list of purchases for returns and warranty repairs", "I like [X online business] because it remembers my preferences", "I would definitely recommend [X online business] to friends, neighbours and relatives" and the value associations item that measured compensation "[X online business] is good because it allows returns to be shipped back at retailer's cost".

5.1.2 Reliability Checks

The second step in the analysis sought to determine internal consistency of the eight dimensions by conducting reliability checks. Cronbach's alpha was calculated for each of the factors and the items were investigated for their contribution to reliability. Some were deleted if the reliability increased substantially or until Cronbach's alpha reached the acceptable cut-off level of 0.70 or more (Cronbach, 1951).

The remaining item that did not significantly contribute to the reliability was eliminated for parsimony purposes: "It feels safe to disclose personal information in [X online business]". The reliability coefficients of the eight factors were as follows: web awareness (0.88), loyalty (0.82), fulfilment (0.76), trust associations (0.79), brand equity outcome (0.86), web functionality (0.68), customer service (0.75) and value associations (0.66).

All these values, except for two, exceeded the conventional minimum of 0.70 reported cut-off level of reliability which is recommended for theory testing research (Bagozzi and Dholakia, 2006). The exceptions were allowed to remain with a lower cut-off point because the items were deemed to represent the constructs more completely. For example, value association items covered the wide spectrum of the construct value. In accordance with previous measurement of the construct value, the various dimensions reflecting it such as breadth and depth of merchandise, competitive price and shopping convenience are maintained. Deleting one or more of these variables may pose a threat to the content validity of the concept of value.

TABLE 5.1 EXPLORATORY FACTOR ANALYSIS OUTCOME

Dimensions	Items	CR	1	2	3	4	5	6	7	8
WEB AWARENESS	I know what [X online business] looks like	**0.88**	0.92							
	I can recognise [X online business] among other competing online businesses		0.79							
	I can quickly recall the name of [X online business]		0.77							
LOYALTY	It makes sense to buy from/use [X online business] instead of any other online business, even if they are the same	**0.82**		0.80						
	Even if another online business has same features as in [X online business] I would prefer to buy from/use [X online business]			0.84						
FULFILMENT	I like [X online business] because it sends email order confirmation	**0.76**			0.60					
	I like [X online business] because items are delivered in the time expected				0.69					
	I have a preference for [X online business] because items delivered match the order				0.90					
	I like [X online business] because items delivered match the product description				0.91					
TRUST	It feels safe to conduct transactions in [X online business]	**0.79**				0.91				
ASSOCIATIONS	[X online business] has my confidence					0.64				
BRAND EQUITY OUTCOME	I'm willing to pay a premium price of up to 10% when purchasing from [X online business] as opposed to a less well known	**0.86**					0.75			
	I would definitely buy from [X online business] again						0.87			
WEB FUNCTIONALITY	I like [X online business] because it is easy to navigate (i.e. content organised around users' needs)	**0.68**						0.66		
	I like [X online business] because it offers consistent accessibility, (i.e. it is up and running at all times)							0.61		
	I have a preference for [X online business] because it is easy to order products from							0.74		
	I prefer this [X online business] because it safes shipping/billing information							0.65		

TABLE 5.1 (Continued)

Dimensions	Items	CR	1	2	3	4	5	6	7	8
CUSTOMER SERVICE	I have a preference for [X online business] because it responds quickly to customers	**0.75**							0.76	
	I like [X online business] because it offers alternative customer support (call centre, toll free, email, "live" individuals								0.62	
	I have a preference for [X online business] because it offers specialised customer support								0.84	
VALUE ASSOCIATIONS	In [X online business] I can make the most for the least money	**0.66**								0.89
Competitive Price	In [X online business] I can find the lowest prices for a quality brand									0.71
Shopping Convenience	I have a preference for [X online business] because it allows the comparison of product prices across online stores									0.60
	I like [X online business] because it allows to track my orders									0.63
	I like [X online business] because it offers alternative forms of payments: cash on delivery, credit cards, money order									0.61
Breadth &	I like [X online business] because one can find the broadest range of products									0.63
Depth Merchandise	I have a preference for [X online business] because it provides the deepest specialised assortments									0.64
	% of variance explained		38.5	15.9	8.74	4.02	2.78	1.67	1.15	1.05

EFA extracted 73.8 % % of the total variance. Loadings that are 0.60 or less are not shown (Hair, et al 1992). Extraction method: Maximum likelihood; Rotation method: Oblimin with Kaiser Rotation; Reliability Cronbach (RC).

5.2 Main Study

The data utilised consisted of 795 cases. 503 of these cases had bought for one of the four online businesses under study. 292 respondents had not bought for any of the stimuli but assessed an alternative online retailer where they had bought. 503 respondents were used as the sample to test the online brand equity measurement and structural models, and the rest (292 cases) was used as a "validating" sample. This was deemed necessary because the split sample validation would reduce the sample too much for a proper application of the SEM methodology that relies heavily on an asymptotic assumption.

The sample of 503 responses contained 58% men and 42% women. The majority of the sample (42%) was between the 22 and 27 years of age which represents the online consumer's prototype, who are reported to be younger in age and well educated (Nunnally and Bernstain, 1994).

The sample included individuals who had considerable level of Internet experience, i.e. more than 7 years (49.6%); they have access to a high speed connection and use the Internet everyday. Please see Table 5.2 with the profile of the respondents. Fifteen percent of the collected questionnaires contained missing value. Missing values were replaced using the Expectation-Maximization algorithm. This algorithm calculates Maximum Likelihood estimates of variances, covariances and means which are then used to estimate regression coefficients that will be used in the estimation of missing values (McDonald and Ho, 2002, Raykov, Tomer and Nesselroade, 1991).

TABLE 5.2 PROFILE OF RESPONDENTS WHO BOUGHT FROM ONLINE BUSINESSES UNDER STUDY

Classification	Number of respondents	Valid Percent
Sample size	503	100
Gender		
Male	292	58
Female	211	42
Age		
17-21	76	15.1
22-27	213	42.4
28-33	95	18.8
34-39	62	12.4
40-45	33	6.6
46-50	8	1.5
50 above	17	3.3
How Frequently do you use the Internet?		
Everyday	376	74.7
4-6 times a week	76	15.2
1-3 times a week	45	9.0
1-3 times/month	6	1.1
How long have you been using the Internet?		
1-11 month	4	0.9
1-3 years	19	3.7
4-7 years	231	45.9
More than 7 years	249	49.6
How do you access the Internet?		
High speed Internet connection (e.g cable)	503	100

Data was explored in terms of normality and outliers. The data presented moderate deviations from normality, that is, with univariate skewness of 2.0 or less and kurtoses of 7.0 or less (Curran, West and Finch 1996). Please see Table 5.3 for descriptive statistics. Since skewness and kurtosis values are normally given with respect to the normal distribution, the

values are equal to zero. From observation of Table 5.3, the three variables (items) that measure awareness have the most dispersion as indicated by their standard deviation greater than 2. Note that the standard error of the mean describes the uncertainty of how the sample mean represents the population mean and it is not meant to describe the sample.

CFA was originally run with both transformed (normalized data) and original raw scales to investigate the effect normality deviations on the model parameters.

The results in the parameter estimations did not differ significantly, therefore the original data was maintained. Different studies provide support for the robustness of Maximum Likelihood (ML) to violations of normality in terms of parameter estimates under moderately non normal data (Curran, West and Finch, 1996; Anderson and Gerbing, 1988; Marsh, Hau and Wen, 2004; Ping, 1996) and this study seems to provide additional empirical evidence.

From inspection of Q-Q plots (provided in Appendix 5), it can be observed that for most variables the majority of the points fall on the diagonal line indicating that the normality assumption may hold except for the variable awareness. As expected, these variables are not normally distributed because all respondents knew and had bought from the online businesses they assessed. The survey data, pooled across all online businesses were subjected to various scale-reduction and refinement analyses. The results are explained below.

TABLE 5.3 VARIABLE DESCRIPTIVE STATISTICS

	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
V1	3.7057	.09703	2.17609	.165	.109	-1.389	.217
V2	3.8074	.09800	2.19783	.080	.109	-1.437	.217
V3	4.5159	.10024	2.24818	-.350	.109	-1.369	.217
V4	3.4902	.07346	1.64749	.197	.109	-.547	.217
V5	3.6901	.07084	1.58878	.073	.109	-.429	.217
V6	3.9461	.07423	1.66480	.010	.109	-.534	.217
V7	3.8258	.07129	1.59884	.036	.109	-.444	.217
V8	3.7105	.07326	1.64316	.109	.109	-.494	.217
V9	4.2204	.07056	1.58259	-.268	.109	-.194	.217
V10	4.3662	.07322	1.64221	-.292	.109	-.376	.217
V11	4.0594	.06549	1.46868	-.245	.109	-.007	.217
V12	3.7984	.06541	1.46702	-.197	.109	-.025	.217
V13	3.8721	.06530	1.46450	-.086	.109	.172	.217
V14	4.3297	.06610	1.48245	-.408	.109	.257	.217
V15	4.1449	.06237	1.39885	-.354	.109	.496	.217
V16	4.3137	.06383	1.43166	-.399	.109	.417	.217
V17	4.3636	.06379	1.43066	-.534	.109	.499	.217
V18	4.4828	.06764	1.51708	-.440	.109	.050	.217
V19	4.7424	.06814	1.52826	-.588	.109	.223	.217
V20	4.4740	.06678	1.49778	-.500	.109	.145	.217
V21	4.0469	.06481	1.45355	-.375	.109	.274	.217
V22	3.7764	.07687	1.72391	-.038	.109	-.699	.217
V23	4.0116	.07277	1.63213	-.185	.109	-.365	.217
V24	3.8672	.07368	1.65240	-.145	.109	-.452	.217
V25	3.8895	.07242	1.62429	-.100	.109	-.417	.217
V26	3.8111	.07271	1.63079	-.086	.109	-.465	.217
V27	3.8435	.06939	1.55617	-.236	.109	-.230	.217

5.2.1 Exploratory Factor Analysis (EFA)

The data on the full 27 item battery was analysed using an iterative scale purification process (Podsakoff et al., 2003) by performing a sequence of EFAs and reliability measures before submitting the data to Confirmatory Factor Analysis. Please see Table 5.4 for a parsimonious and interpretable solution comprising 22 of the original 27 items. Reliability values were all above the suggested cut off point of 0.70 (Podsakoff et al., 2003), different from the pilot study where eight factors were extracted, only seven factors were extracted in the main study, accounting for 71.6% of the variance. The main difference appeared in the constructs web functionality and fulfilment as they formed a single factor that dominates the solution.

Factor one loaded items from both constructs *web functionality* and *fulfilment* and is described by five variables: "I have a preference for [X online business] because items delivered match the product description", "I have a preference for [X online business] because items delivered match the order", "I like [X online business] because it is easy to navigate (i.e. content organised around users' needs)", "I like [X online business] because it offers consistent accessibility, (i.e. it is up and running at all times)" and "I have a preference for [X online business] because it is easy to order products from".

Factor two labelled *awareness* contains three observable variables (or items): "I know what [X online business] looks like", "I can recognise [X online business] among other competing online businesses" and "I can quickly recall the name of [X online business]"

Factor three reflects *loyalty* and is described by two variables: "It makes sense to buy from [X online business] instead of any other online business, even if they are the same" and "Even if another online business has same features as in [X online business] I would prefer to buy from [X online business]".

Factor four is named *trust* associations and extracted two variables: "It feels safe to conduct transactions on [X online business]" and "[X online business] has my confidence".

Factor five represents *brand equity outcome* and comprises of two items: "I'm willing to pay a premium price of up to 10% when purchasing from [X online business] as opposed to a less well known website" and "I would definitely buy from [X online business] again".

Factor six reflects the *value associations* construct. Items included in this construct are: "In [X online business] I can make the most for the least money", "In [X online business] I can find the lowest prices for a quality brand", "I have a preference for [X online business] because it allows the comparison of product prices across online stores", "I like [X online business] because it allows me to track my orders", "I like [X online business] because one can find the broadest range of products" and "I have a preference for [X online business] because it provides the deepest specialised assortments".

Factor seven seems to tap on *customer service* and the variables included in this factor are: "I like [X online business] because it offers alternative customer support (i.e. call centre, toll free number, email)" and "I have a preference for [X online business] because it offers specialised customer support".

In summary, the 22 items that remained for the main study are, according to the various dimensions, as follows: web functionality/fulfilment (5 items), web awareness (3 items), loyalty (2 items), trust associations (2 items), brand equity outcome (2 items), value associations (6 items), and customer service (2 items).

The following items were removed because of their loading being less than 0.60 on all factors (Hair et al. 1998). Under this criterion, the following items were eliminated:

"I have a preference for [X online business] because it responds quickly to customers"

and “I like [X online business] because it offers alternative forms of payments: cash on delivery, credit cards, money order”.

Other items were deleted to increase the unidimensionality of the dimensions because they had cross loadings on more than one factor. Items that had loading greater than 0.50 on two or more factors were deleted. As a result, the eliminated items in this category were: “I like [X online business] because it sends email order confirmation”, “I like [X online business] because items are delivered in the time expected” and “I prefer [X online business] because it saves shipping/billing information for one-click ordering”.

The second step in the analysis sought to determine internal consistency of the seven dimensions by conducting reliability checks. Cronbach’s alpha was calculated for each of the factors with three or more variables. Pearson correlation was used when only two items are present (Bagozzi, Yi and Phillips, 1991).

The reliability coefficients of the seven factors were as follow: web functionality/ fulfilment (0.91), web awareness (0.90), loyalty (0.81), trust associations (0.81), brand equity outcome (0.68), value associations (0.89), and customer service (0.77). All these values (except for brand equity outcome), exceeded the conventional minimum of 0.70 reported cut-off level of reliability which is recommended for theory testing research (Fornell and Larcker, 1981).

The subsequent stage aimed at confirming the previous explored underlying dimensions through Confirmatory Factor Analysis.

TABLE 5.4 CRONBACH RELIABILITY AND EXPLORATORY FACTOR ANALYSIS OUTCOMES

Dimensions	Items		Factors						
		RC	1	2	3	4	5	6	7
FULFILMENT &	I like [X online business] because items delivered match the product description	**0.91**	0.77						
FUNCTION-ALITY	I have a preference for [X online business] because items delivered match the order		0.98						
	I like [X online business] because it is easy to navigate (i.e. content organised around user's needs)		0.67						
	I like [X online business] because it offers consistent accessibility, (i.e. it is up and running at all times)		0.87						
	I have a preference for [X online business] because it is easy to order products from		0.66						
WEB AWARENESS	I know what [X online business] looks like	**0.90**		0.84					
	I can recognise [X online business] among other competing online businesses			0.95					
	I can quickly recall the name of [X online business]			0.68					
LOYALTY	It makes sense to buy from [X online business] instead of any other online business, even if they are the same	**0.81**			0.720				
	Even if another online business has same features as in [X online business]				0.931				

	I would prefer to buy from [X online business]					
TRUST ASSOCIATIONS	It feels safe to conduct transactions in [X online business]	**0.81**	0.715			
	[X online business] has my confidence		0.916			
BRAND EQUITY OUTCOME	I'm willing to pay a premium price of up to 10% when purchasing from [X online business] as opposed to a less well known website	**0.68**		0.713		
	I would definitely buy from [X online business] again			0.745		
VALUE ASSOCIATIONS	In [X online business] I can make the most for the least money	**0.89**				0.74
Competitive Price	In [X online business] I can find the lowest prices for a quality brand					0.78
Shopping Convenience	I have a preference for [X online business] because it allows the comparison of product prices across online stores					0.77
	I like [X online business] because it allows to track my orders					0.79
Breadth & Depth Merchandise	I like [X online business] because one can find the broadest range of products					0.70
	I have a preference for [X online business] because it provides the deepest specialised assortments					0.73

TABLE 5.4 (Continued)

Dimension	Items	RC	1	2	3	4	5	6	7
CUSTOMER SERVICE	I like [X online business] because it offers alternative customer support (call centre, toll free phone number, email, "live individuals"	**0.77**							0.83
	I have a preference for [X online business] because it offers specialised customer support								0.88
	% of variance explained	37	11.6	7.8	6.22	2.76	2.67	2.4	1.15

EFA extracted 71.6 % of the total variance. Loadings that are 0.60 or less are not shown (Hair, et al 1992). Extraction method: Maximum likelihood; Rotation method: Oblimin with Kaiser Rotation; Reliability Cronbach (RC).
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5.3 Measurement Model

The psychometric properties of the measurement and structural models were examined via the Maximum Likelihood confirmatory factor analysis using LISREL v 8.72. All analyses were performed on covariance matrices (Appendix 6) using the raw data. To identify potential weaknesses in the models, the overall measurement model is divided in two parts. First, the online hypothesised brand equity measurement model is described and discussed. Secondly, the whole measurement model, including the web marketing effort and brand equity outcome measures are described.

5.3.1 Online Brand Equity Measurement Model

In the second stage of the analysis, Confirmatory Factor Analysis was applied using the 22 variables purified in the Exploratory Factor Analysis (first) stage. The resulting CFA indicators are as follows: Chi square = 126.92 with df =48, p value = 0.0000, RMSEA = 0.057, CFI = 0.988, NNFI = 0.984, GFI = 0.96, AGFI = 0.93, SRMR = 0.028. Although the online brand equity measurement model seems to be fitting the covariance reasonably well, inspection of modification indices suggest that the model can be improved. The exploration of alternative models is discouraged unless they are justified (Lindell and Whitney, 2001).

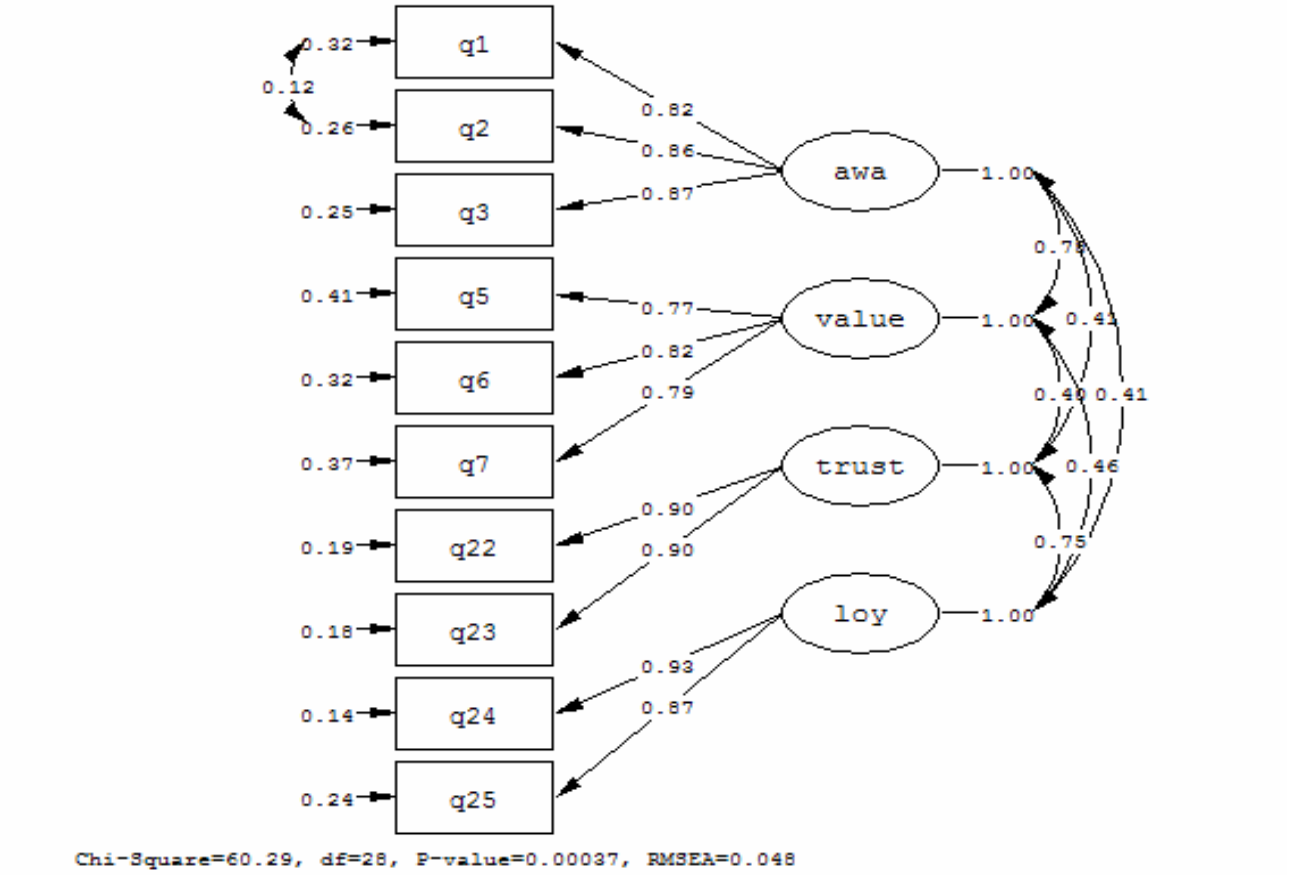
The following arguments are provided to justify the measurement improvement. Four items, of the 22 suggested by the Exploratory Factor Analysis, failed to confirm their importance in the CFA and they were eliminated because the loadings were below 0.70. In other words, the explained variance of each deleted item accounted for less than 50 percent. One of the items belong to the construct fulfilment: “I have a preference for [X online business] because items delivered match the order”, and three belong to the construct

perceived value: “In [X online business] I can make the most for the least money”, “I have a preference for [X online business] because it allows me to track my orders”, and “I have a preference for [X online business] because it provides the deepest specialised assortments”.

Modification indices and standardised residuals above the recommended value (2.58) suggest the existence of correlated errors. Adding covariances between errors are particularly difficult to justify, however it is not unusual to find some common method biases, even in the field of marketing (Podsakoff et al., 2003) that account for at least part of the error covariance. An examination of item 1 (“I know what [X online] looks like”) and 2 (“I can recognise [X online business] among other online competing online businesses”) may explain why a method bias is present. This may be the result of a carryover effect associated with a prior item, thus the respondent may have used the easily accessed item 1 to answer item 2 although these items were intermixed in the questionnaire. The carryover effect may have also been influenced by the wording or content of the items, thus, respondents may also have attempted to maintain consistency in their responses to these items (Hair et al., 1992).

After adding the covariance of the errors and deleting variables, the model resulted in an improvement of fit as demonstrated in the chi square: χ^2 60.29 df 28, p = 0.0003, however the χ^2 low probability indicates that the model fails to pass the exact-fit chi square test. Please see the brand equity measurement model illustrated in Figure 5.1.

FIGURE 5.1 ONLINE BRAND EQUITY MEASUREMENT MODEL



The sensitivity of the Likelihood Ratio Test to sample size that assumes a perfect fit has been questioned (Byrne, 1998) therefore, other indices have been suggested. The most cited indices and their values for the improved model are: RMSEA = 0.048, P-Value for test of close fit = 0.56, NNFI = 0.99, CFI = 0.99, SRMR = 0.02 and GFI = 0.98.

Inspection of the Q-plot values of standardised residuals shown in Figure 5.2 and summary of these residuals in Table 5.5 also indicate a better fit with most fitted residuals falling more or less symmetrically around the zero point, in the middle, and falling within the limit (2.58).

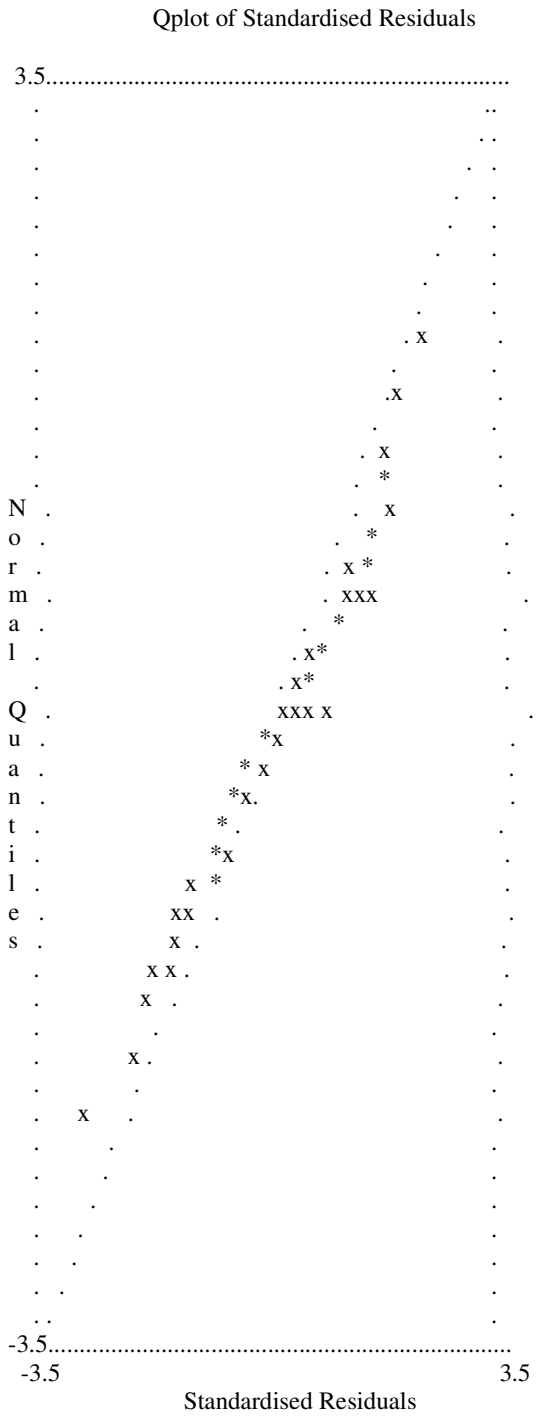
TABLE 5.5 SUMMARY STATISTICS OF STANDARDISED RESIDUALS

Smallest Fitted Residual = -0.135
Median Fitted Residual = 0.000
Largest Fitted Residual = 0.156

Stemleaf Plot

- 1|330
- 0|98776655
- 0|42221111100000000000000000
  0|11122244
  0|556667
  1|0013
  1|6

FIGURE 5.2 Q-PLOT OF STANDARDISED RESIDUALS



5.3.2 Discriminant Validity

Discriminant validity assesses the extent to which a concept and its indicators differ from another concept and its indicators (Bagozzi et al., 1991). Although there is no firm rule for discriminant validity, correlations with other latent variables or constructs less than |0.7| are frequently accepted as evidence of discriminant validity. The correlations between constructs range between 0.41 to 0.78 and are all statistically significant at p = 0.05. Please see Table 5.6. Since two correlations are beyond 0.70, a measurement model that constrained the correlation equal to 1 was run for the highest correlation (0.78). The chi square difference (χ^2 107.36 - χ^2 60.29) equals χ^2 47.07 and with 1 degree of freedom the p value = 0.0000, indicating that the two constructs are distinct from one another.

An alternative method to determine discriminant validity is suggested by Fornell & Larcker (Hair et al., 1998) and consists in comparing the shared variances (or squared inter-factor correlations) between factors with the average variance extracted (AVE) from the individual factors. This is shown in Table 5.6. This comparison shows that in all cases the AVE is higher than the shared variances therefore confirming discriminant validity.

TABLE 5.6 AVERAGE VARIANCE EXTRACTED AND SHARED VARIANCE FOR PAIRED FACTORS

	Awareness	*Value*	*Trust*	*Loyalty*
Awareness	**0.73**	0.78	0.41	0.40
Value	0.60	**0.63**	0.41	0.46
Trust	0.17	0.17	**0.81**	0.75
Loyalty	0.16	0.21	0.56	**0.81**

Note: AVE values appear in the diagonal (bold). Values under the diagonal are squared interfactor correlations. Values above the diagonal are correlations.

5.3.3 Convergent Validity

The convergent validity of the measures can be assessed by observing the t-values and by measuring the composite reliabilities of each of the constructs. T-values range from 17.016 to 29.449 and are all statistically significant at p = 0.000. Composite reliabilities range between 0.73 and 0.81.

An exploration of the squared multiple correlations of the observable variables also suggests that the variables are reasonably successful as measures of the latent variable. Squared multiple correlations range between 0.50 to 0.86. All statistically relevant measures of the dimensions of online brand equity are disclosed in Table 5.7.

To summarise, a model based on dimensions of awareness, associations of value and trust, and attitudinal loyalty seem to fit the data well. The measures in the measurement model have adequate reliability, convergent and discriminant validity.

5.4 Overall Measurement Model

It has been suggested that in order to evaluate a structural model, all constructs and their respective scales should be assessed simultaneously. As in the process followed with the measurement model of the brand equity dimensions, the overall model was inspected in terms of the item loadings and standardised residuals.

One item is sharing the loading between the customer service construct and the functionality construct: ("I like [X online business] because items delivered match the product description).

TABLE 5.7 OBE MEASUREMENT MODEL STATISTICS

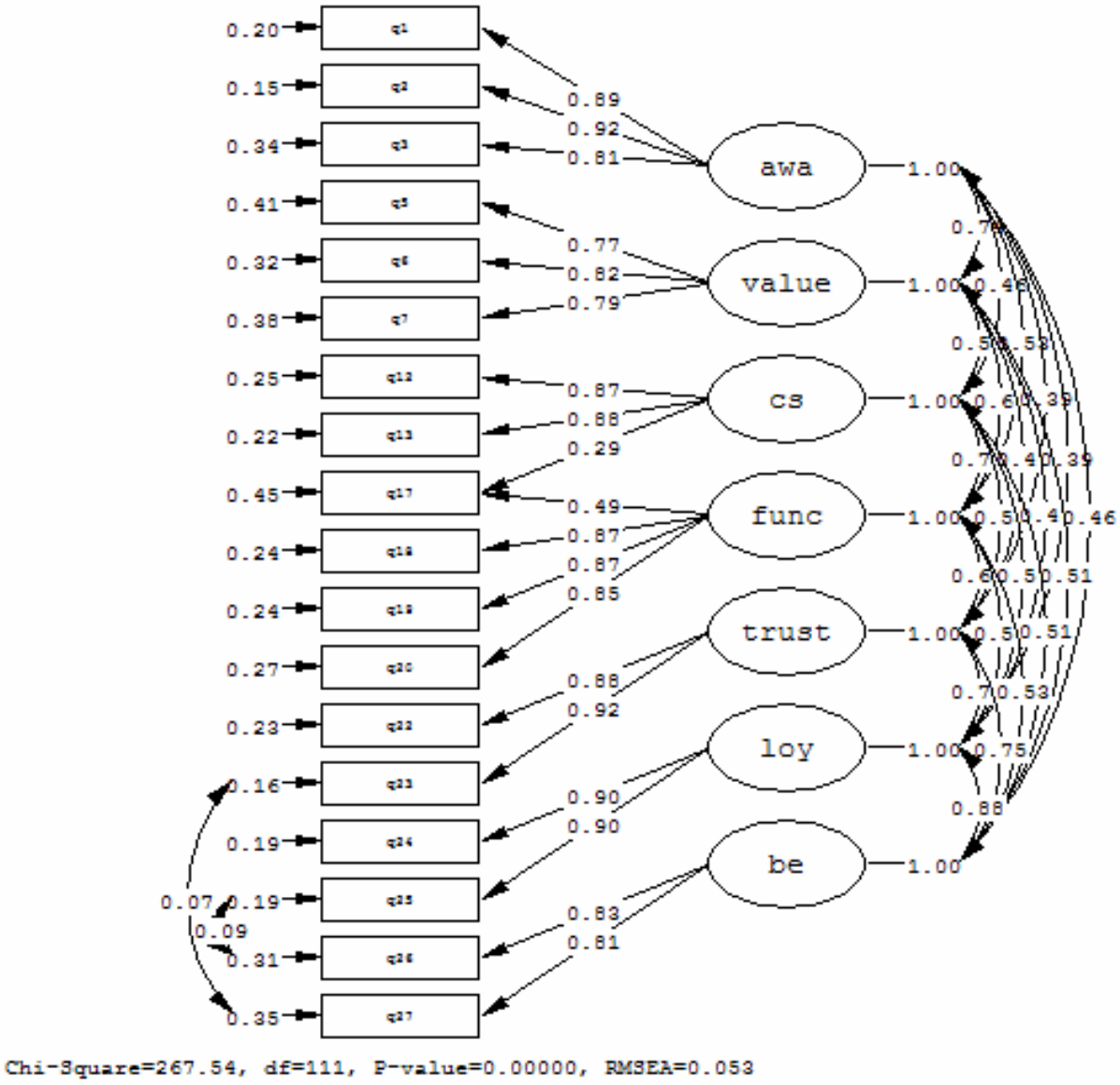
Dimension	Items	Loadings	*t* value	Standard Error	Composite Reliability	Average Variance Extracted
Awareness q1	I know what [X online business] looks like	1.0 [(a)]				
q2	I can recognise [X online business] among other competing online businesses	0.93*	29.49	.036		
q3	I can quickly recall the name of [X online business]	0.81*	23.66	.040		
					0.90	**0.77**
Association **Value** q5	In [X online business] I can find the lowest prices for a quality brand	1.0 [(a)]				
q6	I like [X online business] because one can find the broadest range of products	0.79*	17.228	.061		
q7	I have a preference for [X online business] because it allows the comparison of product prices across online stores	0.75*	17.01	.054		
					0.83	**0.63**
Association **Trust** q22	[X online business] has my confidence	0.90*	1.0			
q23	It feels safe to conduct transactions in [X online business]	0.90*	23.81	.040		
					0.90	**0.81**
Loyalty q24	It makes sense to buy from [X online business] instead of any other online business, even if they are the same	0.93	1.0			
q25	Even if another online business has same features as in [X online business] I would prefer to buy from [X online business]	0.87	24.15	.038		
					0.90	**0.81**

Two sets of correlated errors were specified, namely between variables ("It feels safe to conduct transactions in [X online business]") and ("I would definitely buy from [X online business] again") and between the variables ("Even if another online business has same features as in [X online business] I would prefer to buy from [X online business]") and ("I would definitely buy from [X online business] again"). Since the latter is the criterion and the others are the predictors, it may be possible that there was a type of context and content method bias. Although the predictor and the criterion were not adjacent to one another, the list of variables interspersed may not have been sufficient to eliminate the context effect (Raykov, Tomer and Nesselroade, 1991, McDonald and Ho, 2002). On the other hand, respondents may have also been influenced by the wording of the items since their content relate to buying from the online business.

Finally the error covariance could also be justified if respondents based their assessment on a consistency motif, that is, between their cognition and attitude (MacCallum, Browne and Sugawara, 1996). In other words, respondents may want to be consistent with the belief that if it is safe to purchase from an online business, there is no reason not to buy from it.

The resulting model and its parameters are illustrated in Figure 5.3 and the model fit indices are as follows: Chi square (X^2 = 267.54 df = 111) and p value = 0.0000. Inspection of the RMSEA (0.053), which is said to be an index free of sampling bias and to a certain extent a substitute for the discrepancy matrix (McDonald and Ho 2002), appears to be reasonably well-fitting the covariance matrix.

FIGURE 5.3 HYPOTHESISED MEASUREMENT MODEL



The RMSEA appears within reasonable limits 0.044, and a 90% confidence that the upper limit is not beyond 0.06. The Comparative Fix Index is 0.99, Non-Normed Fit Index = 0.99, Goodness of Fit Index = 0.94, and Standardised RMR = 0.03.

Composite Reliability or correlations[5] were calculated for the seven scales. All scales except for brand equity – that has a correlation of 0.68 – are above the minimum recommended of 0.70 (Hair et al., 1998). The brand equity scale reliability was more or less expected to be lower than 0.70 because the two items are measuring very distinct dimensions of brand equity namely, re-purchase intention and willingness to pay a price premium.

5.4.1 Discriminant Validity

Correlations among the first order constructs ranged between 0.39 and 0.88. Suggested values for discriminant validity have been proposed to be below 0.90 (Aaker, 1996a, Keller, 1993) or below 0.70 (Hair et al., 1998) to demonstrate that the factors are distinct from each other. Please see Table 5.8 for a description of the correlations between constructs.

Given that the correlation between brand equity outcome and loyalty is 0.88 above 0.70, two measurement models were tested, one with the target correlation fixed at 1, and a second with this correlation free and used a single-degree-of-freedom (see Bagozzi and Phillips, 1982).

[5] Where the constructs have only two measures, Pearson r is reported instead of Cronbach's alpha. Cronbach's alpha is mathematically equivalent to the average of all possible split correlations when there are several items measuring a construct.

The (χ^2) difference calculated equals 88.08 = (χ^{22} = 355.62 - χ^2 267.54) with 1 degree of freedom is statistically significant p. = 0.000. This result suggests the constructs are correlationally distinct, thus confirming discriminant validity. All statistically relevant measures of the overall measurement model are disclosed in Table 5.9.

TABLE 5.8 CORRELATIONS BETWEEN CONSTRUCTS

	Awareness	Value	Customer Service	Functionality	Trust	Loyalty	Brand Equity
Awareness	1.00						
Value	0.753	1.00					
Customer Service	0.456	0.599	1.00				
Functionality	0.533	0.591	0.764	1.00			
Trust	0.387	0.414	0.552	0.606	1.00		
Loyalty	0.392	0.470	0.552	0.558	0.757	1.00	
Brand Equity	0.459	0.520	0.512	0.532	0.746	0.882	1.00

5.4.2 Convergent Validity

Convergent validity of the overall measures in the model is demonstrated in several ways: path t- values significance (range between 8.10 – 29.72) indicating that parameters are statistically significantly different from zero, the standardised item lambda coefficient are between 0.71 – 0.92, and each path loading was greater than twice its standard error (0.035 - 0.234).

TABLE 5.9 OVERALL MEASUREMENT MODEL STATISTICS

Dimension	Items	Loadings	*t* value	Standard Error	Composite Reliability	Average Variance Extracted
Awareness q1	I know what [X online business] looks like	1.0 [(a)]				
q2	I can recognise [X online business] among other competing online businesses	0.93*	29.49	0.036		
q3	I can quickly recall the name of [X online business]	0.81*	23.66	0.040		
					0.90	**0.77**
Association **Value** q5	In [X online business] I can find the lowest prices for a quality brand	1.00 [(a)]				
q6	I like [X online business] because it one can find the broadest range of products	0.82*	16.482	0.070		
q7	I have a preference for [X online business] because it allows the comparison of product prices across online stores	0.79*	17.228	0.061		
					0.83	**0.63**
Association **Trust** q22	[X online business] has my confidence	1.00 [(a)]				
q23	It feels safe to conduct transactions in [X online business]	0.90*	23.81	0.040		
					0.90	**0.81**
Loyalty q24	It makes sense to buy from [X online business] instead of any other online business, even if they are the same	1.00 [(a)]				
q25	Even if another online business has same features as in [X online business] I would prefer to buy from [X online business]	0.87	24.15	. 038		
					0.90	**0.81**

TABLE 5.9 (Continued)

Dimension	Items	Loadings	*t* value	Standard Error	Composite Reliability	Average Variance Extracted
Customer Service q12	I like [X online business] because it offers alternative customer support (call centre, toll free, email, "live individuals"	1.00 [(a)]				
q13	I have a preference for [X online business] because it offers specialised customer support	0.86*	22.56			
					0.87	**0.77**
Functionality (+ fulfilment) q17	I like [X online business] because items delivered match the product description	1.00 [(a)]				
q18	I like [X online business] because it is easy to navigate (i.e. content organised around user's needs)	.87*	19.44			
q19	I like [X online business] because it offers consistent accessibility, (i.e. it is up and running at all times)	.86*	19.35			
q20	I have a preference for [X online business] because it is easy to order products from	.85*	19.07			
					.90	**.69**
Brand equity outcome q26	I'm willing to pay a premium price of up to 10% when purchasing from [X online business] as opposed to a less well known	1.00 [(a)]				
q27	I would definitely buy from [X online business] again	.80*	20.58			
					.81	**.69**

a = item is fixed to 1.0 for reasons of model identification. * = Parameter is significantly different from zero

5.5 Structural Model

Once the measurement model above was tested for its satisfactory quality, the structural model was developed and tested. Consistent with the conceptualisation developed in Chapter 3 the structural model is illustrated in Figure 5.4 to facilitate its recall.

The structural model hypothesises that there is a hierarchical effect of the brand equity sources. There is a directional relationship between brand awareness and associations of value and trust consumers hold in their minds. Value, in turn, influences trust and loyalty, and finally trust has a directional relationship with loyalty.

The full structural model illustrates that there are two exogenous latent variables (customer service and web functionality) that influence each of the four endogenous variables (the brand equity sources encapsulated in the box). The exogenous variables are thought to be correlated therefore they are linked by bi-directional arrow.

Note that no directional relationship has been posited between the exogenous variables (customer service and web functionality) and the endogenous brand equity outcome. However, these omissions are also tested to confirm if there is a misspecification in this part of the structural model.

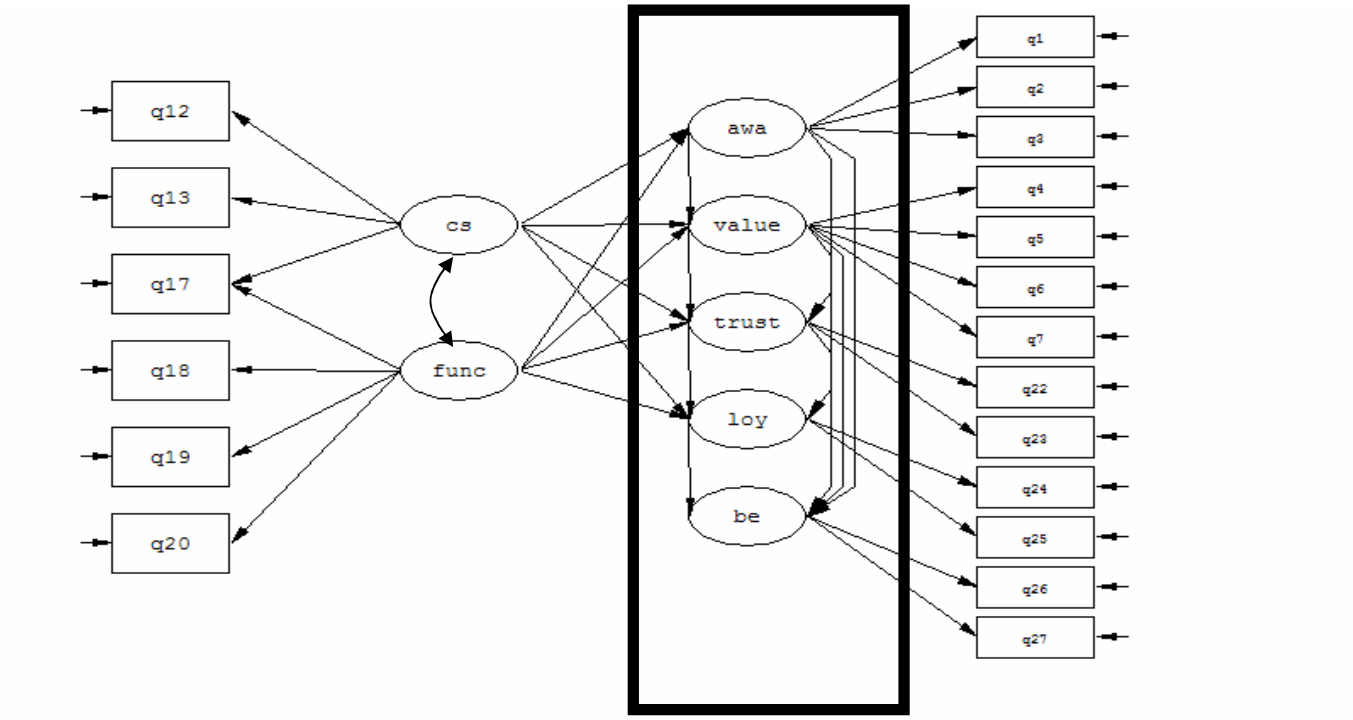
5.5.1 Direct Effects of Brand Equity Sources on Brand Equity Outcome

The structural relationships and standardised parameters are reported in Table 5.10 and illustrated in Figure 5.5. For better clarity, the figure only shows the statistically significant linkages. The Chi square of this model is 281.04 with 121 degrees of freedom and RMSEA = 0.051, 90 percent Confidence Interval for RMSEA = 0.043 – 0.059, CFI = 0.99, NNFI = 0.99, SRMR = 0.03 and GFI = 0.94. All these indices, except for the statistically significant chi square probability, are indicative of a reasonably well-fitting model.

One of the hypothesised direct relationships of brand equity sources with brand equity outcome did not reach statistical significance namely perceived brand value associations (β =

0.00, p = 0.96). As hypothesised, awareness, trust and loyalty are positively related to brand equity β = 0.12, p = 0.000, β = 0.15 p = 0.01 and β = 0.73, p = 0.000 respectively.

FIGURE 5.4 CONCEPTUAL STRUCTURAL MODEL



From inspection of the standardised β values it can be concluded that loyalty is the strongest determinant of brand equity, followed far behind by trust and awareness. From a regression point of view, it can be said that a change of one unit in loyalty will produce a corresponding effect of 0.73 units in brand equity outcome.

Brand awareness is positively related to value associations (β = 0.60 p = 0.000), however, it does not affect trust association (β = 0.04, p = 0.36). Perceived value association is not statistically significantly related to trust association (β= 0.01, p = 0.86) but is positively

related to loyalty (β = 0.19, p = 0.000). Also, as surmised, trust has a strong positive influence on loyalty (β = 0.69 p = 0.000).

5.5.2 Indirect Effects of Brand Equity Sources on Brand Equity Outcome

It has been noted in the literature that indirect effects are generally overlooked in most empirical research (Holbert and Stephenson, 2003). This finding is worrisome because if indirect effects are not reported, the relationship between two variables of interest may not be fully considered (Raykov and Marcoulides, 2000). According to the SEM output, awareness, in addition to having a statistically significant effect on brand equity, has a statistically significant cascading effect on loyalty (0.12, p = 0.00) and on brand equity outcome (0.08, p = 0.000). Brand value association, although did not contribute directly to explain brand equity outcome, it does have a significant indirect effect on brand equity outcome (0.14, p = 0.000). Finally, trust has a significant effect on loyalty that cascades to brand equity outcome in a weight of 0.50, p = 0.000. When the total effect of trust is taken into consideration, its influence is close to the impact of loyalty.

FIGURE 5.5 ONLINE BRAND EQUITY STRUCTURAL MODEL

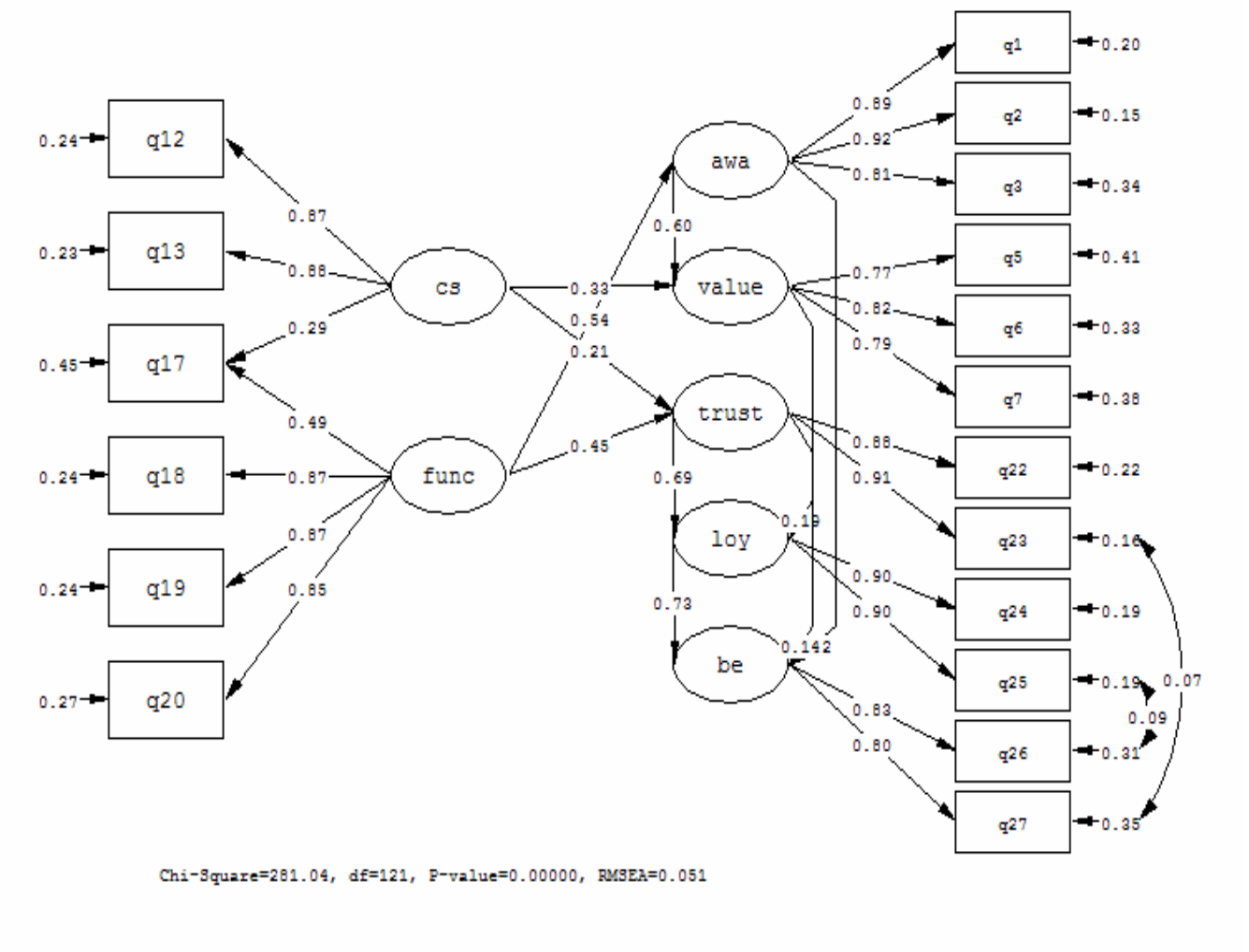


TABLE 5.10 SUMMARY OF STRUCTURAL MODEL HYPOTHESES

	Hypothesis	Parameter; P value	Conclusion
$\mathbf{H}_1$	Awareness → Brand Equity (BE)	β=0.12; P=0.000	Supported
$\mathbf{H}_2$	Value → BE	β=0.00; P=0.96	Not Supported
$\mathbf{H}_3$	Trust → BE	β=0.15; P=0.01	Supported
$\mathbf{H}_4$	Loyalty → BE	β=0.73; P=0.000	Supported
$\mathbf{H}_5$	Awareness → Value	β=0.60; P=0.000	Supported
$\mathbf{H}_6$	Awareness → Trust	β=0.04; P=0.36	Not Supported
$\mathbf{H}_7$	Value → Trust	β=0.01; P=0.86	Not Supported
$\mathbf{H}_8$	Trust → Loyalty	β=0.69; P=0.000	Supported
$\mathbf{H}_9$	Value → Loyalty	β=0.19; P=0.000	Supported
$\mathbf{H}_{10}$	Functionality → Awareness	γ=0.54; P=0.000	Supported
$\mathbf{H}_{11}$	Functionality → Value	γ=0.00; P=0.60	Not Supported
$\mathbf{H}_{12}$	Functionality → Loyalty	γ=0.01; P=0.73	Not Supported
$\mathbf{H}_{13}$	Functionality → Trust	γ=0.45; P=0.000	Supported
$\mathbf{H}_{14}$	Customer Service → Loyalty	γ=0.13; P=0.06	Not Supported
$\mathbf{H}_{15}$	Customer Service → Trust	γ=0.21; P=0.005	Supported
$\mathbf{H}_{16}$	Customer Service → Value	γ=0.33; P=0.000	Supported

5.5.3 Direct Effects of Web Marketing Activities on Brand Equity Sources

It was expected that web functionality would influence positively brand awareness, brand associations of value, trust and behavioural intentions of loyalty, all sources of brand equity. However, web functionality seems to have an influence on awareness ($\gamma = 0.54$ $p = 0.000$) and trust $\gamma = 0.45$ $p = 0.000$) only, and not at all on value ($\gamma = 0.00$ $p = 0.60$), or loyalty ($\gamma = 0.01$ $p = 0 .73$). Interpreting this from a regression point of view, it can be said that a change of one unit in investment in functionality will produce an effect of 0.54 units on awareness.

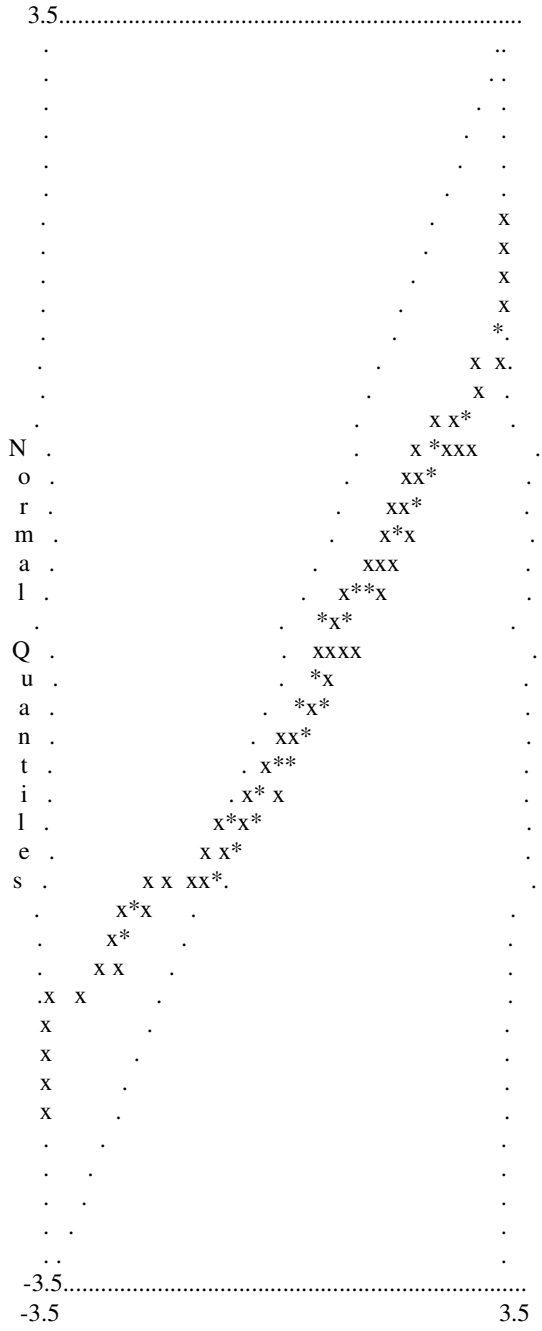
Perception of customer support services was expected to influence brand awareness, brand associations of value, trust and behavioural intentions of loyalty. The data supports three of the hypothesised relationships: customer support services strongly and positively influence perceptions of value ($\gamma = 0.33$ $p = 0.000$) and trust ($\gamma = 0.21$ $p = 0.00$). The data do not support a relationship with brand awareness ($\gamma = 0.07$ $p = 0.23$) or loyalty ($\gamma = 0.13$ $p = 0.06$).

The proposed model explains quite a substantial (> 0.50) percentage of the variance ($R^2 = 0.81$) of brand equity. This is mainly determined by three sources of brand equity: awareness (0.12), trust (0.15), and loyalty (0.73), the latter accounting for the majority of the variance. The explained variance of loyalty ($R^2 = 0.61$) is accounted by trust (0.69) followed to a much lesser extent by value (0.19) and indirectly by customer support service (0.21). The variance of trust ($R^2 = 0.40$) is explained significantly by web functionality (0.45) and customer support service (0.21). The former contributes almost twice the latter to explain the variance. Perception of value variance explained amounts to ($R^2 = 0.64$) and is accounted by awareness (0.60), customer support service (0.33) and indirectly web functionality (0.33). Finally, explained variance of awareness ($R^2 = 0.30$) is mainly accounted by the perception of web functionality.

Also important to mention is the covariance between web functionality and customer support service ($\Phi = 0.77$), this shows there is a substantive correlation between the two variables as expected.

Inspection of a summary of the Q-plot of residuals (Figure 5.6), indicate that although the majority of the residuals fall in the middle of the distribution (are normally distributed), there are still some residuals greater (positive and negative) than the recommended value (+/- 2.58) indicating some cases of overestimation and underestimation of the covariance.

FIGURE 5.6 Q-PLOT OF STANDARDISED RESIDUALS



It has been suggested that it is important to account for potential relationships (either directly of indirectly) that were not theoretically justified, nor specified a priori, but that could have an impact in the structural model. In other words, there may be structural links that could have been omitted and are statistically significant therefore they need to be reported. (McDonald and Ho, 2002). To follow this direction, alternative relationships are compared to the baseline model (χ^2 (121) = 281.04 p= 0.000) discussed previously and illustrated in Figure 5.5.

The test is calculated by obtaining the difference in Chi square and degrees of freedom between the baseline model χ^2 (121) = 281.04 and the model with a constraint χ^2 (120) = 280.42. The difference (χ^2 (1) = 0.62) can then be compared to a Chi square distribution with 1 degree of freedom to find the exact probability. Although a direct relationship between customer service and brand equity outcome was not hypothesised, posterior tests confirmed that there is not statistically significant relationship (p = 0.43) therefore there was no model misspecification in this case.

Similarly, there is no misspecification in omitting a direct link between web functionality and brand equity (p = 0.27) calculated from the difference X^2 (120) = 279.85 and X^2 (121) = 281.04 = X^2 (1) = 1.19.

5.5.4 Indirect Effects of Web Marketing Activities on Brand Equity

Indirect effects of web functionality are statistically significant in relation to value (0.33, p = 0.000), loyalty (0.37, p = 0.000) and brand equity outcome (0.40, p = 0.00). Indirect effects of customer support service on brand equity outcome (0.19, p =0.00) are statistically significant through the impact on loyalty (0.21, p =0 .00).

5.6 Model Cross Validation

The final structural model of the effects of web marketing activities on brand equity sources and outcome was replicated across a sample of respondents who had not bought from the online businesses under study, but had bought products from the Internet. The covariance matrix of this sample is provided in Appendix 7.

The goodness of fit of the model for the two groups in combination and with no equality constraints imposed (H_1) is as follows: Chi square = 803.60, df = 264; RMSEA = 0.072, CFI = 0.98. The model with equality constraints (H_0) resulted in the following: Chi square = 834.16 df = 287; RMSEA = 0.069, CFI = 0.98. The chi square difference between the two models = 30.56 and with 23 degrees of freedom is not statistically significant (p = 0.13). The Expected Cross Validation Index (ECVI) equals 1.17 compared to ECVI (saturated model) = 0.431, and ECVI (independence model) = 37.61. In sum, it can be concluded that the structural model is equivalent across the validation sample.

5.7 Power

An important, but often neglected, issue in research design involves the determination of sample size necessary to achieve adequate power for detecting when hypotheses are false. This type of error is known as Type II error (the error of *not* rejecting an incorrect model). There are two types of power calculations. One is the calculation of power associated with a "test of exact fit" (i.e. testing the null hypothesis that the model fits perfectly in the population). This model is very restrictive and is basically given by the Chi square. Because of this restriction, a model is normally tested on the assumption of a "close fit" whereby the assumption is that the model has a close, although imperfect fit (MacCallum, Browne and Cai,

2006). To estimate power for the model, Table 2 of MacCallum, Browne and Sugawara (2000) has been used. From Table 2 (not supplied in this report), a model with 100 degrees of freedom (the present study has 116) and a sample of 500 (the reported study has 503), the power estimate for the test of close and exact fit is 1.000. For the test of close fit RMSEA values of $\epsilon_0 = 0.05$ and $\epsilon_a = 0.08$ are considered, where ϵ_0 is the null value of the RMSEA.

Thus both power estimates indicate that the analysis conducted for this study is sufficiently powerful considering that the recommended value is 0.80. Put in a different way, one can say the present research study is able to detect major specification errors; the likelihood of rejecting the hypothesis of close fit when the true fit is mediocre is 100. Thus we can rest assured that serious misspecifications would be detected.

5.8 Individual Brand-Level Results

One of the main sections of this study identifies the impact of different sources of brand equity at the brand unit of analysis. This analysis complements the structural equation modelling conducted at the aggregated consumer level.

Because the limited sample size of each specific online business prohibited conducting analysis of structural means by using structural equation modelling, several tests of means were performed using paired comparisons between the variables of the four online retailers. The results of the tests are shown in Table 5.11. The analysis and tests of differences between means of the various measures can indicate which constructs, and in particular variables outperform other online businesses, and which constructs did not.

The consumer-based brand equity for each brand was calculated by first multiplying the average value of each brand equity source by the weight of the source of equity.

TABLE 5.11 T- TEST MEAN DIFFERENCES

Observable Variable	Amazon (A)	CDnow (C)	Dell (D)	eBay (E)	pair	p value
I know what [X online business] looks like	5.23	3.72	5.01	5.78	A -C A -E C- E D -E	0.010 0.011 0.001 0.000
I can recognise [X online business] among other competing websites	5.25	4.04	5.11	5.68	A -C D -E	0.027 0.004
I can quickly recall the name of [X online business]	5.98	4.56	5.83	6.16	A -C C- E D -E	0.009 0.024 0.009
I like [X online business] because one can find the broadest range of products	4.79	3.02	3.73	5.27	A -C A- D A -E C- D C- E D -E	0.000 0.000 0.005 0.010 0.000 0.000
In [X online business] I can find the lowest prices for a quality brand	4.40	3.64	4.70	5.11	A -E C- E	0.000 0.022
I have a preference for [X online business] because it allows the comparison of product prices across online stores	4.23	3.69	3.58	4.70	A- D A -E D -E	0.000 0.012 0.000
It feels safe to disclose personal information in [X online business]	4.69	3.68	4.62	4.29	A -C C- E	0.019 0.002
[X online business] has my confidence	5.09	4.06	5.00	4.58	A -E C- E	0.007 0.008
It makes sense to buy from [X online business] instead of any other online business, even if they are the same	4.93	3.76	4.65	4.85	A –C C- E	0.008 0.004
Even if another online business has same features as [X online business] I would prefer to buy from [X online business]	4.95	3.50	4.47	4.88	A -C A- D C- E	0.002 0.017 0.001
I am willing to pay a premium price of up to 10% when purchasing from [X online business] as opposed to a less well-known website	5.13	3.48	4.65	5.22	A- D C- E D -E	0.050 0.001 0.019

I would definitely buy from [X online business] again	5.47	3.98	4.87	5.49	A -C A- D C- E D -E	0.005 0.003 0.001 0.005

The source of equity was derived from the final structural equation model. The standardised solution provides the Betas for awareness, trust, and loyalty: 0.12, 0.15, and 0.73 respectively.

Please note that the source of equity perceived value is not considered in the calculation because the structural equation did not identify it as statistically significant in its relationship with brand equity. Each individual value of brand equity was converted to an index by dividing the individual brand value into the average of all four brands under study. The result is multiplied by 100. The index above 100 would indicate a better than average brand equity. Values below 100 indicate the opposite. Please see Table 5.12 for a summary of the calculations.

According to the calculations Amazon obtains slightly higher brand equity than eBay and puts it in the first place, eBay is in second place, followed by Dell in third. CDNow is the worst performer and obtains consumer-based brand equity below average.

Consumer brand equity can also be calculated based on the average of the two observable variables of the construct brand equity outcome. After all, if a company has brand equity it is because consumers are willing to pay a price premium and maintain the intention to repurchase from the business. The results from these calculations produce a mean value of 5.30 for Amazon, 4.76 for Dell, 5.35 for eBay, and 3.73 for CD Now. According to these values, Amazon and eBay are head on to dispute the first place, followed by Dell and CD Now. It appears that respondents have been more or less consistent with their assessment of the various online businesses. In other words, when brand equity sources are used as predictor

of brand equity, the results are similar to those obtained when using the brand equity outcome variables only.

Finally, using the pool data, Pearson correlations between the sources of brand equity (awareness, trust and loyalty) and brand equity outcome (e.g. willingness to pay a premium price) were conducted to test for the consistency of the respondents' assessments. In other words, the online assessments based on the sum of the weighted average of awareness, trust and loyalty should be concordant with the predisposition to pay a premium and, or purchase again from the same online business. Three correlations were estimated. One correlated the sources of brand equity with only one brand equity outcome variable, e.g. willingness to pay a premium. The second correlation used the outcome variable: intention to re-purchase, and the third correlation was conducted between the sources of equity and an average of the two brand equity outcome variables. The resulting correlations obtained are 0.71, 0.71 and 0 .77 respectively.

Previous studies by Millward Brown International (Dyson, Farr and Hollis, 1996) and Keller (2003) discussed in Chapter 2 propose that customers develop various stages in their relationship with a brand.

Therefore, calculations were conducted in this thesis to identify the variation in customers' value to each brand based on their fundamental attitude toward it using a hierarchy of effect. This effect suggests that customers, before being bonded to a brand (top of the hierarchy), must first be aware of it, perceive it as valuable and trust it. This bond will translate in a willingness to pay a price premium.

The resulting calculations for each brand, based on the three relevant brand equity sources found in the structural equation model namely, awareness, trust, and loyalty, are illustrated in Figure 6.1. The findings are discussed in the next section.

TABLE 5.12 CALCULATIONS OF CONSUMER-BASED BRAND EQUITY

AMAZON Awareness = (mean) * (weight) = 5.48 * 0.12 = 0.657 Trust = 4.89 * 0.15 = 0.733 Loyalty = 4.94 * 0.73 = 3.606	
Consumer-based brand equity (BE) = **4.99**	BE Index = 4.99 / 4.58 = 1.08*100 = **109**
DELL Awareness = 5.32 * 0.12 = 0.638 Trust = 4.81 * 0.15 = 0.721 Loyalty = 4.56 * 0.73 = 3.320	
Consumer-based brand equity = **4.69**	BE Index = 4.69 / 4.58 = 1.02*100 = **102**
eBAY Awareness = 5.87 * 0.12 = 0.704 Trust = 4.43 * 0.15 = 0.664 Loyalty = 4.86 * 0.73 = 3.547	
Consumer-based brand equity = **4.92**	BE Index = 4.92 / 4.58 = 1.07*100 = **107**
CD Now Awareness = 4.22 * 0.12 = 0.506 Trust =3.87 * 0.15 = 0.580 Loyalty = 3.63 * 0.73 = 2.649	
Consumer-based brand equity = **3.74**	BE Index = 3.74 / 4.58 = 0.81*100 = **82**

CHAPTER 6.0 DISCUSSION

6.1 Aggregated-level Analysis

The main goals of this research were to: (a) identify brand equity sources for online companies; (b) test for their influence on brand equity outcome; and, (c) test for the influence of web marketing activities (web functionality and customer service support) on brand equity sources. It was hypothesised that brand equity, expressed both as the willingness to pay a price premium for shopping on a particular online business website versus another less well known website and by the intention to repurchase from the website, would be influenced by consumer awareness of the business website, perceived value and trust associations with the business, and loyalty towards it.

As expected, and supporting some previous academics and brand management practitioners, **brand awareness** is a relevant source of brand equity. It contributes to brand equity, both directly and indirectly, by influencing other associations customers make with the brand, specifically associations of value and attitudinal loyalty. Notwithstanding the direct relationship, its importance is considerably less than the impact of trust and loyalty as brand equity sources. This result is consistent with Yoo, Donthu and Lee's (2000) finding of a statistically significant, but weak relationship, between brand awareness/associations and brand equity. However, given that Yoo, Donthu and Lee's (2000) methodology does not report on indirect effects and knowing that they did not test hierarchical effects either, the influence of awareness may have been underestimated in their case.

On the other hand, the result in this thesis seems to mitigate the over emphasis of awareness as a factor of brand equity found by Srinivasan, Park and Chang (2005) and Aaker

(1991) and Keller (2003) that postulate brand awareness as the cornerstone of brand equity. The discrepancy in emphasis between the present research findings and those of Srinivasan, Park and Chang (2005) may be due to the methodology in which the factor was elicited and also, perhaps, the point at which this factor is considered. With respect to this last point, brand awareness is probably a cornerstone of brand equity for a business or product when it is at the introductory stage in the market; however, its importance declines as consumers become totally aware of the business. In this latter case spending on media and focusing on image only rather than generating traffic is a recipe for failure as noted by Mark Andresen – developer of Netscape (Ilfeld and Winer, 2002).

Perhaps the over importance of awareness found by Srinivasan, Park and Chang (2005, p.1444) is biased by the very elaborate question to which six industry experts responded: "… what would have been the levels of the brand's availability (in terms of the brand's share of shelf space in retail outlets of cellular phones) and its awareness had the brand not conducted any brand building activities and relied entirely on the current level of push through the channel (by the sales-force)?" After all, ask someone in marketing about the value of advertising (beyond sales) and they will answer along the lines of 'brand awareness'.

Although it may be common sense that customers must be aware of a brand previously to even consider it in their evoked set, let alone purchase it, some have found that awareness, and recall are not significantly related to brand equity (Washburn and Plank, 2002, Faircloth, 2005, Bravo, Fraj and Martinez, 2007).

Specifically related to e-commerce, Low (2000) in a report on the relevant factors comprising the Value Creation Index (VCI), concluded that building brand awareness had no statistical association with market value. The most important value drivers for e-commerce companies were the number of alliances and partners, then investment in innovation and,

finally, the company's website viewing (traffic).

The data in this research support Washburn and Plank's (2002) view that, although consumers have a relatively high degree of awareness and recognition of a brand, this does not necessarily lead them to perceive the brand as offering value, let alone feel a high degree of relationship (trust) or attachment (loyalty).

Perceived **value association** of an online business does not appear to be relevant source of customer-based brand equity. One plausible explanation is the narrowly conceived measure of customer value in the model. The items measuring the value dimension that remain in the study (after uni-dimensionality depuration) relate mainly to price, except for one variable that reflects value in the form of broadest range of products. In this context, price-related value may do little to create brand equity. In fact, if brand equity is defined as a differential in the price given as a result of the brand name, it is expected that loyal consumers will be less sensitive to price than brand-non loyal consumers (Bagozzi and Dholakia, 2006).

Value associations, being more specific than the loyalty construct, influence brand equity only through loyalty. This latter construct is closer to brand equity whereas value associations are more specific evaluative constructs (Ha, 2004). This result may not be surprising for some who suggest that even though consumers may have rich associations in conjunction with a brand, these may not be necessary to create brand equity (Graebner-Kraeuter, 2002). Still another explanation of the lack of importance of value as a source of brand equity is that in the Internet space, where functional product features are becoming commodities, it is relationship benefits that increasingly drive brand equity.

Although value does not have a direct effect on brand equity, its importance cannot be underestimated. A strong brand, that is one which provides product and services that customers truly value, creates loyalty that in turn creates brand equity (Gommans, Krishnan

and Scheffold, 2001, Harris and Goode, 2004, Sirdeshmukh, Singh and Sabol, 2002, Singh and Sirdeshmukh, 2000, Reichheld and Schefter, 2000, Pitta, Franzak and Fowler, 2006, Chaudhuri and Holbrook, 2001). The results in this study are supportive of the view that consumer's perceived sense of value resulting from a transaction with an online business develops into loyalty.

A note of caution is necessary at this point. Perceived value, as reported in the literature, and as originally conceived in this study, has various dimensions apart from value as the ratio of price–benefit. This research, although initially contemplated other value dimensions, exploratory and later confirmatory analyses suggested deletion of some variables for better fit, perhaps because they were not correlated with the price/value trade-off. Or perhaps, because price, being an extrinsic cue, is more readily accessible since it is observable and comparable (Zeithaml, 1988). Furthermore, the functionality to compare prices and finding the broadest range of products in one place are also perceived as valuable. Hence, all three variables come as more representative to customers than other cues that maybe more difficult to evaluate.

Notwithstanding the previous reasoning, one can argue, and rightly so, that the variables used to describe the value construct do not adequately assess the construct entirely. On the other hand, the use of multiple items to measure a construct is arguable. Agarwal and Rao (1996) indicate that it may not be necessary to subject respondents to difficult questions in order to obtain accurate measures of brand equity. Simple appropriately worded single-item scales may do just as well. Bagozzi and Dholakia (2006) used one and two variables to measure for example constructs such as brand identification, social identity, group behaviour, evaluative and social identity and subjective norms, etc.

Trust association with a brand, as expected, has proved to have a direct effect on brand equity and an indirect one through loyalty. There is no surprise that so much research has been

devoted to studying this construct, especially in the online environment. Trust has been deemed crucial for online businesses because without it, e-commerce development will not reach its potential (Yang and Peterson, 2004). Trust only exists in uncertain and risky environments (Reichheld and Schefter, 2000) such as in a computer-mediated environment where customers cannot physically inspect or touch a product, nor can they see the salesperson's gestures.

This research provides the support of previous claims of the relationship between trust and loyalty (Baldauf, Cravens and Binder, 2003) and also theoretical support of trust associations with brand equity (Keller, 2003). It has been noted that strong brands are safe place for customers and that this safety can be cultivated by associating their brands with trust (Aaker and Joachimsthaler, 2000), this study corroborates the importance of this construct in building brand equity. It is not an over emphasis to say that trust is the new Colossus because it is the total of what is left behind once an online company has advertised, sold and serviced a product. While image belongs to a brand, a brand's trust belongs to its customers. This is especially the case in an open-computer-mediated environment like the Internet.

The construct is explained to a great extent ($R^2 = 0.40$) by customer support and the mix of functionality and fulfilment activities. Notwithstanding this relatively high explained variance, other constructs are also expected to contribute to explain trust.

Customer **loyalty** has been a widely researched topic in marketing because it is considered an important company goal. In e-commerce particularly, loyalty is deemed a major driver of success (Davis and Dunn, 2002) and even more valuable than in offline businesses because of the higher costs of acquiring customers (Yang and Peterson, 2004, Yoo, Donthu and Lee, 2000). The findings from the present study confirm its importance in creating brand equity. Together with trust association, loyalty is the most important driver of brand equity online. In

regression terms, an increment of one unit of loyalty has an increment in brand equity of 0.73 unit. This finding is consistent with models of brand equity developed by (Baldauf, Cravens and Binder, 2003). (Yoo, Donthu and Lee, 2000) and Keller (2003) and reinforces Aaker and Joachimsthaler' s (2000) assertion that brand loyalty is at the heart of brand's value.

Moreover, this finding ratifies the importance of managing loyalty as part of the brand management strategy (Christodoulides and Chernatony, 2004, Page and Lepkowska-White, 2002, O'loughlin, 2006). Hence companies are well advised to design strategies to build trust and loyalty to enhance brand equity. Consistent with the literature reviewed, loyalty explained variance ($R^2 = 0.61$) is driven by trust mainly and value to a much lesser extent (Carpenter, 2000).

Although this study cannot prove causality, it does suggest confirmation of the hypothesised hierarchical effects of brand equity sources (Harris and Goode, 2004, Bart et al., 2005). Brand awareness influences the association of value customers make about a brand and in turn, these associations influence loyalty, which ends up creating brand equity directly.

6.2 Individual Brand Analysis

Results at the brand level unit of analysis suggest that eBay's brand name has a competitive advantage in terms of **awareness and recognition** of its website. It appears consistently and statistically significantly better than Dell and CD Now, however it does not have an edge over Amazon. A further analysis of the percentage of customers that can recognise, recall and know what the branded company looks like, provide additional information.

To achieve some discrimination among businesses in relation to brand awareness, and given that all consumers had bought from these businesses' websites, the following

calculation was performed. The proportion of frequency from 4 to 7 for each three of the variables of brand awareness was obtained and then an average was calculated. Amazon, on average, is recognised by about 87.2 percent, CDNow is recognised by 68.2 %, Dell 85.4 %, and eBay is the online company respondents are most aware of as reflected in 93 percent. From these results one can infer that the online businesses have done a good job in creating an active presence in their markets except for CDNow that has a low level of presence compared to the competing businesses. Presence in the relevant markets is important because people will often opt for brands that they recognise over unknown ones.

However, simple brand presence will not create loyalty as discovered in previous studies and confirmed here, therefore to progress beyond awareness, the brand's promise must be of relevance (of value) to consumers. eBay enjoys better consumer perception of value for money than the rest of the online businesses. This is perhaps because of the nature of the business model, namely an auction. This is consistent with the expectation that auction models create value for consumers in the form of lower prices and that the Internet is transferring this value to consumers (Smith, Bailey and Brynjolfsson, 2000).

In relation to **trust**, there does not seem to be statistically significant mean differences among the major online businesses, eBay, Amazon, and Dell. The assessments are not impressive, mostly between 4 and 5 on a scale of up to seven, indicating that there is still perhaps an attitude of doubt in terms of confidence and trust towards the branded websites. This is not uncommon given the still newness of the e-commerce industry.

To measure the proportion of respondents that truly trust each online business, the percentage of frequency 6 and 7 of each trust variable was computed. Amazon counts on a large percentage (41.5 %) of customers that judge it as trustworthy, followed by Dell with 39.8 per cent. eBay comes next with 27 percent of customers that rated it as trustworthy, and

finally CDNow with 11.9 percent. These percentages seem to indicate that eBay, regardless of the relatively higher percentage of recognition and better perception of value for money, has not been able to leverage them and to make consumers to trust the company more. On the other hand, Amazon has been doing a good job in maintaining a high percentage of customers that trust the company website.

The attitudinal **loyalty** mean values toward the online businesses are also very similar to the values obtained for trust, with Amazon obtaining nominal values slightly higher than the rest of the competitors, but these differences are not statistically significant. Since mean values mask differences in terms of the actual support a company receives and since loyalty is a core dimension of brand equity, it needs a more detailed analysis.

Millward Brown International's Brand Dynamics™ Pyramid shows that only 7 percent of consumers are "bonded" or truly loyal to a brand. However, there are different levels of loyalty as expressed in the answers to the items measuring loyalty.

Two levels of loyalty were calculated. One represents customers "bonded" loyal to the online brand business and the other represents a less intense relationship just called "loyal". Like the calculations for the trust scale, the proportion of customers loyal to a company resulted from averaging the percentage of frequencies 6 and 7 of both variables measuring trust. According to these categories, eBay has a larger percentage of loyal consumers (38.9%) than Amazon (36.8%), Dell (33.6%), or CDNow (12%). These results indicate that consumers are more likely to spend a higher percentage of their purchases in eBay than their competitors.

The above measure of loyalty is revealing however, a truly "bonded" segment will be one willing to pay a price premium; in measuring price premium, Aaker (1996) also suggests to segment the market by loyalty. Following this suggestion, the proportion of "bonded" loyal

segment in each company was obtained by counting those that would definitely be willing to pay a price premium (i.e. gave a score of 7) and also rated both loyalty variables with a value of 7. This is obviously a very stringent criterion. Under this condition, Amazon counts with 14.1 per cent of bonded loyal customers. eBay follows with 11.8 per cent, Dell 6.7 per cent, and CDNow 4.8%. The arithmetical calculations are illustrated in a pyramid form in Figure 5.7. The top of the pyramid represents the bonded loyal segment just calculated above. This percentage, according to Millward Brown International could be on average about 38 per cent.

Finally, since **price premium** is a reasonable summary of the strength of the brand (Aaker 1996), and this measure can help estimate the financial value of a brand, a more elaboration on this measure is provided. In general, Amazon and eBay enjoy better brand equity than do Dell and CDNow derived from respondents' mean inclination to pay a price premium for shopping at the branded website. A percentage of customers that rated the measure price premium with a score of 7 was calculated. Results from the calculations indicate that 26.6 per cent of eBay customers are willing to pay a premium to conduct transactions on their branded website. This value is slightly higher than for Amazon (25.5%), and substantially more than Dell (19 %), or CDNow (4.8%).

Interestingly, Dell, apart from being well known and recognisable, does not enjoy much equity when calculated as the sum of the sources of brand equity, nor when it is based on their outcome variables. This less aggregated group of loyal customers provides a more sensitive measurement and a clearer interpretation of brand equity. These results indicate that Amazon captures more than double the amount of bonded customers than Dell and a few more percentage points than eBay.

Hence the brand strategy for the leaders Amazon and eBay would be to reinforce commitment to the branded websites through customer service and fulfilment. There is no

surprise that both companies are leveraging their current position by extending their product categories. Overall, CDNow is the worst performer, which means that it in needs a comprehensive and perhaps innovative solution to improve overall consumer perception. It must be remembered that CDNow, although in existence when this thesis was begun, has now been acquired by Amazon.

Also interesting is the relationship of the consumer-based brand equity ranking provided in this thesis with Tobin's Q[6] calculations for eBay, Amazon and Dell. According to calculations (Boasson and Boasson, 2006) produced for 2003, Tobin's Q for Amazon, eBay, and Dell were 9.067, 8.950, and 4.630 respectively. In the first two cases, the company wealth is justified by almost 90 % in terms of intangible, whereas for Dell it accounts for 78% (Low, 2000).

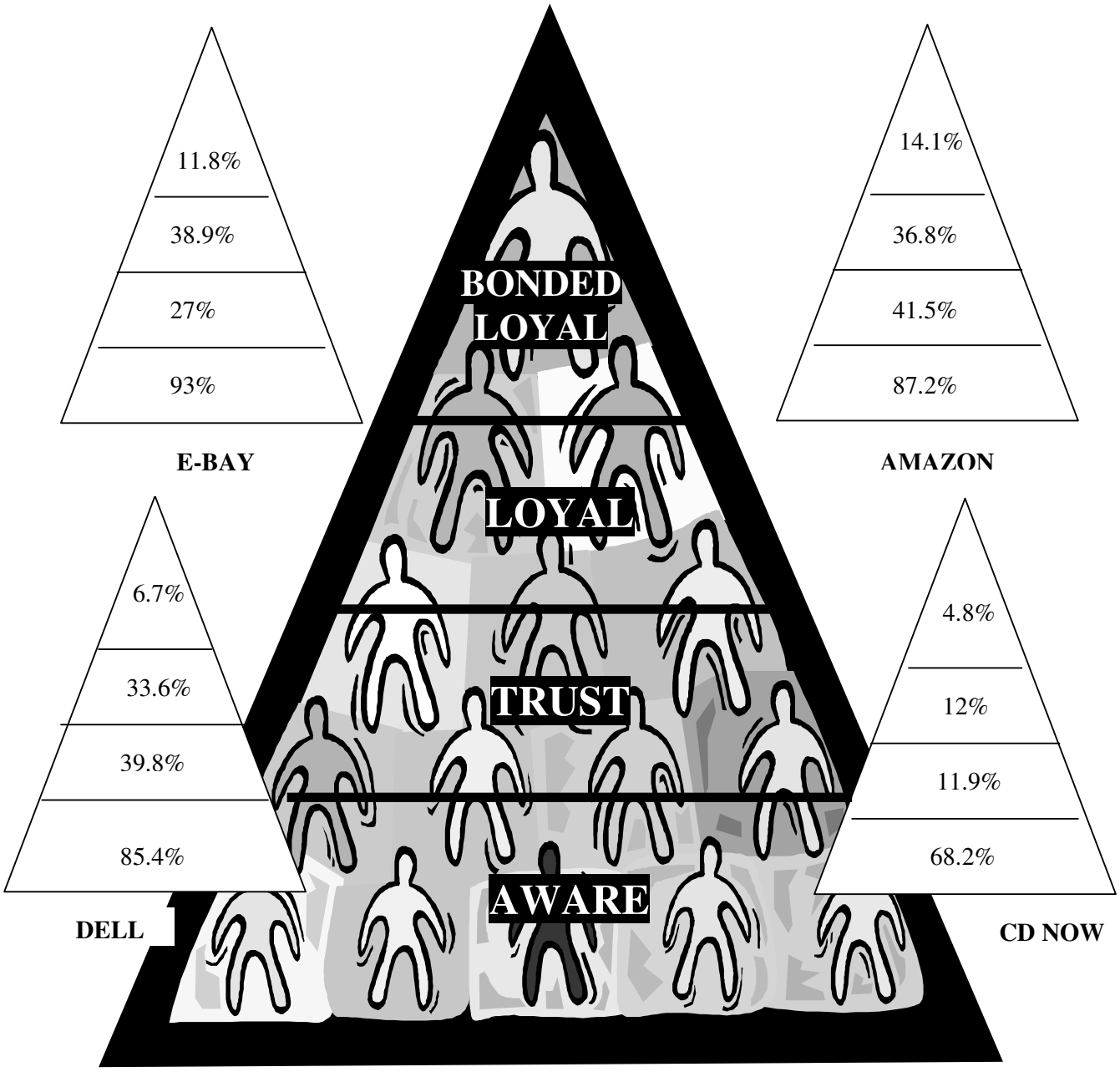
The Tobin's Q figures are in line with the calculations based on consumers' perceptions in this study where both Amazon and eBay enjoy greater intangible value than Dell. These figures are not consistent, however, with results calculated by Interbrand. In the Best Global Brands index produced by Interbrand and published by Business Week, eBay appears consistently a better performer in terms of brand equity than Dell and Amazon. For example, in calculations for year 2006, Dell has 12,256 ($ million) in intangible brand value, eBay 6,755 ($ million), and Amazon.com $4,707 million (Interbrand, 2006). A caveat is in order here: Interbrand measures the current intangible value accrued to the brand name only, whereas Tobin's Q includes all intangible value (patents, human resources, research and development, etc) and the potential of the company to generate the intangible value in the future.

[6] Tobin's Q ratio is the ratio of the market value of a firm's assets over the replacement value of its assets. This ratio was developed by James Tobin of Yale University who won the Nobel Prize for such development. A Tobin's Q would be 1 if the market value reflected only the recorded assets of a company. If Tobin's Q is greater than 1, then the market value is greater than the value of the company's recorded assets. This suggests that the market value reflects some unmeasured or unrecorded assets of the company (Boasson and Boasson 2006).

Overall, the sources creating brand equity for the online companies under study are awareness, trust and loyalty. The last source, according to its relative weight, is the most important one. In terms of brand equity outcomes, namely willingness to pay a price premium and intention to repurchase from the website, both Amazon and eBay lead their rivals.

Inspection of Table 5.11 seems to indicate that eBay may be perceived as offering more value than rival online retailers and this may give the online company a competitive edge.

FIGURE 6.1 PROPORTION OF CONSUMERS IN EACH STAGE OF RELATIONSHIP WITH A BRAND



Interpretation of the correlations between the multidimensional brand equity and the brand equity variables (rho = 0.77) seems to indicate that the composite brand equity (i.e. the combination of the two outcome variables) is a better measure of the construct of brand equity than when either of the brand equity observable variables is used. However, if only one observable variable could be chosen to measure brand equity, either one on its own constitutes a good predictor judged by the calculated Pearson correlation (rho = 0.71).

6.3 Web Marketing Efforts

Two main web marketing efforts developed by an online vendor were used as antecedent of sources of brand equity. **Web functionality** (a combination of fulfilment activities and web functionality) contributes to create awareness and trust directly and helps, indirectly, in building loyalty and brand equity. Part of the results are concordant with literature that suggest online companies that provide consistent, reliable accessibility to businesses' websites (Page and Lepkowska-White, 2002) and simple purchasing processes (Pitta, Franzak and Fowler, 2006) create awareness and develop associations of trust (Li, Browne and Wetherbe, 2006). It is surprising that web functionality/fulfilment does not create value directly.

A plausible explanation, as stated before, is that value has been measured in a too narrow form, namely reflecting value for money. In this context web functionality does little to create a perception of value for money. Web functionality/fulfilment does not create loyalty directly either as it was hypothesised. Perhaps, once customers learn to navigate and order products from a business website and receive the products as expected, these functionalities are taken for granted and consumers do not become loyal as a result. It may be that web functionality/fulfilment is so essential to any company nowadays that their value as a driver is

neutralised: without it a company is not even in the game (Barber, 1983).

Although no hypotheses were specified between web functionality/fulfilment and brand equity directly, such effect was assessed by exploring alternative links in the structural model and also by judging the importance through their indirect effect. This indirect effect is measured by adding the product of web marketing functionality/fulfilment through all possible routes to brand equity. The result of this exercise confirms the importance of web functionality/fulfilment as indirect influence on brand equity through the value and loyalty sources. Therefore one cannot underestimate its effect.

Customer support **service**, another vendor marketing effort, creates value and trust directly but does not influence website awareness or loyalty. These results are consistent with theoretical literature that suggest customer service is a critical factor affecting online purchase behaviour (Aaker and Joachimsthaler, 2000) and that the difference between a successful online company and one that is not, is based on the level and value-added service they provide for customers (Morgan and Hunt, 1994). This research also corroborates a survey by Jupiter Communications that found that 91 percent of online consumers want human contact at one point in time while making transactions online (Page and Lepkowska-White, 2002).

The opportunity to contact a company representative and obtain specialised support is widely available in the travel industry, where sometimes retired personnel work from home to provide advice to passengers around the clock all over the world (Chaudhuri and Holbrook, 2001). Other industries, like financial and health care, are also providing these services to enhance value. Apart from adding value, customer service support online also boosts trusting beliefs. This is consistent with suggestions that regular communication is a necessary condition for the formation, development and maintenance of trust (Bart et al., 2005). It is also possible that customer support online is signalling consumers that the online business is

trustworthy since often technical or professional competence of the trusted party foment trust relationships (Piccoli et al., 2004).

Customer service support does influence loyalty and brand equity but only indirectly. The total indirect effect of customer service support on brand equity outcome is not negligible (0.25).

Overall, the findings imply that to secure trust managing customer support and functionality/fulfilment activities are considerably significant. Moreover, the interaction of these activities – as suggested by the high correlation (rho = 0.69) – also contributes to the overall effect on awareness, value and trust. No wonder some successful online retailers like Jeff Bezos suggest investing money in developing and implementing efficient delivery mechanisms, rather than on advertising which is easy to copy (Jiang and Rosembloom, 2005).

The model cross-validation, although across subjects that had not bought products from the retailers under study, performed reasonably well. From this perspective, the structural model serves also as a strong support for the final model derived from respondents who had bought from the online retailers under study. The validation of the model can also be justified on the high correlation (0.77) found between the brand equity sources and the brand equity outcome.

6.4 Managerial Implications

The branding literature suggests that companies build brand equity over time therefore it is expected that brand equity dimensions will also be affected by time. According to the traditional framework of brand equity, brand awareness and brand associations contribute to create brand equity. This study confirms that the conceptual framework applies to explain brand equity for online companies. Brand awareness does influence brand equity both directly and indirectly justifying the investment in creating brand awareness. However, this effect may

not be so relevant after customers have become fully acquainted with the company. It is therefore important at this point to invest resources in creating brand association of trust and attitudinal loyalty; these are the two additional sources of brand equity. The importance of trust and loyalty seem to ratify the need to create relationship with customers as suggested in the literature (e.g. Carpenter 2000). It has been reported that consumer-brand relationship influences quality judgements about brand extensions to other product categories and also purchase intentions (Park, Lee and Lee, 2005), both an outcome of brand equity.

When developing trust online, managers must go beyond concentrating only on privacy and security issues and contemplate developing marketing activities that create trust in a broader sense, perhaps a sense of confidence. Loyalty is directly influenced by brand associations of value and associations of trust, therefore businesses are well advised to invest resources in creating customer value and trust. Both of these can be achieved by developing web marketing efforts around functionality, fulfilment of the promises, and customer service support. Some of these efforts are related to maintaining a website for business transactions that is easy to navigate, to order products, that is accessible, running consistently, and delivers the promise (fulfilment). In a computer-mediated business environment, customers expect alternative ways to communicate and transact with an online business, hence offering alternative ways of customer support such as call centre, toll free number, email, and "live individuals" can create value and develop trust. In addition, this customer support is expected to be specialised, in other words, the person answering the questions should be capable to handle the customer's doubts.

A caveat must be borne in mind. Similar to the impact of awareness as a brand equity source that appears to decrease as customers become more aware of the online business, it is expected that web functionality/fulfilment, at a later stage, can also be taken for granted. Thus

customers will expect of an online business website some minimum functionality just to maintain the relationship. In this case, online companies will need to devise new website features that can create additional value.

CHAPTER 7 CONCLUSIONS

A conceptual development of empirical knowledge about the relationships between web marketing efforts, sources of brand equity and brand equity outcomes for online companies is still in its infancy. A few previous studies that have tackled the task are inconclusive because of the lack of a guiding theoretical framework, limitation of the method they apply (e.g. regression), arbitrary definition of brand equity entertained, or their outcome measure (i.e. neither generally accepted ones). In addition, these studies fall short in terms of testing the nomological validity of the developed measurement model.

This research is an attempt to overcome some of the previous limitations by using the structural equation model methodology that has advantages over simple regression, uses a well-known theoretical framework as a guide, uses conventional definitions and outcome measures of brand equity. Finally, the nomological validity of the measurement model is tested in relation to selected antecedents including web marketing activities related to functionality/fulfilment and customer support.

This study finds support in defence of the application of the offline brand equity theoretical framework based on brand awareness, brand associations and loyalty for online companies. Brand loyalty, brand associations of trust and brand awareness, in this order according to this research, are the main sources of brand equity for online companies**.** This study not only testifies to the importance of loyalty as a brand equity dimension, but demonstrates that it has the strongest effect among all other dimensions. This influence comes from the direct and mediating effect between trust and brand equity.

Trust associations formed about the online business is the second most important

dimension of brand equity. This corroborates what many practitioners and academics in the area have been saying. Trust is relevant because it creates loyalty more than its direct influence in creating brand equity. This finding is at odds with the ORS model where trust resulted in more or less equal weight among five dimensions.

Just as Aaker & Joachimsthaler (2000) have justified treating perceived quality as distinct from brand associations, this study promotes the idea that trust must be singled out in an online brand equity model. This thesis is also supportive of the view that online exchanges are more relational rather than transactional, therefore the need to develop trust for online companies. Both brand trust and brand loyalty (defined in terms of commitment to the brand) have been deemed key mediating factors in relational exchanges. Hence, given the great importance of trust as a source of brand equity, future research could test the explanatory power of the trust-commitment theory in explaining brand equity. Suggestions for a more encompassing framework of brand equity that incorporates not only product, services, but also network equity are also advanced by Brodie, Glynn and Little, (2006).

From the hierarchy of effects perspective, the study shows that eBay, although holding more presence than the rest of the competing online firms, has not been able to leverage it to create higher level of trust or as much "bonded" loyalty as Amazon. Amazon, on the other hand, has a higher proportion of customers who think the online business is trustworthy from those that are aware of the branded website and is able to achieve the highest level of "bonded" loyalty. Dell, although with a high percentage of consumers that recognise the business and also with a relatively high proportion of customers that trust the online business, still is not able to achieve substantially more "bonded" loyal customers. Overall, CDNow, at the time this research was conducted, suffered from low level of awareness and trust, which would undoubtedly have had an impact in moving customers to the next levels of truly and

"bonded" loyal**.**

In summary, this research shows that brand loyalty, trust, and awareness are determinant of brand equity outcomes as relative price and intention to repurchase from the online business. (The latter implies, if not an increment of market share, at least its maintenance). Furthermore, and inferring from the individual brand analysis, specifically correlations between sources of equity and brand equity, the value source seems to be the major differentiator between the leading online businesses. Also, it may appear that the way to increase brand equity among the leaders is through increasing trust and loyalty.

The present study tested the importance and role of two web marketing efforts in building brand equity indirectly through brand equity dimensions. First, web functionality/fulfilment activities proved to have significant direct influence in creating brand awareness and trust associations, and a significant indirect effect in creating associations of value, loyalty and brand equity outcome. Secondly, customer support service also resulted in significant direct effects on brand associations of value and trust, and has indirect significant effects on loyalty and brand equity outcome. Therefore customer service is another critical marketing effort e-marketers need to facilitate to consumers, especially considering that not every consumer approaches an online business with same Internet skills or trust disposition.

7.1 Limitations of the Study

This research posed some challenges common to social science research and is subject to some limitations. First, the study may have limited generalisations as a result of the use of students. This purposeful sample will certainly not reflect a sample of the whole population. However, as justified in another section of this manuscript, this sample may be appropriate for theory testing purpose and development.

Second, because this study is cross sectional and there was no variable manipulation, it is not possible to draw cause-effect inferences; therefore the findings must be interpreted with caution. A longitudinal study would be preferred since the importance of brand equity sources may change over time as a result of being satisfied. For example, awareness may be important and critical to create brand equity at the beginning when the product brand, service, or company is not known but at a later stage its effect may be considerably less.

Third, a company's web marketing efforts (e.g. customer service and functionality-fulfilment) are measured at the perceptual level rather than using actual company data for these efforts. Although it has been indicated that perception is important because it can drive behaviour as well as hard data, the interpretation of hard data (e.g. number of people working on customer service, number of lines open for customer support) may be different from the scales that have been used to represent such data.

Fourth, the indicators or observable variables that were used in this study may not be deemed comprehensive enough. Different researchers have defined and measured the constructs in different ways, some with more observable variables than others; some have defined broader concepts in scope than the used in this study, still others have summed multiple items and used the sum as a measure of the construct. Even when scales may have proved reliable in some studies, it may not necessarily be the case in others. In addition, although variables may contribute to scope in a definition they may cause problems with other variables within and between constructs. The challenge in social sciences remains in this respect. Notwithstanding the above, multidimensional measures of online customer value and trust should be used.

Fifth, indicators used in the various constructs are reflective rather than formative, however formative indicators have been suggested for richer and more comprehensive construct

representation and potentially lead to fewer model specification errors.

Sixth, this study has not incorporated interaction effects. Potential interactions among the sources of brand equity such as trust and loyalty on brand equity outcome could provide additional insights. Similar interactions could be explored between web functionality/ fulfilment and customer service support on some brand equity sources.

Seventh, this research study was based only on a few online business retailers. Although the theoretical framework based on brand associations, awareness, and loyalty tested here seems robust enough, brand equity sources could have a different impact on brand equity (outcome) when studying other online businesses such as portals and verticals. Eighth, the business web-marketing activities were limited to only some web design functionalities such as fulfilment, easy to navigate, easy to order, reliability and customer support service online. Other studies may expand the number of functionalities. A potential good and comprehensive source of net-based customer service systems and functionality could be that developed by Piccoli et al.(2004).

Finally, it is possible that the study suffers from some common methods bias since the same subjects report on their perception and attitude of online companies and at the same time on the brand equity outcome measures. Some of the method bias have been recognised and justified in this report.

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APPENDICES

APPENDIX 1. TABLE 2.1 CONSUMER-BASED BRAND EQUITY LITERATURE REVIEW

Author by year	Definition of brand equity (offline)	Brand equity measure and or outcome	Consumer brand equity sources	Brand equity drivers	Type of study, research method, product category	Key findings
Aaker's (1991)	"A set of brand assets liabilities linked to a brand, its name, and symbol that add to or subtract from the value provided by a product or service to a firm or to that firm's customers or both"	Price premium Sales Market share Loyalty	1) Brand awareness 2) Perceived brand quality 3) Brand associations 4) Brand loyalty Market Based sources: 1) Patents 2) Trademarks 3) Channel relationships	1) Communication programs	Conceptual	The benefits and value that these sources offer to the firm help to build up brand equity.
Keller (1993)	"The differential effect that brand knowledge has on consumer response to the marketing efforts of that brand" CBBE.	1) Additional (net) revenue from a brand vs. a generic one. 2) Stock price	Indirect approach: 1) Brand knowledge: a) Brand awareness (brand recall) b) Brand image: Brand associations Direct approach: Consumers response to Marketing mix efforts	MKTG Mix programs: 1) Product-related specification 2) Frequent advertising and promotions. 3) Sport sponsorships 4) Pricing policy	Conceptual	A brand has a positive consumer-based brand equity when consumers react positively to a product and the way it is marketed because consumers identify the brand.
Park and Srinivasan (1994)	CBBE. Incremental preference endowed by the brand to the product as perceived by an individual consumer	1) Market share 2) Price premium	Brand Associations: 1) Product related attribute 2) Non-product related attribute (usage situation imagery)		Empirical survey-based. Composite multi-attribute preference model. Tooth-paste and mouthwash categories.	Brand equity is driven by non-attribute-based components. Market share and price premium are suggested meaningful summary measures of brand equity because they are linked to a brand's profitability.
Cobb-Walgren, Ruble and Dhonthu (1995)	Used Aaker's (1991)	1) Consumer preferences 2) Purchase intention 3) Brand choice	1) Brand awareness 2) Brand associations 3) Perceived quality	1) Advertising spending 2) Brand name 3) Price	Empirical. Consumer report ratings. Conjoint and regression. Hotels and household cleaners	Brands with the higher equity generated significantly greater preference and purchase intentions. The brand with greater advertising budget yielded substantially higher levels of brand equity.

TABLE 2.1 (Continued)

Author by year	Definition of brand equity (offline)	Brand equity measure and or outcome	Consumer brand equity sources	Brand equity drivers	Type of study, research method, product category	Key findings
Agarwal and Rao (1996)	The added value of the brand. Used Aaker' and Keller's CBBE approach	1) Actual choice 2) Market share	1) Awareness 2) Brand perceptions and attitudes. 3) Brand preferences 4) Choice intentions		Empirical. Industry experts, In-depth interviews, mini-focus group and consumer survey. EFA, Multinomial logit regression analysis. Chocolate bars.	Awareness (brand recall) did not converge. Perception, attitudes, preferences and choice intention can explain choice. Dollar metric measure, brand specific coefficients and purchase intention are good validity predictors of brand equity. Multiple constructs are better in terms of predictive validity.
Silverman, Sprott and Pascal (1999)	Used Keller's (1993) CBBE	Market-based outcomes: -Sales -Brand value	1)Brand Awareness: - Familiarity - Direct experience (i.e. usage) - Favourability (i.e., evaluation) 2) Brand associations: Brand image-strength, uniqueness, favourability of brand associations		Empirical. Pearson Correlation and affinity analysis. Beverages and over the counter medicine as product brands.	Support Keller's conceptualisation of brand equity and its components. Brand favourability and usage are the consumer's measures most closely associated to market-outcomes of brand equity.
Yoo and Donthu (2000)	"Difference in consumer choice between a focal brand and an unbranded product given the same level of product features"	Overall brand equity (OBE) scale. For validity purposes they use purchase intention and brand attitude	1) Brand loyalty 2) Brand awareness 3) Brand associations 4) Perceived quality	Marketing Mix: 1) Price 2) Store image 3) Distribution Intensity 4) Advertising spending 5) Price deals	Empirical, survey-based. EFA, CFA, SEM. Athletic shoes, camera film, colour television set.	Awareness/associations do not discriminate. Loyalty (0.69) is the most important source of brand equity followed by perceived quality (0.10) and brand awareness/associations (0.07). Perceived quality and brand associations might influence brand equity by first affecting brand loyalty. High advertising spending, high price, good store image and high distribution intensity were related to high brand equity. Frequent price promotions erode brand equity.

TABLE 2.1 (Continued)

Author by year	Definition of brand equity (offline)	Brand equity measure and or outcome	Consumer brand equity sources	Brand equity drivers	Type of study, research method, product category	Key findings
Mackay (2001).	Used Aaker and Keller's CBBE definition.	1) Brand Choice 2) Market share.	1) Awareness 2) Brand perceptions and attitudes. 3) Brand preferences 4) Choice intentions		Empirical: Consumer purchasing panel, telephone and mail survey. Multinomial logit regression. Fuel retail outlet.	Empirical confirmation of Agarwal and Rao's (1996) study. Measures converged, except for awareness. Brand recall is not an indicator of brand choice when consumers know about the brand. Most of the measures have some predictive ability and reliability observed across product category.
Yoo and Donthu (2001)	Consumers' different responses between a focal brand and an unbranded product when both have the same level of marketing stimuli and products attributes	1) Overall brand equity scale (OBE).	1) Brand loyalty 2) Brand awareness 3) Brand associations 4) Perceived quality		Empirical, cross cultural (America and Korean Americans). Survey-based. EFA, CFA. Athletic shoes, camera film, colour television set.	No discriminate validity was observed between the constructs awareness and associations. The most important source of brand equity was perceived quality (0.41) followed by loyalty (0.29) and awareness/associations (0.29). Regression weights are slightly different for Korean/American and Korean samples. High correlations of MBE with purchase intention, attitude towards the brand and OBE measures.

TABLE 2.1 (Continued)

Author by year	Definition of brand equity (offline)	Brand equity measure and or outcome	Consumer brand equity sources	Brand equity drivers	Type of study, research method, product category	Key findings
Washburn and Plank (2002)	Used both CBBE according to Aaker (1991) and Keller (1993).	1) Overall brand equity based on Yoo and Donthu (2000).	1) Brand loyalty 2) Brand awareness 3) Brand associations 4) Perceived quality		Empirical. Pearson correlation, EFA, CFA and SEM. Co-branded products.	Could not differentiate brand awareness from brand association. When items selected measure only the lowest level of both awareness/associations. The model improved by adding items, Yoo and Donthu's have left out. They also found acceptable fit with a four factor model, differentiating brand awareness from associations. When using more discerning items in awareness an associations.
Netemeyer et al (2004)	Used both CBBE according to Aaker (1991) and Keller (1993).	Brand Response: 1) Brand 2) Purchase intention 3) Brand choice behaviour 4) Past purchase	**Primary CBBE sources**: 1) Perceived brand quality (PQ) 2) Perceived brand value for the cost (PVC) 3) Brand uniqueness 4) Willingness to pay a price premium **Related brand associations** 1) Brand awareness 2) Familiarity 3) Popularity 4) Organizational associations 5) Brand image consistency		Empirical, focus group, industry and academic experts, survey-based, EFA, CFA, SEM and Univariate (MANOVA). Colas, toothpaste, athletic shoes, and jeans.	High levels of correlations among the latent factors of PQ and PVC suggested lack of discrimination between these sources. Primary CBBE sources were correlated with brand awareness, brand familiarity and brand popularity. Primary CBBE sources: PQ/ PVC, uniqueness and willingness to pay a price premium are better predictors of brand response than related brand associations. PQ/PVC, uniqueness. Willingness to pay a price premium correlated with brand purchase intent PQ/PVC and brand uniqueness are direct antecedents of willingness to pay a price premium. Price premium is a potential direct antecedent of brand purchase intention and choice.

TABLE 2.1 (Continued)

Author by year	Definition of brand equity (online)	brand equity measure and or outcome	Consumer brand equity Sources	brand equity Drivers	Type of study, research method, product category	Key Findings
Srinivasan, Park and Chang (2005)	The incremental ($) contribution/ year obtained by the brand in comparison to the same product (or service) at the same price but with no brand-building efforts.	Brand choice probability	1) Brand awareness 2) Brand associations 3) Brand image preference: Attribute-perception biases: signal reception, durability, battery hours Non-attribute preference: user imagery 3) Brand availability	**Based-product choice probability:** Price Sales-force Advertising	Empirical, survey-based, industry experts. Conjoint analysis. Digital cellular phone in Korea.	Brand awareness (0.21) is the major source of brand equity followed by non-attribute preference (0.14) and enhanced attribute perception (0.06). Non-attribute based equity is more important than attribute-based equity corroborating Park and Srinivasan (1994) study.
Pappu, Quester and Cooksey, (2005).	Used both CBBE according to Aaker (1991) and Keller (1993).		1) Brand awareness 2) Brand associations: - Organisational (i.e., liking, pride and trust. - Brand personality :(i.e., sincerity, excitement, competence, sophistication ruggedness. 3) Perceived quality 4) Brand loyalty		Empirical, Mall intercept survey. CFA. Cars and televisions	Empirical evidence of the multi-dimensionality of CBBE supporting four constructs as conceptualised by Aaker (1991).Discrimination between brand awareness and brand associations can be obtained through more discerning indicators.

TABLE 2.1 CONSUMER-BASED ONLINE BRAND EQUITY LITERATURE REVIEW

Author by year	Definition of brand equity (online)	Brand equity measure and or outcome	Consumer brand equity Sources	Brand equity drivers	Type of study, research method, product category	Key findings
Carpenter (2000)	Set of assets and liabilities linked to that brand that can add or subtract additional value to the product or service	Online business success	Brand awareness Loyalty Customer commitment Uniqueness Value	Distribution and alliances	- Inductive case study. - Four Internet ventures	1. Building brand awareness, 2. Cultivate customer commitment, 3. Distribution and alliances 4. Move early /move fast 5. Customer knowledge 6. Deliver and add outstanding value 7. Respect core brand elements 8. Create unique online version of the offline product 9. Leverage key offline assets.
Dayal, Landersberg and and Zeisser (2000)		Online branding success	1) Web experience 2) Personality 3) Presence 4) Performance 5) Value	1. Core promises marketers make to consumers (i.e., convenience, fun, belonging and adventure) 2. Web design to deliver the promises on-line (i.e., quickly, reliable) 3. Economic model required to gain profit	Inductive case study.	The success of online branding depends on the unlimited capabilities of the Internet to deliver, and completely satisfying, end-to-end consumer experience from the promise made by a product or service through purchase to delivery and beyond. The combination of personality, presence and performance contributes to consumer's online experience and thus influencing brand equity.
Alan Berstrong (2000)			1) Trust 2) Brand identity 3) Differentiation 4) Relevance 5) Affinity 6) Brand identity 7) User experience 8) Value 9) Loyalty	Advertising Customer service Distribution	Inductive case study.	Recommendations to building a brand on the Internet: 1. Define the brand. 2. Determine an optimal brand future and develop a brand trajectory. 3. Create the brand strategy. 4. Identify the brand action steps. 5. Leverage the unique aspects of the Internet. 6. Monitor, measure, and adjust.

TABLE 2.1 (Continued)

Author by year	Definition of brand equity (online)	brand equity measure and or outcome	Consumer brand equity Sources	brand equity Drivers	Type of study, research method, product category	Key Findings
Page and Lepkowska-white (2002)	Web equity: Consumer familiarity and perceptions about dot.com's website.	Loyalty	**Web-equity dimensions**: 1. Web Awareness: Consumer familiarity with a dot.com's website. 2. Web Image	1) Marketer and non-marketer communication. 2) Site design 3) Vendor characteristics 4) Product/service characteristics	Conceptual	Four different drivers to build value in online companies. These factors might impact consumer awareness and image. Loyalty is suggested as an outcome of brand equity.
Johnson and Griffith (2002)		Online success	1. Brand awareness 2. Perceived quality 3. Credibility 4. Confidence 5. Consumers perceptions	**Website design:** 1) Feel: content and navigation 2) Look: graphic design 3) Functionality: one click Ordering 4) Innovation	Inductive case study	Five managerial steps to build brand equity online: 1. Assess importance of branding industry 2. Assess virtual/traditional brand intensity 3. Assess branding positioning 4. Assess level of competitive website design 5. Take branding/web design action
Kim, Srinarayan and Setzekorn (2002).	Used CBBE according to Keller (1993).	Firm performance	1) Awareness: 2) Knowledge: -Positive image -Quality 3) Trust 4) Loyalty	**Awareness marketing efforts** 1. Registered with a search engine 2. Advertise on the web 3. Word of mouth communication 4. Cross-promotion **Knowledge marketing efforts** 1. Web usability 2. Web design 3. Web information architecture **Trust marketing efforts** 1) Strategic alliance 2) Seal of approval from trusted third parties	Conceptual	

TABLE 2.1 (Continued)

Author by year	Definition of brand equity (online)	Brand equity measure and or outcome	Consumer brand equity Sources	Brand equity drivers	Type of study, research method, product category	Key findings
Christodoulides and de Chernatony (2004)	Used Marketing Science Institute definition:' A set of associations and behaviours on the part of brand's consumers, channel members and parent corporation that enables a brand to earn greater volume or greater margins that it could without the brand name and, in addition, provides a strong, sustainable and differential advantage (Srivastava and Shocker, 1991, p.5).		**brand equity, Aaker's 10: Traditional measures:** 1. Price premium 2. Satisfaction/loyalty 3. Perceived quality 4. Leadership/popularity 5. Perceived value 6. Brand personality 7 Organisational associations 8. Brand awareness 9. Market share 10. Market price and distribution coverage **brand equity(Internet – specific measures)** 1. Online brand experience 2. Interactivity 3. Customisation 4. Relevance 5. Site design 6. Customer service 7. Order fulfilment 8. Quality of brand relationship 9. Communities 10. Website logs e.g. number of hits, re-visit, and view time		Conceptual model	The study posits that brand equity for online businesses can be created by complementing traditional (Aaker's) brand equity measures with new measures pertinent to the web.
Argyriou, Kitchen and Melewar (2005)	**Corporate brand equity:** The differential response by consumers, customers, employees, other firms, or any relevant constituency to the words, actions, communications, products or services provided by an identified corporate brand entity (Schultz 2002, p.113)	1. Financial value 2. Market share, price, premium, sales 3. Consumer brand associations 4. Revenue premium	1. Website reputation: overall esteem and character of the website as seen by people generally and over time. 2. Attitude towards the website: website image or current perception of the corporate website) 3. Consumer brand associations		Conceptual model	The model postulates which reputation and attitude create brand equity.

TABLE 2.1 (Continued)

Author by year	Definition of brand equity (online)	Brand equity measure and or outcome	Consumer brand equity Sources	Brand equity drivers	Type of study, research method, product category	Key findings
Na & Marshall (2005)	Cyber brand power relates to the likelihood of online customers using a particular site because of its particular configuration of relevant evaluation criteria'.	1. Customer satisfaction 2. Market share 3. Loyalty 4. Brand extension	1. Brand awareness 2. Brand image power dimension: -Attributes -Consumer's perception of Value and benefit 3. Brand Attitudes 4. Brand associations		Empirical, survey-based in Singapore and Korea. Regression. Portal-search engine sites (e.g. Yahoo, AOL)	brand equity sources for off-line products and services work just as well in the on-line context.
Interbrand (2006)		Brand value	Financial strength, role of brand analysis and brand strength.		Empirical analysis	Ranking of best global brands according to brand value in $.
Christodoulides et al (2006)	Online retail/services (ORS) brand equity. Conceptualised as a "relational type of intangible asset that is co-created through the interaction between consumers and the e-tail brand"		ORS brand equity, a second order factor, can be measured by: 1. Emotional connection 2. Online experience 3. Responsive service nature 4. Trust 5. Fulfilment		Empirical, web-based survey, EFA, CFA. CDs, books	Developed and validated a 12-item ORS brand equity scale with five correlated but distinctive dimensions.

APPENDIX 2. GENERAL DESCRIPTION OF ONLINE BUSINESSES USED IN THE PILOT STUDY

Name	Website address
http://www.amazon.com	Founded in 1995 and it directly offers a variety of products, such as books, music, online auctions, and millions of books, toys and games, electronics, kitchenware, computers and more.
http://www.bluenile.com	Founded in 1999, Blue Nile has grown to become the largest online retailer of certified diamonds and fine jewellery.
http://www.buy.com/	Founded in October 1996 and it sells products ranging from computer hardware to software, from electronics to cellular phones, from books to movies, from music to toys, and more.
CDNow http://www.amazon.com	Founded in 1994, four years before Amazon jumped into the online music arena, CDNow was once the dominant seller of compact discs on the Web. In 2002 outsourced its Web site operations to Amazon.com, becoming the latest in a string of online merchants to choose to join, rather than fight, the e-tail giant.
http://www.dell.com/	Dell Computer Corporation was founded in 1984 but in 1999 Dell introduces "E-Support Direct from Dell" online technical support. Since then they are the leading computer systems company. Dell designs, builds and customises products and services to satisfy a range of consumer requirements.
http://www.ebay.com	Founded in 1991 but went public in 1998. Provides an online trading platform through the Internet. EBay permits sellers to list items for sale, buyers to bid on items of interest and all eBay users to browse through listed items.
http://www.ecost.com	Founded in 1999. It is a dominant Internet retail company offering superior selection, competitive prices, and speedy delivery in the computers and electronics market. eCOST.com is a subsidiary of Creative Computers (Nasdaq:MALL), a publicly traded company founded in 1987.
http://www.egghead.com/	In the fall of 1997 is relaunched as pure-play selling (rephrase to computer related electronics) electronics things computer-related. It comprises another two low-overhead Websites-colourful, catalogue-style markets that a bargain warehouse for refurbished or discontinued products (www.surplusdirect.com), and an online auction house for avid bargain hunters (www.surplusauction.com). In 2001 Amazon bought all of the assets of defunct e-tailer Egghead.com through a California bankruptcy court for US$6.1 million.
http://www.onsale.com/	Located in Palo Alto (Calif.) company that runs an online auction house. Onsale hosted its first auction of computer equipment in May, 1995. It sells high quality, low-priced electronics. In 1999, Egghead merged with fellow pure-play OnSale.com in a deal said to be worth $400 million at the time.
http://www.redenvelope.com/	Launched in 1999, previously known as 911 Gifts Inc. This is a specialty gift e-tailer.

APPENDIX 3. ONLINE BRAND EQUITY DIMENSIONS AND CORRESPONDING ITEMS USED IN THE PILOT AND MAIN STUDY (in shade)

Dimension	Items
Web Awareness	*I know what [X online business] looks like*
	I can recognise [X online business] among other competing online businesses
	I can quickly recall the name of [X online business]
	Some characteristics of [X online business] come quickly to mind
	I have difficulty in imagining [X online business]
Value Associations **Competitive Price**	I prefer [X online business] because price deals are frequently offered
	I have a preference for [X online business] because it frequently offers an updated list of product promotions (sales)
	In [X online business] I can make the most for the least money
	In [X online business] I can find the lowest prices for a quality brand
	I cannot find quality products at an affordable price in [X online business]
Value Associations **Shopping Convenience**	*I have a preference for [X online business] because it allows the comparison of product prices across online stores*
	I like [X online business] because it allows me to track my orders
	I like [X online business] because it offers alternative forms of payments: cash on delivery, credit cards, money order
Value Associations **Breadth & Depth Merchandise**	*I like [X online business] because one can find the broadest range of products*
	I have a preference for [X online business] because it provides the deepest specialised assortments
Value Associations **Compensation**	**[X online business] is good because it allows returns to be shipped back at retailer's cost**

APPENDIX 3. (CONTINUED)

Trust Associations	
	It feels safe to disclose personal information in [X online business]
	It feels safe to conduct transactions in [X online business]
	[X online business] has my confidence
Loyalty	
	It makes sense to buy from [X online business] instead of any other online business, even if they are the same
	Even if another online business has same features as in [X online business] I would prefer to buy from [X online business]
	I would definitely recommend [X online business] to friends, neighbours and relatives
Brand Equity outcome	
	I'm willing to pay a premium price of up to 10% when purchasing from [X online business] as opposed to a less well known.
	I would definitely buy from [X online business] again
Web Functionality	
	I do not like [X online business] because it is particularly slow in downloading pages
	I like [X online business] because it is easy to navigate (i.e. content organised around users' needs)
	I like [X online business] because it offers consistent accessibility, (i.e. it is up and running at all times)
	I have a preference for [X online business] because it is easy to order products from
	I like [X online business] because it saves list of purchases for returns and warranty repairs
	I like [X online business] because it offers consistent navigation (links on each web page)
	I have a preference for [X online business] because it provides interactive, fun experience (graphics, 3-D images, animation, video and audio capabilities
	I like [X online business] because it remembers my preferences
	I prefer this [X online business] because it saves shipping/billing information

APPENDIX 3. (CONTINUED)

Customer Service	I have a preference for [X online business] because it responds quickly to customers
	I like [X online business] because it offers alternative customer support (call centre, toll free, email, "live individuals"
Compensation	**[X online business] is good because it allows returns to be shipped back at retailer's cost**
	I have a preference for [X online business] because it offers specialised customer support
Fulfilment	*I like [X online business] because it sends email order confirmation*
	I like [X online business] because it offers consumers a choice of carrier
	I like [X online business] because items are delivered in the time expected *I have a preference for [X online business] because items delivered match the order* *I like [X online business] because items delivered match the product description*

APPENDIX 4. QUESTIONNAIRE USED IN THE MAIN STUDY

Dear participant, the objective of this study is to investigate the perception of several online businesses on a number of attributes to assess the overall brand value of the business. You need to assess only one. To ensure valid and meaningful findings we need your conscientious help.
There is no right or wrong answer, *only the perception you have of the online businesses is what matters*.

Please, indicate to what extent you disagree or agree with the statements below for only one of the online retailers you have an opinion or perception about. If you believe that you have no opinion and cannot rate anyone of the listed online retailers but you can assess another one, feel free to do so in the line "Other".

	Very strongly disagree	**Very strongly agree**
I know what [X online business] looks like		CDNow.com Amazon.com eBay.com Dell.com Other
I have a preference for [X online business] because it offers specialised customer support		CDNow.com Amazon.com eBay.com Dell.com Other
In [X online business] I can find the lowest prices for a quality brand		CDNow.com Amazon.com eBay.com Dell.com Other
I have a preference for [X online business] because it responds quickly to customers		CDNow.com Amazon.com eBay.com Dell.com Other

	Very strongly disagree	**Very strongly agree**
I can recognise [X online business] among other competing websites		CDNow.com Amazon.com eBay.com Dell.com Other
I like [X online business] because it offers alternative forms of payment: cash on delivery, credit cards, money order.		CDNow.com Amazon.com eBay.com Dell.com Other
I like [X online business] because items delivered match the product description		CDNow.com Amazon.com eBay.com Dell.com Other
It feels safe to conduct transactions in [X online business]		CDNow.com Amazon.com eBay.com Dell.com Other
I have a preference for [X online business] because it allows the comparison of product prices across online stores.		CDNow.com Amazon.com eBay.com Dell.com Other
I can quickly recall the name of [X online business]		CDNow.com Amazon.com eBay.com Dell.com Other
Even if another online business has same features as [X online business] I would prefer to buy from/ use [X online business]		CDNow.com Amazon.com eBay.com Dell.com Other

	Very strongly disagree	**Very strongly agree**
In [X online business] I can make the most for the least money		CDNow.com Amazon.com eBay.com Dell.com Other
I like [X online business] because one can find the broadest range of products		CDNow.com Amazon.com eBay.com Dell.com Other
I prefer [X online business] because it saves shipping/billing information for one-click ordering		CDNow.com Amazon.com eBay.com Dell.com Other
I will definitely buy from/ use [X online business] again		CDNow.com Amazon.com eBay.com Dell.com Other
It makes sense to buy from/use [X online business] instead of any other website, even if they are the same		CDNow.com Amazon.com eBay.com Dell.com Other
I have a preference for [X online business] because it is easy to order products from		CDNow.com Amazon.com eBay.com Dell.com Other
I am willing to pay a premium of up to 10% more to buy from [X online business] than from a less well known retailer		CDNow.com Amazon.com eBay.com Dell.com Other

	Very strongly disagree	**Very strongly agree**
[X online business] has my confidence		CDNow.com Amazon.com eBay.com Dell.com Other
I have a preference for [X online business] because it provides the deepest specialized assortments		CDNow.com Amazon.com eBay.com Dell.com Other
I like [X online business] because it offers alternative customer support (call centre, toll free, email, "live individuals".		CDNow.com Amazon.com eBay.com Dell.com Other
I like [X online business] because it offers consistent accessibility (i.e. it is up and running at all times)		CDNow.com Amazon.com eBay.com Dell.com Other
I like [X online business] because it sends e-mail order confirmation		CDNow.com Amazon.com eBay.com Dell.com Other
I like [X online business] because it allows to track my orders		CDNow.com Amazon.com eBay.com Dell.com Other
I like [X online business] because items are delivered in the time expected		CDNow.com Amazon.com eBay.com Dell.com Other

	Very strongly disagree	**Very strongly agree**
I like [X online business] because it is easy to navigate. (i.e. content organised around users' needs).		CDNow.com Amazon.com eBay.com Dell.com Other
I have a preference for [X online business] because items delivered match the order		CDNow.com Amazon.com eBay.com Dell.com Other

General Information

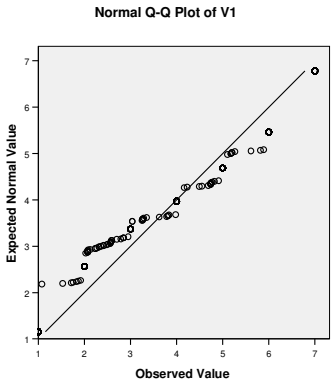
Gender: Male Female

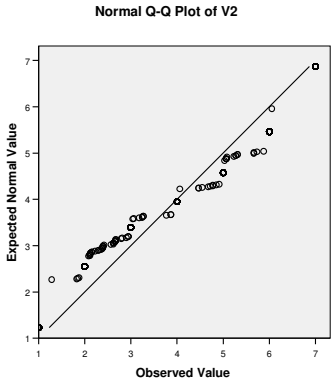
Age: 17- 21 22- 27 28- 33 34- 39 40 – 45 46 – 50 50>

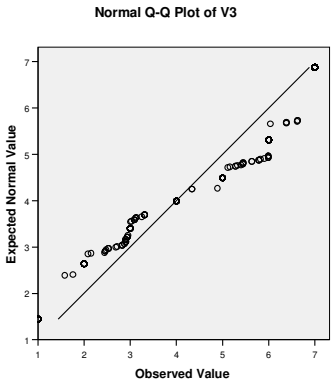
How frequently do you use the Internet?
Every day 4-6 times/week 1-3 times/week 1-3 times/month
How long have you been using the Internet?
2- 12 months 1- 3 years 3- 7 years 7 years >
How do you access the Internet?
Dial-up modem High-speed access (e.g. cable)
Have you purchased products on the Internet? YES NO

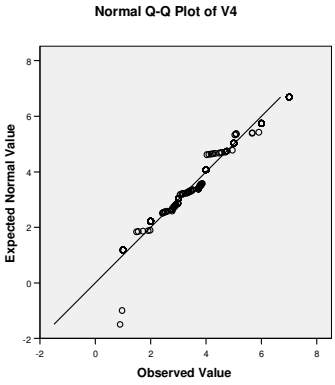
Thank you very much for your cooperation.

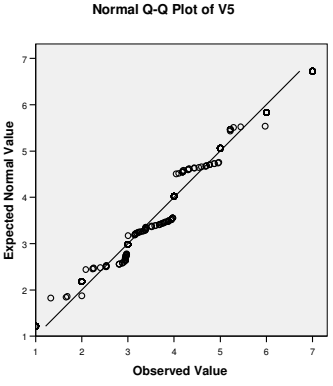
APPENDIX 5. Q-Q PLOTS OF VARIABLES USED IN THE MAIN STUDY

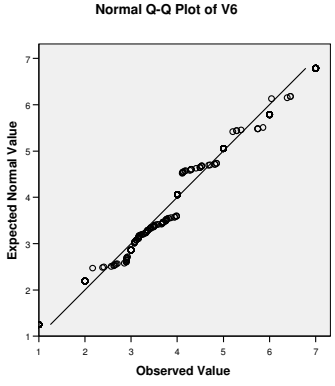


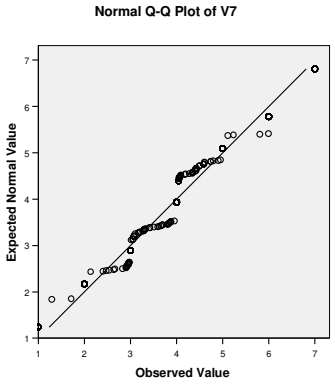


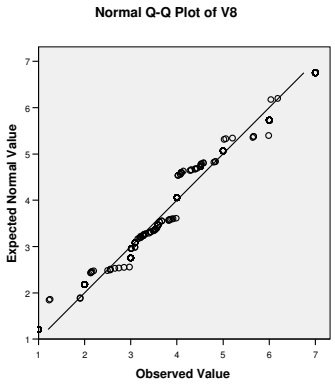


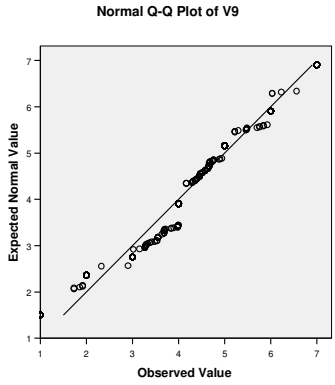












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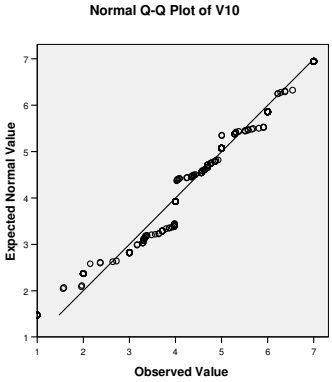

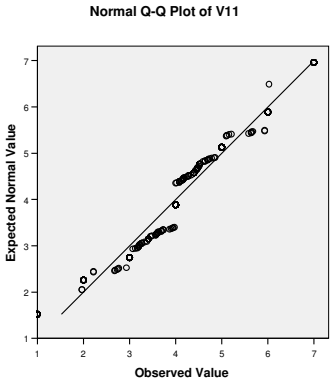

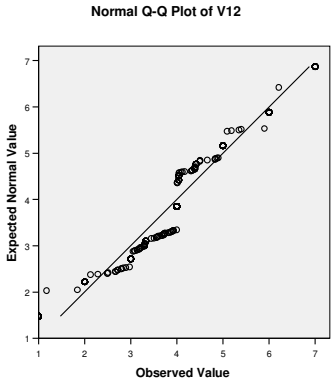

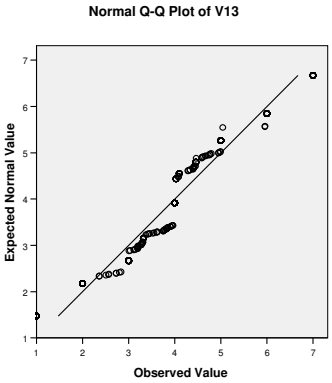

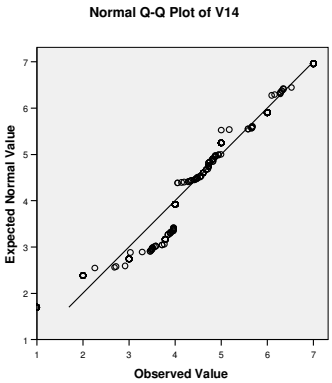

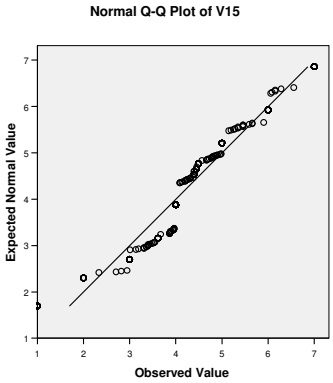

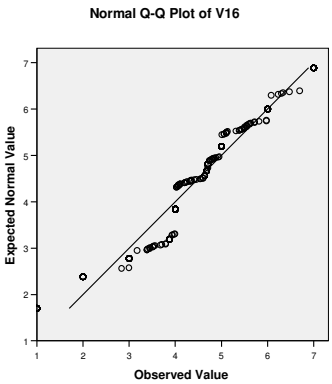

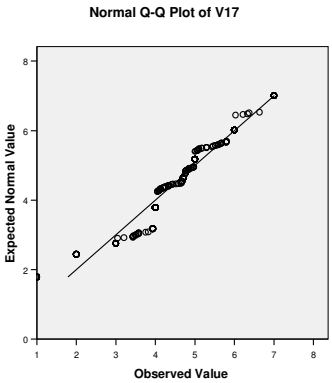

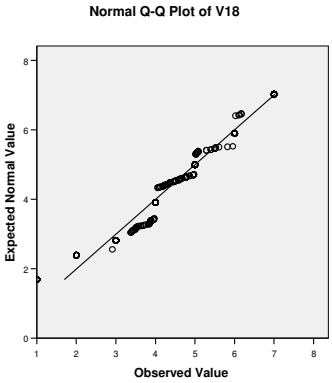

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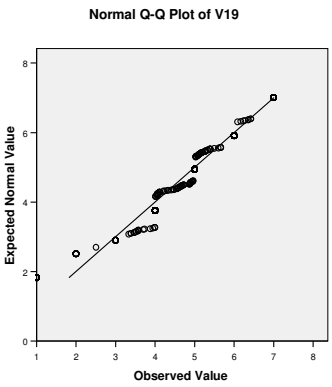

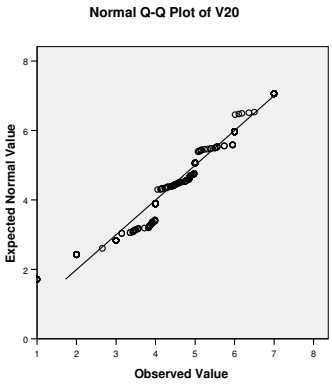

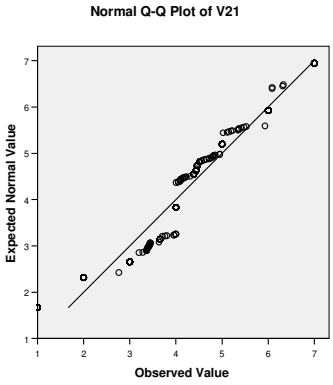

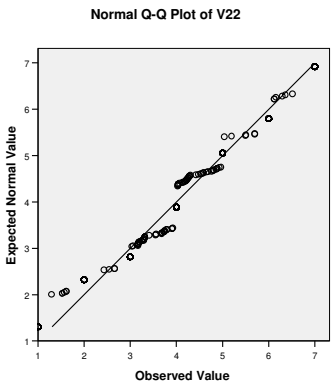

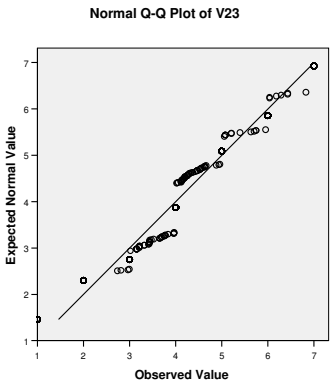

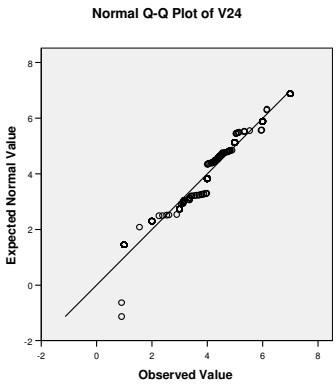

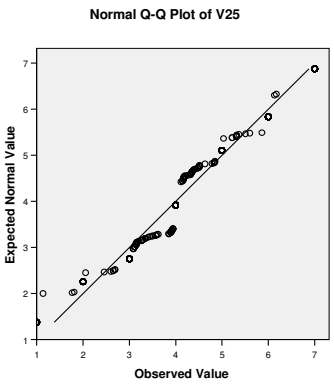

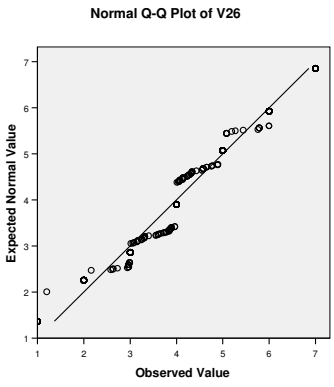

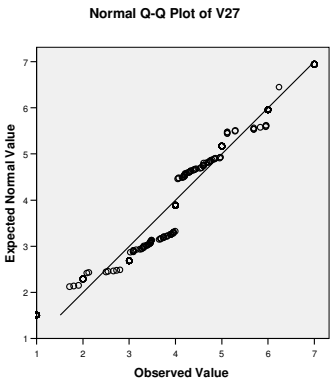

APPENDIX 6. CALIBRATION SAMPLE COVARIANCE MATRIX (Variables 1-14)

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
V1	4.735	3.977	3.457	1.789	1.630	2.064	1.822	1.476	1.797	1.799	1.417	1.024	1.193	1.150
V2	3.977	4.830	3.716	1.867	1.735	2.031	1.846	1.491	1.866	1.819	1.446	1.099	1.306	1.201
V3	3.457	3.716	5.054	1.741	1.824	2.123	1.826	1.378	1.837	1.726	1.501	0.977	1.154	1.203
V4	1.789	1.867	1.741	2.714	1.763	1.567	1.454	1.474	1.339	1.405	1.210	0.991	0.997	0.839
V5	1.630	1.735	1.824	1.763	2.524	1.672	1.557	1.315	1.492	1.275	1.202	0.993	1.000	0.924
V6	2.064	2.031	2.123	1.567	1.672	2.772	1.721	1.506	1.518	1.442	1.330	1.014	0.990	0.967
V7	1.822	1.846	1.826	1.454	1.557	1.721	2.556	1.533	1.580	1.426	1.236	0.898	0.994	0.994
V8	1.476	1.491	1.378	1.474	1.315	1.506	1.533	2.700	1.457	1.301	1.122	0.857	0.956	1.111
V9	1.797	1.866	1.837	1.339	1.492	1.518	1.580	1.457	2.505	1.639	1.393	1.186	1.255	1.309
V10	1.799	1.819	1.726	1.405	1.275	1.442	1.426	1.301	1.639	2.697	1.278	1.125	1.238	1.194
V11	1.417	1.446	1.501	1.210	1.202	1.330	1.236	1.122	1.393	1.278	2.157	1.378	1.297	1.319
V12	1.024	1.099	0.977	0.991	0.993	1.014	0.898	0.857	1.186	1.125	1.378	2.152	1.644	1.292
V13	1.193	1.306	1.154	0.997	1.000	0.990	0.994	0.956	1.255	1.238	1.297	1.644	2.145	1.497
V14	1.150	1.201	1.203	0.839	0.924	0.967	0.994	1.111	1.309	1.194	1.319	1.292	1.497	2.198
V15	0.950	1.077	1.113	0.798	0.840	0.848	0.800	0.782	1.193	1.158	1.212	1.361	1.318	1.330
V16	0.972	1.104	0.983	0.695	0.765	0.798	0.687	0.689	1.057	1.031	1.023	1.256	1.222	1.390
V17	0.993	1.128	1.010	0.783	0.834	0.866	0.683	0.688	1.083	1.064	1.016	1.199	1.255	1.362
V18	1.436	1.456	1.488	0.881	0.962	1.156	1.006	0.929	1.336	1.154	1.274	1.315	1.367	1.563
V19	1.357	1.408	1.381	0.736	0.937	1.019	0.916	0.743	1.232	1.084	1.166	1.224	1.254	1.376
V20	1.276	1.278	1.346	0.926	1.045	1.070	1.008	0.932	1.392	1.213	1.362	1.291	1.266	1.390
V21	0.831	0.856	0.810	0.367	0.294	0.406	0.325	0.361	0.616	0.761	0.597	0.783	0.832	0.850
V22	1.098	1.087	1.306	0.840	0.692	0.892	0.790	0.767	1.077	1.135	0.922	1.120	1.006	0.916
V23	1.132	1.070	1.290	0.814	0.693	0.706	0.878	0.707	1.039	0.957	1.065	1.110	1.002	0.932
V24	1.069	1.173	1.218	0.926	0.874	0.831	0.960	0.824	1.082	0.920	0.863	0.993	1.053	0.884
V25	1.099	1.204	1.059	0.888	0.847	0.882	0.923	0.786	1.010	0.974	0.833	1.030	1.081	0.906
V26	1.259	1.313	1.240	0.840	0.817	0.979	1.044	0.863	1.017	0.923	0.825	0.839	0.973	0.804
V27	1.097	1.054	1.026	0.802	0.668	0.748	0.868	0.910	0.915	0.841	0.893	0.796	0.811	0.847

(Contin.) CALIBRATION SAMPLE COVARIANCE MATRIX (Variables 15-27)

	V15	V16	V17	V18	V19	V20	V21	V22	V23	V24	V25	V26	V27
V1	0.950	0.972	0.993	1.436	1.357	1.276	0.831	1.098	1.132	1.069	1.099	1.259	1.097
V2	1.077	1.104	1.128	1.456	1.408	1.278	0.856	1.087	1.070	1.173	1.204	1.313	1.054
V3	1.113	0.983	1.010	1.488	1.381	1.346	0.810	1.306	1.290	1.218	1.059	1.240	1.026
V4	0.798	0.695	0.783	0.881	0.736	0.926	0.367	0.840	0.814	0.926	0.888	0.840	0.802
V5	0.840	0.765	0.834	0.962	0.937	1.045	0.294	0.692	0.693	0.874	0.847	0.817	0.668
V6	0.848	0.798	0.866	1.156	1.019	1.070	0.406	0.892	0.706	0.831	0.882	0.979	0.748
V7	0.800	0.687	0.683	1.006	0.916	1.008	0.325	0.790	0.878	0.960	0.923	1.044	0.868
V8	0.782	0.689	0.688	0.929	0.743	0.932	0.361	0.767	0.707	0.824	0.786	0.863	0.910
V9	1.193	1.057	1.083	1.336	1.232	1.392	0.616	1.077	1.039	1.082	1.010	1.017	0.915
V10	1.158	1.031	1.064	1.154	1.084	1.213	0.761	1.135	0.957	0.920	0.974	0.923	0.841
V11	1.212	1.023	1.016	1.274	1.166	1.362	0.597	0.922	1.065	0.863	0.833	0.825	0.893
V12	1.361	1.256	1.199	1.315	1.224	1.291	0.783	1.120	1.110	0.993	1.030	0.839	0.796
V13	1.318	1.222	1.255	1.367	1.254	1.266	0.832	1.006	1.002	1.053	1.081	0.973	0.811
V14	1.330	1.390	1.362	1.563	1.376	1.390	0.850	0.916	0.932	0.884	0.906	0.804	0.847
V15	1.957	1.506	1.389	1.227	1.180	1.382	0.835	0.982	0.946	0.888	0.871	0.623	0.747
V16	1.506	2.050	1.766	1.353	1.319	1.419	0.982	1.088	1.013	0.940	0.962	0.720	0.803
V17	1.389	1.766	2.047	1.354	1.343	1.330	0.889	1.091	1.014	0.942	0.975	0.841	0.811
V18	1.227	1.353	1.354	2.302	1.794	1.633	0.938	1.203	1.184	1.089	1.080	0.938	0.985
V19	1.180	1.319	1.343	1.794	2.336	1.728	0.871	1.059	1.123	1.087	0.983	0.850	0.848
V20	1.382	1.419	1.330	1.633	1.728	2.243	0.998	1.241	1.330	1.182	1.018	0.903	0.886
V21	0.835	0.982	0.889	0.938	0.871	0.998	2.113	1.476	1.436	1.394	1.389	1.263	1.212
V22	0.982	1.088	1.091	1.203	1.059	1.241	1.476	2.972	2.285	1.797	1.639	1.341	1.531
V23	0.946	1.013	1.014	1.184	1.123	1.330	1.436	2.285	2.664	1.699	1.553	1.450	1.635
V24	0.888	0.940	0.942	1.089	1.087	1.182	1.394	1.797	1.699	2.730	2.179	1.787	1.559
V25	0.871	0.962	0.975	1.080	0.983	1.018	1.389	1.639	1.553	2.179	2.638	2.004	1.647
V26	0.623	0.720	0.841	0.938	0.850	0.903	1.263	1.341	1.450	1.787	2.004	2.659	1.731
V27	0.747	0.803	0.811	0.985	0.848	0.886	1.212	1.531	1.635	1.559	1.647	1.731	2.422

APPENDIX 7. VALIDATION SAMPLE COVARIANCE MATRIX (Variables 1-14)

	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
V1	5.442	4.656	3.872	2.268	2.193	2.690	2.310	1.478	2.155	2.579	1.962	1.455	1.219	1.881
V2	4.656	5.383	4.050	2.230	2.078	2.853	2.202	1.659	2.233	2.636	1.977	1.539	1.295	1.985
V3	3.872	4.050	5.037	2.028	1.887	2.524	1.890	1.308	1.788	2.057	1.605	1.173	0.958	1.601
V4	2.268	2.230	2.028	3.639	2.522	2.255	1.934	2.129	1.589	2.000	1.669	1.445	1.534	1.647
V5	2.193	2.078	1.887	2.522	3.597	2.140	2.282	1.698	2.095	2.137	1.980	1.732	1.769	1.699
V6	2.690	2.853	2.524	2.255	2.140	3.741	2.128	1.685	1.684	2.034	1.809	1.413	1.277	1.712
V7	2.310	2.202	1.890	1.934	2.282	2.128	3.534	1.911	2.082	2.124	1.901	1.628	1.568	1.587
V8	1.478	1.659	1.308	2.129	1.698	1.685	1.911	3.721	1.541	1.802	1.486	1.365	1.460	1.347
V9	2.155	2.233	1.788	1.589	2.095	1.684	2.082	1.541	3.549	2.676	2.096	1.987	1.868	1.954
V10	2.579	2.636	2.057	2.000	2.137	2.034	2.124	1.802	2.676	3.628	2.268	2.001	1.716	2.090
V11	1.962	1.977	1.605	1.669	1.980	1.809	1.901	1.486	2.096	2.268	3.121	2.000	1.829	1.960
V12	1.455	1.539	1.173	1.445	1.732	1.413	1.628	1.365	1.987	2.001	2.000	3.196	2.285	1.803
V13	1.219	1.295	0.958	1.534	1.769	1.277	1.568	1.460	1.868	1.716	1.829	2.285	3.075	1.937
V14	1.881	1.985	1.601	1.647	1.699	1.712	1.587	1.347	1.954	2.090	1.960	1.803	1.937	3.195
V15	1.589	1.624	1.376	1.462	1.689	1.596	1.635	1.368	2.056	1.995	2.080	1.739	1.874	2.128
V16	1.892	1.916	1.571	1.217	1.445	1.594	1.494	1.021	1.872	1.952	1.833	1.469	1.409	2.263
V17	1.770	1.730	1.402	1.256	1.436	1.459	1.411	1.024	1.829	1.940	1.716	1.553	1.574	2.148
V18	2.413	2.358	1.853	1.553	1.761	1.890	1.782	1.169	2.009	2.048	1.862	1.762	1.491	1.898
V19	2.203	2.295	1.900	1.457	1.852	1.944	1.750	1.119	2.090	2.082	1.716	1.723	1.472	1.784
V20	2.077	2.066	1.694	1.502	1.701	1.821	1.732	1.189	1.976	2.106	1.864	1.782	1.465	1.907
V21	1.734	1.634	1.377	1.255	1.498	1.461	1.539	1.219	1.710	1.721	1.646	1.590	1.448	1.678
V22	2.065	1.797	1.656	1.437	1.710	1.632	1.950	1.189	2.056	1.979	1.815	1.877	1.709	1.865
V23	1.928	1.847	1.693	1.392	1.609	1.659	1.845	1.222	2.043	2.051	1.781	1.903	1.737	1.847
V24	1.849	1.645	1.365	1.699	2.105	1.637	2.093	1.516	2.049	1.878	1.731	1.831	1.838	1.819
V25	1.810	1.830	1.440	1.480	1.853	1.697	2.030	1.556	1.978	1.938	1.628	1.734	1.673	1.812
V26	1.940	1.911	1.508	1.877	2.122	1.768	2.201	1.753	2.117	1.994	1.704	1.722	1.936	1.786
V27	2.331	2.283	2.004	1.970	1.994	2.071	2.055	1.733	1.905	2.088	1.931	1.540	1.482	1.944

(Contin.) VALIDATION SAMPLE COVARIANCE MATRIX (Variables 15-27)

	V15	V16	V17	V18	V19	V20	V21	V22	V23	V24	V25	V26	V27
V1	1.589	1.892	1.770	2.413	2.203	2.077	1.734	2.065	1.928	1.849	1.810	1.940	2.331
V2	1.624	1.916	1.730	2.358	2.295	2.066	1.634	1.797	1.847	1.645	1.830	1.911	2.283
V3	1.376	1.571	1.402	1.853	1.900	1.694	1.377	1.656	1.693	1.365	1.440	1.508	2.004
V4	1.462	1.217	1.256	1.553	1.457	1.502	1.255	1.437	1.392	1.699	1.480	1.877	1.970
V5	1.689	1.445	1.436	1.761	1.852	1.701	1.498	1.710	1.609	2.105	1.853	2.122	1.994
V6	1.596	1.594	1.459	1.890	1.944	1.821	1.461	1.632	1.659	1.637	1.697	1.768	2.071
V7	1.635	1.494	1.411	1.782	1.750	1.732	1.539	1.950	1.845	2.093	2.030	2.201	2.055
V8	1.368	1.021	1.024	1.169	1.119	1.189	1.219	1.189	1.222	1.516	1.556	1.753	1.733
V9	2.056	1.872	1.829	2.009	2.090	1.976	1.710	2.056	2.043	2.049	1.978	2.117	1.905
V10	1.995	1.952	1.940	2.048	2.082	2.106	1.721	1.979	2.051	1.878	1.938	1.994	2.088
V11	2.080	1.833	1.716	1.862	1.716	1.864	1.646	1.815	1.781	1.731	1.628	1.704	1.931
V12	1.739	1.469	1.553	1.762	1.723	1.782	1.590	1.877	1.903	1.831	1.734	1.722	1.540
V13	1.874	1.409	1.574	1.491	1.472	1.465	1.448	1.709	1.737	1.838	1.673	1.936	1.482
V14	2.128	2.263	2.148	1.898	1.784	1.907	1.678	1.865	1.847	1.819	1.812	1.786	1.944
V15	2.895	2.190	2.141	1.795	1.702	1.896	1.550	1.840	1.824	1.617	1.594	1.702	1.762
V16	2.190	3.071	2.613	1.951	1.847	1.835	1.562	1.826	1.851	1.448	1.543	1.508	1.774
V17	2.141	2.613	3.139	2.108	2.015	1.814	1.537	1.947	1.983	1.646	1.735	1.605	1.846
V18	1.795	1.951	2.108	3.377	2.555	2.275	1.775	1.987	1.999	2.046	1.878	1.970	1.997
V19	1.702	1.847	2.015	2.555	3.188	2.408	1.811	2.036	2.025	2.011	1.844	1.898	1.979
V20	1.896	1.835	1.814	2.275	2.408	3.117	1.963	2.083	2.086	2.038	1.817	2.032	1.935
V21	1.550	1.562	1.537	1.775	1.811	1.963	2.739	1.937	1.919	1.963	1.922	1.812	1.851
V22	1.840	1.826	1.947	1.987	2.036	2.083	1.937	3.927	3.344	2.500	2.390	2.287	2.261
V23	1.824	1.851	1.983	1.999	2.025	2.086	1.919	3.344	3.744	2.436	2.519	2.519	2.501
V24	1.617	1.448	1.646	2.046	2.011	2.038	1.963	2.500	2.436	3.620	2.889	2.919	2.440
V25	1.594	1.543	1.735	1.878	1.844	1.817	1.922	2.390	2.519	2.889	3.647	3.056	2.515
V26	1.702	1.508	1.605	1.970	1.898	2.032	1.812	2.287	2.519	2.919	3.056	3.867	2.806
V27	1.762	1.774	1.846	1.997	1.979	1.935	1.851	2.261	2.501	2.440	2.515	2.806	3.679