HOMEBUYER INFORMATION SEARCH: AN EXTENSION OF THE TECHNOLOGY ACCEPTANCE MODEL FOR REAL ESTATE WEBSITES

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Abstract

Buying a property can be an exciting, but also daunting, prospect for home buyers. A recent innovation for potential buyers and sellers which can aid this process has been the introduction of real estate websites, containing searchable databases of property listings and several interior photos of the property on offer. These websites are often touted as offering convenience and efficiency for the house buyer by enabling them to narrow the number of homes to seriously consider, and make a more informed market choice (Littlefield, Bao and Cook, 2000).

This thesis explores the adoption of real estate websites by recent house purchasers in the Bay of Plenty region of New Zealand, with particular focus on the determinants explaining attitudes to use and moderating factors affecting their decision to use the real estate website. Exploratory interviews were undertaken with realtors, and a mailout survey used to gather both behavioural and attitudinal data from recent home purchasers.

The research illuminates how using a real estate website influences subsequent purchase behaviour, in particular, how purchasers search for properties and the impact of using these websites on aspects such as search duration, other media types used, and the number of open homes visited. Mediating factors such as age, property type, professionalism and distance to market are also examined.

The technology acceptance model (TAM) (Davis, 1989) has been proven effective in explaining behavioural intention to use a wide range of IT devices (Konana and Balasubramanian, 2005; Luarn and Lin, 2005; Shang, Chen and Shen, 2005; Chen, Gillenson and Shernell, 2002), including the internet (Moon and Kim, 2001; Lin and Lu, 2000), also the use of interactive IT devices has been found to be intrinsically motivating for the user (Teo, Lim and Lai, 1999; Bruner and Kumar, 2005). This thesis extends the ability of the TAM to explain behavioural intention to use interactive technologies through the context of the real estate website. The study examines the TAM in this context by determining the extent of both the established constructs of perceived usefulness and perceived ease of use, as well as the recently introduced construct of perceived enjoyment.
This thesis establishes that the TAM extended for perceived enjoyment explains the major determinants of attitude formation towards using real estate websites, finding age and previous purchase experience as moderating factors in the propensity to adopt the real estate website innovation. Additionally, using real estate websites during the search process significantly increases overall search duration and number of open homes visited by a potential purchaser.

Predictions are that the innovation will continue as a favoured tool by property purchasers in the short term, although newer tools (such as email lists and automated PDA updates) are now entering the market (Hendery, 2006).

Despite the change towards newer methods of gathering information, the underlying determinants in the search process for a house requires interactive tools that will reduce the overall purchase risk, and allow convenient means to find property while motivating the purchaser to continue to consider a variety of property options on offer.
I would like to thank all those who have contributed in many ways towards this thesis.

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List of Abbreviations

A – attitude
ANOVA – analysis of variance
ATM – automated teller machine
BI – behavioural intention
CA – Cronbach alpha
dTPB – decomposed theory of planned behaviour
FSBO – for sale by owner
GNA – gone no address
HNZC – Housing New Zealand Corporation
ICT – information and communications technology
IDT – innovation diffusion theory
IS – information systems
IT – information technology
LIM – land information memorandum
NZ – New Zealand
OECD - Organisation for Economic Co-operation and Development
PBC – perceived behavioural control
PC – personal computer
PCA – principal components analysis
PCI – perceived characteristics of innovating
PDA – personal digital assistant
PEnj – perceived enjoyment
PEOU – perceived ease of use
PU – perceived usefulness
REINZ – Real Estate Institute of New Zealand
SD or Std Dev – standard deviation
SMS – short message service
SN – subjective norm
TAM – technology acceptance model
TPB – theory of planned behaviour
TRA – theory of reasoned action
txt – text messaging
URL – Uniform Resource Locator
US – United States of America
WWW – world wide web
Chapter 1: Introduction

This thesis explores the adoption of real estate websites by recent house purchasers in the Bay of Plenty region of New Zealand, with particular focus on the determinants explaining attitudes to use and moderating factors affecting their decision to use the real estate website information medium.

The chapter provides contextual background to the research and outlines the research approach undertaken.

Background information relating to the research subject is provided in the following section. Firstly, a brief overview of the real estate environment, highlighting factors impacting on housing market sales is given, followed by a discussion regarding the impact of technology developments in the real estate sector.

1.1 RESEARCH BACKGROUND

1.1.1 The New Zealand Real Estate Sector

The housing market in recent years has been very buoyant, with a high turnover of sales (108,000 houses were sold in 2005), and over the past 5 years, as the market has increased, the number of sales agents has risen by 60% from around 10,000 agents to 16,000 (Gibson, 2006b). Real estate agents currently have a monopoly on residential sales in New Zealand, with 90% of houses being sold through real estate agents (Crews and Hovell, 2005). In recent years, however, there has been a significant decline in consumer perceptions of the quality of service provided by real estate agents, but recent clients appear to have a better view of the sector than the public as a whole (Crews and Hovell, 2005).

Property vendors have enjoyed good capital gains, as property prices have risen on average 85% since 1997, the single biggest global increase by any country over this time period (Gibson, 2006b). A phenomenal boom in residential building and rampant consumer spending have provided most of the impetus to growth since 2001 (BIS Shrapnel and LJ Hooker, 2005), (Figure 1) however, the rate of median price rise is slowing due to more houses selling for under $400,000 (HNZC, 2005).
High capital yields have been achieved across a number of housing markets, driving investors to build portfolios, as property accumulation and riding out boom and bust cycles has been indicated by the New Zealand Property Council as the surest way to make money on real estate (Property Council of New Zealand, 2003). The lack of houses on the market due to portfolio retentions, particularly in the low-middle house price range, has seen demand outstripping supply, high price increases, and stronger capital gains for divestors (Property Council of New Zealand, 2003). Despite construction prices continuing to increase each quarter since June 1999, increases in house prices obtainable are continually outstripping construction costs, causing further incentives for new building consents (HNZC, 2005).

New Zealand has one of the highest rates of home ownership in the world at 68% (DTZ New Zealand, 2004) and many small investors have recently entered the investment market buying additional homes. At any one time, there are an estimated 50,000 houses for sale throughout New Zealand (Gibson, 2006a). While a majority (84%) of buyers purchase homes through standard Sales and Purchase agreements, the number of sales being undertaken through tender processes and auctions has increased (Crews and Hovell, 2005).

As high achievable price increases have driven growth in real estate sales activity, the greater demand has led to a reduced number of days for a property to be listed on the market, before being sold (Figure 2). This increase in turnover of houses has allowed a larger stock of houses
to be sold each month (Figure 3). National monthly house sales averaged 6,000 units pre-2001, growing to 8,000-10,000 per month from 2002 (REINZ, 2006).

1.1.1a Bay of Plenty Real Estate

The Bay of Plenty region is home to some 260,000 people, which is the fifth most populous region, comprising 6% of the population. There is a high Maori proportion of the population (25%), and the region had 65% home ownership in 2001 (EBOP, 2005).

Demographic shifts within and between regions, as well as population growth, are a major impact on residential house sales in the area. Population within the Bay of Plenty is patchy,
with significantly growing populations in Tauranga and Western Bay of Plenty, while Rotorua has experienced slow growth, and Kawerau negative growth (Kiwi Property Investor, 2005). Latest census figures indicate a 7% increase in population growth during 1996-2001, making Bay of Plenty the nation’s third fastest growing region (EBOP, 2005). Property prices in the Bay of Plenty have remained high with significant growth during 2005. Average prices for property in the Bay of Plenty have seen yearly increases between 2004 and 2005 of 4% for Mt Maunganui/ Papamoa; 23% for Tauranga; and 19% for Rotorua (REINZ, 2006).

As a majority of the respondents in this study purchased houses within the Rotorua City or nearby Rotorua Lakes area, the following section focuses on real estate conditions for Rotorua City.

1.1.1b  Rotorua Residential Market

The Rotorua district is home to over 65,000 persons (EBOP, 2005). Rotorua City real estate consists of three main residential categories:

- Rotorua City suburbs – comprising housing on smaller sections within the city boundary
- Rotorua Lakes – comprising housing in the major lakeside areas of Okareka, Rotoiti, Tarawera and Rotoma, many of which are secondary holiday homes.
- Rural property – houses attached to farming units, lifestyle blocks, or on the outskirts of the city (e.g. Kaharoa, Rotomahana, Reporoa and Waikite Valley).

Within these categories, houses are purchased for primary dwelling, as well as investment/rental purposes.

During 2000-2004, Rotorua enjoyed steady sales growth, with monthly median sales prices of between $120,000 and $170,000 (REINZ, 2006). The median sales price during 2005 was higher than previous years, and continued to rise throughout the year, beginning with a monthly median price of $168,000 in January, and finishing the year at $215,000 (Figure 4).
The average number of days a house is on the market in Rotorua has more than halved since 2000, with the annual average of 59 days for 2000 falling to just 24 days for 2005 (Figure 5). During winter 2005 the market experienced the quickest time to sell at a monthly average of 21 days. A dramatic reduction in the monthly average number of days to sell occurred over 2003 (Figure 6), as the monthly average number of days to sell reduced from 71 days in January, to 27 days in December. During 2004 and 2005, the monthly average number of days to sell remained under 35, tracking steadily down over time (REINZ, 2006).
Fig 6: Average number of days on the market in Rotorua 2000–2005 (monthly figures).
(Source: REINZ data)

During the same period, in response to the higher house prices on offer, and quick selling time, the volume of houses sold in Rotorua more than doubled from an average of 77 sales per month during 2000, to an average of 173 sales per month during 2005 (Figure 7). Volumes reduced throughout 2000, but picked up again in 2001. Although the monthly sales volume was already increasing during 2001-2002, real estate agents have therefore been operating in a very different market environment since around April 2003 (Figure 8).

Fig 7: Average number of sales per month in Rotorua 2000–2005 (annual averages)
(Source: REINZ data)
The market environment for real estate has therefore been in a growth cycle in recent years, with high turnover, greater interest and demand from clients, more investors entering the market, and increasing margins from sales.

1.1.2 Technology and The Real Estate Sector

Technological change is reducing the marketing edge of the real estate professional due to a democratisation of information (Tuccillo, 1997). Effective real estate marketing in past decades required excellent interpersonal communication skill, due to the heavy reliance on face to face contact with the client, and fairly rudimentary technologies such as the telephone, photocopier and facsimile.

Three parties are affected by technological innovations and increased market efficiencies in real estate: buyers, sellers, and service providers (including agents) (Baen and Guttery, 1997). The ownership of real estate information, such as data concerning properties for sale, and characteristics of past property sales is being called into question. The right of the real estate agent to hold transaction details as proprietary information, as well as the ability of the industry to disclose information in large datasets raises issues relating to privacy as well as access of information (Baen and Guttery, 1997).
As technology allows greater exchange of information, and the ability to access previously undisclosed information, the power of the real estate agency in relation to market knowledge and information dissemination reduces. If information is power, then the powerbase will increasingly move to the consumer.

The ultimate empowerment of consumers will occur when total property transactions can occur without the use of an agent or related service provider, such as a mortgage lender or legal advisor. Although much shopping and many banking services can occur completely online, other internet-marketed industries and services are not yet capable of this total consumer empowerment. Toyota New Zealand spokesperson Nihar Ratnam states that in the car industry, dealer franchise agreements and current legislation still prevents full online transactions, but that the internet allows “basically anything you would be able to do at a dealership, short of physically test driving and actually purchasing the product” (Medcalf, 2005 pg 19).

Greater empowerment of the consumer through technological developments has caused concern in the real estate sector regarding long-term viability and necessity of the real estate agent within the buying and selling process. Baen and Guttery (1997 pg 4) state “The fear mongers’ theory is simple: If buyers and sellers can sit at their personal computers and Macs and gather enough information about each other’s offerings – and even make an offer – why should they pay agents?”

To keep a market edge, real estate marketers therefore need to go further than simply conveying information to customers, instead ensuring customers are quickly and effortlessly connected with service providers. This will allow a reduction in transaction times and relieve stress for the vendor or purchaser, creating value for the client (Tuccillo, 1997). Real estate interaction with related service providers (financial lending institutes, legal offices) has historically been limited (Tuccillo, 1997). To continue to be competitive in the marketplace, Tuccillo (1997) states this will require the realtor to specialise in either technological efficiencies in the transaction process (by providing a full information and contact service, with linkages to information databases and other service providers quickly and readily) or else specialise in a personalised service to rid the consumer of requiring any information searching themselves. Tuccillo predicts this will eventually lead to a smaller number of realty franchises in the marketplace overall, comprising fewer, larger realtors who are technologically proficient, and a number of small specialised (often local) realty agencies providing a more
customised, hands-on service. Myers and Crowston (2004) agree with the likelihood of consolidation within the industry due to information technology; but also foresee a few realtors who will be able to adopt IT and really use it to their advantage.

The internet will increasingly become the conduit for all business relating to home improvement; mortgage insurance; mortgage lenders; legal brokerage; home inspection; house appraisal; building firms; insurers; and property information (titles and LIMs) (Tucillo, 1997), providing the opportunity for co-operation and integration between the various real estate players (Crews, 1997).

Baen and Guttery (1997) predict the following changes in real estate marketing as a consequence of technology-based marketing:

- Availability of historical ‘real estate’ information to the general public
- A gradual decline in the number of agents with increased productivity per sale (similar to downsizing of other industries); as well as a decrease in other related service providers (mortgage lenders; legal advisors; loan services, etc.). However, newer, integrated (hybrid) service providers may arise.
- Face-to-face time spent with each customer in order to complete a transaction will reduce
- A decline in real estate agent commissions per sale, and introduction of fixed marketing fees.

Current technology trends that are beginning to be, or could be, adopted within the real estate industry include: digital imaging; electronic transmission of legal and consenting documentation; online access to and storage of a range of records (council, land information, titles and purchase agreements, etc.); computer software integration to call information and merge it into reports; hand-held data communication devices; geographic information systems (GIS) and neighbourhood mapping technologies; electronic instant loan arrangements and payment facilities (Baen and Guttery, 1997).

Real estate agents should therefore readily embrace these new technological developments to gain competitive advantage, or face increasing head-on competition with other service providers (Crews, 1997).
1.2 JUSTIFICATION FOR THE RESEARCH

Although information search is one of the more studied processes of consumer decision-making, research investigating the nature of high-involvement purchases has usually been undertaken on appliances and automobiles (Newman and Staelin, 1972; Beatty and Smith, 1987). House purchase behaviour has not been investigated to the same extent from a decision-making perspective, and those that have looked at home buying behaviour have approached the subject from the perspective of geographical dislocation, buyer search duration, the disintermediation of agents due to technology, or economic cost benefit of search (Clark and Smith, 1982; Palm and Danis, 2001; Baryla and Zumpano, 1995; Smith and Mertz, 1980).

Similarly, over the past one and a half decades since its inception, the Technology Acceptance Model (TAM) has been shown on numerous occasions to be a good model to explain IT adoption, but has only recently been investigated as a model to explain adoption of internet technologies (Xu and Quaddus; 2004). The internet and electronic marketing is growing in popularity as a business tool in many sectors, including real estate, however, the reasons behind the rapid diffusion of the internet, both for business and public use, and the factors influencing its adoption are not yet clearly established. Nor has the effect of the internet in aiding consumer decision-making been adequately proven. Haubl and Trifts (2000) found evidence that decision aids don’t necessarily enhance consumer decision-making, and in fact may even reduce it. A few studies are beginning to emerge that have investigated the impact of the internet on home purchase behaviour, but these have focused on the effect of the technology on search time and costs, and demographic modifying factors, rather than on explaining the underlying determinants for use (Findsen, 2005; Palm and Danis, 2002).

The TAM model, with perceived usefulness and perceived ease of use constructs, has been proven useful in explaining computer technology adoption, particularly in the workplace environment. With the advent of more interactive technologies, many of which are used outside the workplace, there is interest in extending the TAM to account for these newer technologies. One factor which is emerging in terms of interactive technologies is the importance of perceived enjoyment in interactive technology adoption (Igbaria et al., 1995; Teo, Lim and Lai, 1999; Moon and Kim, 2001; Bruner and Kumar, 2005).

The property market is currently of general public interest, with a growing number of media reports, investment seminars and television programmes dedicated to the purchase and sales
experience of homeowners, with tips to enhance the buying or selling experience and investment returns. This interest in homeownership and the real estate market (both by investors as well as the general public), coupled with a rise in use of technology within real estate sales and marketing provides considerable impetus for this research.

The research extends the technology acceptance model in a new context that will further aid understanding of the model in explaining interactive technologies, and aids realtors in understanding homebuyers’ decision-making in order to provide a better service to clients.

1.3 RESEARCH OBJECTIVES

A major technological innovation impacting on the real estate sector over the past decade has been the introduction of the internet, allowing increased service value to customers, but also raising competition and reducing realtor monopoly on real estate market information. Real estate websites with search engines for property listings have developed as a tool to aid in house purchase decision-making over the past decade, and online property listings are now commonly available to the public via links from individual agency sites, or the REINZ member website [www.realenz.co.nz](http://www.realenz.co.nz).

The thesis explores the reasons behind the growth in real estate website use, and key factors that explain the intention to adopt this technology in the search for a house.

Specifically, this research investigates consumer search processes during house purchase decision-making using the technology acceptance model (TAM), and assesses the model’s applicability in the context of real estate websites.

The research aims to determine the motivational factors influencing uptake of real estate websites to aid a homebuyer during the information search phase when looking to purchase a new home, and how moderating factors impact on actual search behaviour, in terms of number of open homes visited, and duration of search.

The research has the following objectives:

- Determine the suitability of an extended TAM model (with the additional factor of perceived enjoyment) in explaining the main factors impacting on intention to use a real estate website during new home purchase
• Determine any demographic or psychographic factors which also impact on the acceptability of the real estate website as a search tool during home purchase
• Discuss the implications of the findings for real estate marketing

Consumer decision-making, innovation diffusion theory and the technology acceptance model are key theoretical frameworks governing the research.

1.4 RESEARCH APPROACH

Preliminary research included a review of the literature concerning consumer information search (with particular emphasis on search relating to home ownership, and search using the internet), innovation diffusion theory and individual technology acceptance.

Interviews with local real estate Sales Managers allowed a contextual overview regarding the nature of real estate marketing, and highlighted some of the prior knowledge regarding internet usage by home-buyers, as well as giving scope for follow up during the survey phase on anecdotal evidence regarding homebuyer search duration and search media consulted.

These two preliminary stages provided the background for the primary research, which was undertaken using a mailout survey designed to investigate behavioural and attitudinal responses from recent homebuyers.

The primary research was used as an exploratory research phase designed to allow analysis and discussion of an extended technology research model, explaining behavioural intention to use a real estate website, and moderating factors influencing uptake.

1.5 SCOPE OF RESEARCH

The decision to limit the investigation to the search process in sourcing information for a house purchase, rather than other property types (e.g. rural land; lifestyle blocks; or commercial property) was made to provide a demographically diverse respondent sample profile of reasonable size, and also allowed investigation into differences between investment and family purchasers.
The Bay of Plenty region was chosen as a convenient geographical subsection of the total New Zealand housing market in which to conduct the research. This region has had high property price increases and significant real estate activity in recent years, with significant growth during 2005 (REINZ, 2006). The study is therefore not generalisable to the national population. However, it allows insights into factors influencing adoption which enhance understanding of real estate consumer decision-making as a whole.

The study focused on the factors governing intention to use a real estate website and therefore the survey respondents included both adopters and non-adopters of the real estate website technology during a search for residential property purchase.

1.6 THESIS STRUCTURE

This thesis comprises five chapters, beginning with an introduction (Chapter One) that firstly outlines the real estate market environment and impact from the use of technology in real estate, followed by an overview of the aspects of research undertaken. Chapter Two (Literature Review) explores the past literature concerning information search behaviour and the adoption of interactive technologies, and establishes the research hypotheses and research model. The primary research undertaken is discussed in terms of methodology (Chapter Three) with an outline of the interview and survey approach undertaken, as well as the items and scales used. Results and discussion from the primary research phase is given in Chapter Four. Chapter Five (Conclusion) summarises the thesis’ main findings, and the implications of these findings for the proposed research model and overall research question.
Chapter 2: Literature Search

2.1 INTRODUCTION

What informs the search process, and the methods employed by consumers to find information with which they can make a purchase decision, are key aspects in the study of consumer behaviour. Research has shown that consumers consult a variety of available resources in order to obtain the required information, drawing from personal conversations, commercial media messages and past purchasing experiences (Asch and Wolfe, 2001 pg 37).

One of the more recently developed tools available to aid in the search process is the internet, through dedicated website searches conducted by the consumer. Marketers are using this technology to create websites that aid consumers in locating the information required, and often provide information ‘virtually’ that would otherwise need to be obtained from a physical store, promotional material or salesperson.

Use of the internet has grown in popularity as a search tool for consumer information search in recent years, across a range of product categories (Moon and Kim, 2001). One of the major high-involvement consumer durable markets to have been impacted by the introduction and use of this search tool is real estate, where you can now purchase property online without the need for a sales agent or visiting a local agency. Although most home buyers still have interaction with a sales agent (Baryla, Zumpano and Elder, 2000; Swanepoel, 1999), the internet is therefore changing the nature of this sales agency interaction. The purpose of this study is to identify the determinant factors in the adoption of this search tool technology by consumers who are searching for available properties for sale in New Zealand.

In this chapter, following the introduction, eleven main areas will be discussed. Firstly, the decision process that consumers go through when purchasing a product will be covered in section 2. This will include an overview of key decision process models and will outline the major stages usually present in this process, and introduce information processing perspectives concerning decision-making.

As past studies have indicated that the real estate search process is both highly involved, and can also be intrinsically motivating for the purchaser (Findsen, 2005 pg 121-122), a discussion on the effects on consumer decision-making of involvement levels, perceived risk,
and intrinsic motivation, and their relationship with the decision-making process is provided in section 3.

Thirdly, as the consumer search for information is a major focus of this study, a more in-depth review of the literature on information search will be given in sections 4-7. This will review literature that examines search processes used to find information, introducing the internet as a modern search mechanism, and discussing in particular the search process used to find a home, the use of the internet as part of this process, and how this search tool is affecting search processes. Previous studies investigating home buyer search processes, and the use of the internet in aiding the search process are reviewed also.

The internet is a relatively new technology that is currently in the growth state of diffusion (Lin and Lu, 2000); therefore, fourthly, theories that relate to diffusion of technology, individual adoption of technology in general, and studies of IT adoption characteristics will be introduced in section 8. The personal characteristics present in persons who adopt IT, and the behavioural aspects of IT use are discussed, as this current study is also concerned with the personal determinants of adoption and use of an IT technology (specifically the real estate website).

The ninth and tenth sections discuss components of consumer attitude formation, and social cognitive theories, as these are known to be very influential in both purchase decisions, and decisions to adopt technologies (Davis, Bagozzi and Warshaw, 1992). An overview of a model developed to explain user acceptance of an information technology, namely the Technology Acceptance Model (Davis, 1989) is discussed in section 11. An outline and description of the model will be given, with particular reference to its link with the Theory of Reasoned Action (Fishbein and Ajzen, 1975). Key constructs explaining the behavioural intention to use IT will also be highlighted, with particular emphasis on recent extensions to the basic TAM model.

The final section summarises key aspects of the literature study, identifying gaps in the current literature, leading to the formation of the research question and hypotheses to be examined in further detail.
2.2 BUYER DECISION-MAKING

The processes which consumers go through to identify a need, seek out alternative solutions and then make a purchase decision are complex, and have been the subject of some debate within marketing texts. For example, East (1990 p166) quotes a number of studies (including Nisbett and Wilson (1977); Wright and Rip (1980)) which indicate that relying on consumers to express the decision-making processes they go through is unreliable. Theories have emerged that draw from a large body of sociology, anthropology and psychology. However, Sirakaya and Woodside (2004 pg 816) state “So far ... no single, unifying theory has emerged across disciplines to describe, explain or predict consumer decisions, and it seems unlikely that individual decision processes fit neatly into a single decision theory”. They quote Zaltmann’s definition of decision-making as an unconscious and complex process, and not yet developed theoretically (Zaltmann, 2003 cited in Sirakaya and Woodside, 2004). Despite not yet having a single defining model, a number of models have been proposed, including three key models during the 1960’s (Nicosia (1966); Engel, Kollat and Blackwell (1968); and Howard and Sheth (1969)) that outline aspects present in the buyer decision process. Five phases have emerged from these models as being generally accepted as the major stages a consumer goes through when deciding to purchase. These early models will be outlined, followed by a discussion of the five stages of the buyer purchase process.

2.2.1 Three key models

East (1990) describes early models of consumer decision-making as being a diagrammatic representation of what ought to happen, rather than a prediction of what will happen, or what does happen, and Wilson (1996) notes that these models are simply “useful as descriptive, organizing frameworks” (pg 7). Given the complexity of these theories, and the largely integrated nature of the constructs and decision pathways, these theories have never been empirically tested, but have been taken and used by researchers instead as indicative models.

The following three theories are generally considered to be the founding models explaining consumer behaviour. Sirakaya and Woodside (2004 pg 818) state that, despite being nearly 40 years old, the following three theories are still the “grand models of consumer behaviour”, and Kotler (1986 pg 206) describes them as “the most prominent models” of the consumer buying process. The three models have several features in common, and all view decision-making as a constant process; by an individual; involving a search, storage and evaluation of
information in order to narrow down alternatives; and feedback post-purchase information into the decision loop (Gilbert, 1991 cited in Sirakaya and Woodside, 2004).

2.2.1a Nicosia

Nicosia (1966 pg pp 119-123) proposed that everyday environmental stimuli affected the consumer and caused a utility function developing from these influences in terms of a set of user preferences which then influence the act of purchase. Nicosia admits that the decision processes of consumers are very complex, but attempts to interpret this complexity in terms of a system.

Nicosia postulated 3 main phases in the decision process system:
1. **Predispositions** are formed in the consumer’s mind. These are non-driving (passive) structures that represent future situations and refer to generic products or brands
2. **Attitudes** are formed towards the products or brands
3. **Motivations** are formed towards the purchase of a specific brand

This process Nicosia derived from the behavioural science viewpoints of the day, and called *funnelling*. He postulated that over time a consumer funnels information and moves from a broad and passive state to an active and driven state, while simultaneously narrowing the range of possible choices. His conclusion regarding the environmental influences is that “*the environmental variables must be internalised by the subject if they are to be relevant to his behaviour; that is, the role of ‘subjectivity’ is crucial to decision-making*” (Nicosia, 1966 pg 119).

2.2.1b Howard and Sheth

Howard and Sheth (1969 pg 27) propose three phases of consumer decision-making: an *extensive problem solving* (EPS) stage, which usually occurs prior to establishing a set of choice criteria (compare Nicosia’s user preference set); a *limited problem solving* (LPS) stage once the criteria have been set, which assesses alternatives against the choice criteria; and a final stage of *routinising* the response behaviour which predisposes the consumer towards purchasing the same chosen item in future. The Howard and Sheth consumer decision-making model divides this hypothetical process into two construct classes of *perception related constructs* (overt search; attention; stimulus ambiguity and perceptual bias), and *learning*
related constructs (motives; brand comprehension; choice criteria; attitude; intention; confidence and satisfaction). Howard and Sheth state that when the buyer is just beginning to purchase in a product class new to them, they lack a well-defined choice criteria, and must therefore actively seek information from both commercial and social environs in order to make a purchase choice. These two sources of information (past experience and the surrounding environmental influences) are used to enable the consumer to define sufficient choice criteria to make a purchase that satisfies their need (Howard and Sheth, 1969 pg 26). Perception related constructs serve the purpose of procuring and processing information, while learning related constructs aid in narrowing the choice and coming to a set of choice criteria and intent to purchase a particular product (Howard and Sheth, 1969 pp 30-38).

2.2.1c Engel, Kollat and Blackwell

Engel, Kollat and Blackwell (1968) established the EKB model with inputs, outputs and two major processing loops – decision processing, and informational processing. These processing loops were later further broken down and better explained as need recognition; information search; alternative evaluation; information processing; and purchase stages (Engel, Blackwell and Miniard, 1990 pp 475-482):

Need recognition incorporates environmental and social elements (consistent with Nicosia, 1966 pg 119)

Information search – showing that for low involvement, memory search is usually utilised, but if this is insufficient, a more extensive search will occur in order to define desired criteria (after Howard and Sheth, 1969 pg 26)

Information processing – incorporating exposure and attention/ retention theory (resembling Howard and Sheth’s perceptual constructs - (Howard and Sheth, 1969 pg 37))

Alternative evaluation – incorporating the Fishbein and Ajzen theories relating to attitude, belief and intention (Fishbein and Ajzen, 1975)

Purchase – incorporates both purchase and post-purchase evaluation

2.2.2 Stages In The Buyer Decision Process

The original processing loops outlined by Engel, Kollet and Blackwell (1968 pg 47) now appear in a number of textbooks as the five stages below (Figure 9) (e.g. Hawkins, Best and Coney, (1992 pg 448); Engel, Blackwell and Miniard (1990 pg 27); Kotler, (1986 pg 190))
and seem to be accepted by a majority of scholars as the generic stages consumers go through when making a purchase decision:

![Diagram](image)

**Fig 9: The generic phases of the buyer decision process**

The first stage occurs when the consumer **recognises the need** for an item in order to solve a problem or need. Ulwick (2002) states that consumers buy products for three reasons:
- To do a job or perform a function
- To remove a constraint
- To enable an outcome

Therefore when a job, constraint or desirable outcome is identified, the consumer will seek to purchase or obtain an item that satisfies this need. Consumers are often not aware of the need until it is pointed out to them by consumer information sources. The following information sources are often referred to during the **information search stage**, and include:
- Personal sources (family and friends)
- Commercial sources (advertising, salesmen, displays, catalogues)
- Public sources (mass media, consumer organisations, internet)
- Experiential sources (handling and trialling the product) (Asch and Wolfe, 2001 pg 37)

Consumers then **evaluate the alternative solutions** to the need, and apply beliefs to form an attitude towards product purchase of each alternative option (Kotler, 1986 pp 193-196). A **purchase intent** is then developed for the preferred solution and the item in turn purchased. **Post-purchase**, the consumer evaluates the decision in terms of product satisfaction, and this information is cycled back into the process to influence future purchase decisions. For high-involvement decisions, post–purchase is an important stage, as rewards of the purchase are reinforced, often via operant conditioning (Hawkins, Best and Coney, 1992 pg 267).

### 2.2.3 Information processing perspectives

Engel, Blackwell and Miniard (1990 pg 363) define information processing as “the process by which a stimulus is received, interpreted, stored in memory, and later retrieved”. Peter and Olson (1993 pg 57) reiterate the two basic components of mental information processing as stored memory, and a central processor, similar to Engel, Kollat and Blackwell’s two loops of decision-making and information processing.
To better understand the information processing component, several separate cognitive steps have been proposed. Engel, Blackwell and Miniard (1990 pg 363 - 381) outline five main stages that a consumer goes through to process external stimuli and store this in memory:

- **Exposure** – which is influenced by the degree of physical proximity to the stimuli
- **Attention** – how consumers allocate processing capacity to each set of incoming stimuli, which is influenced by the individual’s need for the information, attitude towards the stimuli, and adaptation level (pg 368), as well as characteristics of the stimulus itself (pg 370)
- **Comprehension** – how a stimulus is interpreted by the consumer, and categorised. The comprehension is affected by the manner of fit with an individual’s particular knowledge and interest in the information received (pp 377, 381)
- **Acceptance** of the information delivered by the stimuli (whether to let it influence attitudes and behaviour)
- **Retention** of the information in memory.

A central theme behind the usefulness of these five stages to explain information processing is that the stimulus must pass through all five stages before it reaches internal memory storage (Engel, Blackwell and Miniard, 1990 pg 364).

Other researchers define the stages in a similar manner to Engel et al. (1990), however, the stages are sometimes redefined or combined to better encompass and explain the researcher’s interpretation of the purpose of each stage. For example, Lawson et al. (1996) links the exposure and attention stages together as a single *acquisition* stage (pg 350) and elaborates on exposure in terms of active search (seeking out information or deliberately allowing self to be exposed to stimuli) and passive reception (stimuli received through everyday activity). The authors also treat attention as a stage that occurs only with stimuli that are capable of producing sensations with which to attract a person’s attention (pg 350). Similarly, Peter and Olson (1993) list exposure as the initial stage, but combine the attention and comprehension stages into a single *interpretation* stage, with a feedback loop to and from memory (pg 60). Acceptance and retention stages are termed as *integration* and are seen as leading to the formation of attitudes and decisions regarding behaviour, in which past memory is used to draw new conclusions (pg 61). Lawson et al. (1996) redefine comprehension in terms of
perceptual encoding (pg 351) and state that the degree of involvement the decision demands influences the level of perceptual encoding undertaken.

Peter and Olson (1993 pg 57) outline a number of “common objections” academics have made regarding decision-making and information processing models. In particular these models are seen to be:

- Too rational / mechanical due to the staged approach
- Not adequately accounting for affective responses during decision-making
- Not accounting for actual consumer experience when using a product or service
- Over-emphasising internal processes at the expense of environmental stimuli
- Not adequately accounting for past purchasing experience/ prior knowledge

However, the authors conclude that “despite these legitimate criticisms, an information-processing approach…remains the best way of understanding cognition (pg 58)”.

### 2.3 FACTORS AFFECTING CONSUMER DECISION-MAKING

Purchases that are more important to a consumer, or have more personal relevance are said to be of higher consumer involvement than others. While property investment purchases have high financial risk, house purchases in terms of the family home are some of the most important decisions consumers make, involving not only high financial risk, but also considerate emotional investment and physical disruption (Anglin, 2004). Additionally, purchasing a new home (if the purchase is a home that will be lived in by the purchaser) can be stressful and emotional, but also potentially exciting, as the move offers new opportunities and marks the beginning of another phase in a person’s life (Findsen, 2005).

The following sections relate to factors affecting consumer decision-making that are of particular relevance to this study. Search is driven by the perception of relative uncertainty, the level of consumer involvement, and risk (Moorthy, Ratchford and Talukdar (1997); Duncan and Olshavsky, (1982)). Sirakaya and Woodside (2004) state that both internal processes (attitudes, motivations, beliefs and intentions) as well as external variables (such as time, pull factors and marketing mix) influence decision-making. Abelson and Levi (1985) (cited in Sirakaya and Woodside, 2004) suggest that risk-free decisions rely on consumer
preferences, while risky decisions also involve the consumer in assessing probabilities and perceived risks.

As a house is one of the most significant purchases people will make during their lifetime, a discussion surrounding the decision process for high involvement purchases, and search processes involved in these types of purchase is outlined, along with a short comment relating to perceived risk. Perceived risk as a major influence on consumer behaviour has been demonstrated across a range of high-involvement decision applications, from food technology to banking (Mitchell, 1999).

Several studies indicate that the search phase can be an enjoyable experience for a consumer (e.g. Cox et al. 2005; Hansen et al. 2004). The act of physically shopping is seen as a rewarding experience for some. In high-involvement purchases, the search phase is by far the longest phase (Punj and Staelin, 1983; Moorthy, Ratchford and Talukdar, 1997), and may therefore correlate with these intrinsically motivating factors of searching and browsing and feeling important due to service from the sales-team. Hansen et al. also states that shopping can constitute a family affair or outing (Hansen, Jensen and Solgaard, 2004), and one would especially expect this in high-involvement decisions such as homes and cars.

The following discourse outlines three key factors that impact upon the purchase decision process: the nature of high-involvement purchases; the nature of perceived risk, and intrinsic motivation for those products types requiring complex decision-making.

2.3.1 Consumer Involvement

Involvement is defined as “a higher perceived relevance of an object based on inherent needs, values and interests” (Zaichowsky, 1985 cited in Balabanis and Vassileiou, 1999). Involvement itself does not imply a particular product category (i.e. there is no high-involvement category of product) but depends on the importance and interest in the product category as perceived by the individual. Hansen (1985 cited in Wu (2002)) suggests involvement is therefore nothing more than a consumer’s interest in a product category, and the concept of involvement as described in marketing is the perceived importance of the product to the consumer (Wu (2002)). Zaichowsky (1986 cited in Wu (2002)), found perceived involvement was due to personal, situational, and object characteristics.
Involvement is one of the most salient influences on consumer behaviour variance, as it affects the amount of mental and physical effort undertaken in order to find and process information and come to a purchase decision. Complex buying behaviour occurs when consumers are highly involved with the purchase, and this tends to involve decisions that are expensive, bought infrequently, risky, or highly expressive (Asch and Wolfe (2001) pg 34). Products such as furniture, homes, cars, perfume, jewellery and fashion are therefore amongst the most highly-involved purchase decisions an individual will ever make (Baryla, Zumpano and Elder, 2000; Swanepoel, 1999). Extensive, complex and risky decisions are also characterised by the generic cognitive learning process that develops into beliefs about the product, attitudes towards purchase and then forms a purchase intent and ultimate purchase (Asch and Wolfe, 2001 pg 36). Along the way, the decision-makers are influenced by both functional and emotional elements (Mansfield, 1992 cited in Sirakaya and Woodside, 2004). The information search stage is often longer, and may be more intense than for low-involvement purchases, as the purchaser seeks to reduce risk through a more informed decision. For high-involvement decisions, post-purchase is also an important stage, as rewards of the purchase are reinforced, often via operant conditioning (Hawkins, Best and Coney, 1992 pg 267). As many high-involvement purchases are made infrequently, more reward is needed from each purchase. Using the product incurs a conscious evaluation of the level of reward obtained. In high-involvement purchases external verification that approves the purchase can be highly rewarding, however, internal enjoyment and self-confidence from having the item can also be an intrinsic reward that positively reinforces the purchase decision (Hawkins, Best and Coney, 1992, pg 268).

2.3.1a  High involvement information search

The higher the price of the item, the greater the propensity to search, and if there are a wide range of options available the search time takes longer also (Punj and Staelin, 1983; Moorthy, Ratchford and Talukdar, 1997). Laaksomen (1994) found that consumers who had high-involvement purchases sought more information, had more criteria, and processed information in greater detail than other consumers (Laaksomen (1994) cited in Balabanis and Vassileiou, 1999). As expected, the stages within the search process are longer and more complex for more involved purchase decisions, however, the search effort undertaken depends on the information available, and the 80:20 rule of seeking more information or alternatives versus the value extracted from the search (e.g. value can be in the form of dollars and time saved, or extending the enjoyment and socialisation from the shopping experience).
High involvement purchase also incurs a longer search time relative to the decision being made to purchase, and actual purchase time (Sirakaya and Woodside, 2004). In fact, these two stages can tend to occur very quickly once a decision is reached, reflecting the high personal nature of involvement, and the desire to own the item immediately once a purchase intent is made. Sirakaya and Woodside (2004) found often once an intent is made, there is little further shopping around for the cheapest option, unlike low involvement shopping where search and intent occurs quickly and then the effort is expended on finding the cheapest or easiest available supply.

Howard and Sheth (1969) state that when the buyer is just beginning to purchase in a product class new to them, they lack a well defined choice criteria, and must therefore actively seek information from both commercial and social environs in order to make a purchase choice (pg 26). Moorthy, Ratchford and Talukdar (1997), however, cite the consistent empirical findings (Beatty and Smith, 1987; Newman, 1977; Wilkie and Dickson, 1985; and Urbany et al. 1989) that consumers exhibit limited pre-purchase information search, even for very expensive items, and suggest that perceived relative uncertainty may be the key to explaining this phenomenon. If one product offering is perceived to have significant advantage over the others on offer, then there is little need for further search to occur. However, if the choices are very similar in perceived benefits (i.e. high perceived relative uncertainty), then more search is required to determine the more attractive offering amongst them. This view is consistent with Newman and Staelin’s (1972) statement that the amount of information search is not related to perceived risk, and Duncan and Olshavsky’s (1982) statement that a greater dispersion in product features amongst offerings in a product category would generate greater information seeking.

To explain how a consumer simplifies the various choices on offer, Punj and Brookes (2002) introduced the concept of pre-decisional constraints, which are decisions made prior to the formal search stage that occur close to the time of problem recognition. The authors suggest these are made when a consumer is not actively seeking information or wanting to purchase the product, and are stored in memory to be used as the internal search information prior to external search.

Midgley (1983) suggests that for many larger-price items, the purchase decision involves a joint or household decision, and that the search theories that relate to single-consumer items may not be able to fully explain search patterns and behaviour. Anglin (2004) also indicates
that household effects of joint and family home purchases may differ from those purchasing houses individually, as in order to purchase the property, the household must be disrupted, and this would impact on the economic models that propose an optimal stopping rule for the break even nature of search-benefit. Anglin (2004) indicates that there is a trade-off in house purchase decisions between being able to move sooner, and the benefits and disruptions of the actual move (i.e. the impacts of the purchase decision on the whole family dynamics and lifestyle). This may therefore explain differences in search procedures and purchase decisions between family and rental/ investment property decisions.

Although information search is a key stage to reduce risk in high-involvement purchases, the amount of information search undertaken depends on a number of factors, such as the number of available options (Newman and Staelin, 1972); the price dispersion between options (Claxton, Fry and Portis, 1974); past experience and internal knowledge (Baryla, Zumpano and Elder, 2000; Asch and Wolf, 2001 pg 37); ease of obtaining information (Asch and Wolf, 2001 pg 37); and education (Kiel and Layton, 1981; Newman and Staelin, 1972; Chao and Gupta, 1995).

2.3.2 Perceived Risk

Mitchell (1999) defines perceived risk as the sum of the importance of a negative purchase consequence and the probability of that consequence occurring. Mitchell explains the power of this construct as being due to consumer instinct to avoid purchase mistakes, rather than to maximise purchase utility (Mitchell, 1999). Perceived risk is therefore of little explanatory value for low-involvement purchases (unless there is a product scare), but very important in high-involvement purchases. Abelson and Levi (1985) (cited in Sirakaya and Woodside, 2004) suggest that risk-free decisions involve consumer preferences, while risky decisions also involve the consumer in assessing probabilities and perceived risks. Risky purchases may also involve greater evaluation of attitudes and beliefs, and adjustment of these beliefs (as per dissonance theory) to justify the purchase. An expensive item is influenced by perceived financial risk; a highly visible product by perceived psychosocial risk; and a consumer durable by perceived physical risk (Mitchell, 1999). Given that houses are expensive, have status, and are a consumer durable, all three aspects of perceived risk are present, and we would expect that the purchase process to overcome such risk would involve greater information search, and more in depth evaluation of alternatives, to combat the risk involved.
Search has the obvious benefit of potentially finding alternative purchase options that are more beneficial than those a consumer is currently aware of, therefore reducing the risk of an inferior purchase choice being made (Klein and Ford, 2003). As consumers become more knowledgeable about a product category, the perception of risk will also decrease. People most concerned with the consequential risk of a bad purchase decision tend to be those with lower self-confidence about the product category, or their ability to make wise purchases in general. Persons with low self-confidence therefore search the most, as higher self-confidence reduces the perceived impact of a bad purchase choice, and the necessity to search until the ultimate purchase choice is found (Kiel and Layton, 1981; Duncan and Olshavsky, 1982).

Bettman (1973) indicates that a marketer can reduce perceived risk most effectively by influencing the buyer’s purchase decision rule, through persuading the buyer that your brand or product offering matches his acceptable set of possible alternative solutions. In a high involvement decision, where there is often a greater price dispersion between offerings (Chao and Gupta, 1995), this can be achieved by emphasising the importance of the product class, and promoting the quality and compatibility of a particular brand or product offering with consumer needs (Bettman, 1973).

**2.3.3 Intrinsic Motivation**

Intrinsic motivation is defined by Deci and Ryan (1985) as “*the innate, natural propensity to engage one’s interests and exercise one’s capacities, and in doing so, to seek and conquer optimal challenges*” (pg 15). Behaviour is therefore determined by extrinsic motivational drive factors, as well as intrinsic motivators.

Deci (1975) proposed that intrinsic motivation to undertake a self-rewarding activity is a result of two underlying elements: an individual’s inherent abilities, and the past experience the individual has had when undertaking the activity. Intrinsic motivation fulfils people’s need to be both competent, and self-determining (Deci and Ryan, 1985 pg 127). Fisher’s (1978) study is used by Deci and Ryan to further argue this case, as Fisher found that an activity was intrinsically motivating only if the individual had personal responsibility for the outcome, and perceived themselves as competent to undertake it (Fisher, 1978 cited in Deci and Ryan, 1985 pg 127). Intrinsic motivation is therefore the motivation to do things for which there is no obvious drive reward — the rewards are inherent in carrying out the activity itself.
The act of purchasing may in itself be intrinsically motivating for individuals who enjoy both the search phase, and the social interactions with other shoppers, salespeople, and family and friends in the planning and trialling phases. Cox, Cox and Anderson (2005) indicate that while economists view retailing as a chore to obtain utility products, “research suggests many consumers derive intrinsic enjoyment from the process of shopping” (Cox et al., 2005 pg 250). Rich and Portis (1963) (cited in Cox et al., 2005) found the search phase of “seeing new items and getting ideas” was found to be the reason that many enjoyed shopping (pg 251). Thus, browsing is seen as a source of shopping enjoyment. Cox, Cox and Anderson also cite both Tauber (1972, pg 47), who “suggested some shoppers enjoy the ‘status and authority’ of being pampered by retail salespeople”, and Westbrook and Black (1985, pg 87) who “argue that shoppers enjoy the “attainment of elevated social position””. Cox, Cox and Anderson’s study into reasons for shopping as a pleasurable experience found that the most motivating factor was in searching and finding bargains, however, browsing, being pampered and sensory stimulation from viewing and touching items were also high motivational factors for shopping enjoyment (Cox, Cox and Anderson, 2005).

Given that the internet has been thought by some researchers to be an intrinsically motivating device (Igbaria, Iiavari and Maragahh, 1995; Yang and Yoo, 2004; Bruner and Kumar, 2005), and the search process itself with regard to purchase is also seen as rewarding for certain individuals, the act of using the internet to search may well be intrinsically motivating to the consumer while searching for a home. This raises the question of whether the intrinsic motivation from using IT channels as an information conduit can fully replace the intrinsic motivation of the traditional purchasing process. As Molesworth and Suortti (2001) state regarding car yard visits “The enjoyable, physical process of going around looking at cars with family and friends may be very difficult to duplicate online” (Molesworth and Suortti, 2001 pg 163).

2.4 CONSUMER INFORMATION SEARCH

Information search is one of the more studied processes of consumer decision-making. Following Copeland’s (1923) study relating to the classification of goods, Katona and Mueller's (1955) empirical investigation of consumer information search behaviour inspired a multitude of research into the information search process during the 1950’s and 1960’s, most of which related to the search mechanisms employed by consumers, largely self reported, and

This section firstly outlines the past literature and theories relating to how a consumer searches for information. The development of the body of knowledge relating to antecedents of information search processes, the identified patterns of search that characterise different consumers, and the extent of search undertaken and motivational factors that influence this are outlined.

When a consumer recognises the need to acquire a new product or service they engage in a search for possible products and service solutions to fill the need, and for information pertaining to these alternative solutions in order to make an informed purchase decision. Beliefs concerning which information search sources and information screening devices will aid consumers the most will affect the search mode employed (Duncan and Olshavsky, 1982). This is deemed the ‘information search’ stage, and consists of internal and external search.

Consumers are thought to firstly consult their own internal memory, or conduct internal search, as this is the immediately available and most convenient source of information on hand. If an internal search process does not elicit sufficient information to make an appropriate solution, then the individual will engage in external search to supplement this internal search, until it is considered that there is sufficient knowledge to make an appropriate purchase decision, and where the benefits of more search would not outweigh the costs (in terms of monetary outlay, effort and time) of undertaking the search (Hawkins, Best and Coney, 1986 pg 466). In undertaking this search, the consumer hopes to reduce the levels of uncertainty and perceived risk associated with the purchase (Duncan and Olshavsky, 1982). As some purchases are less ‘risky’ or involving than others (i.e. those with less at stake financially, psychologically or emotionally), a greater or lesser degree of external search effort will ensue for different product categories, depending on the risk and benefit attributed to gathering external information (Duncan and Olshavsky, 1982). Hodkinson, Kiel, and McColl-Kennedy (2000) also state that as more information is gathered, the value of a piece of information will vary over the search duration as consumers narrow down their purchase choices.
2.2.1 Models of search behaviour

Models to explain search behaviour have tended to be derived from economic, psychological or geographical contexts (Gursoy and McCleary, 2004). Three major modelling streams have emerged, namely economic approaches which considered the costs and benefits of search; psychological and motivational approaches that explained search as a function of individual characteristics, product class, beliefs and attitudes, and involvement; and information processing models that focussed on memory and cognition (Gursoy and McCleary, 2004). Researchers in the 1970’s concentrated on the development of typologies of search strategies with search measures and observations (e.g. number of stores visited; number of shopping trips; number of brands considered) (Newman and Lockeman, 1975), while during the 1980’s, search behaviour was correlated with various explanatory factors and determinant variables. While early conceptual frameworks indicate that search is determined by environmental and consumer factors (Westbrook and Fornell, 1979; Duncan and Olshavsky, 1982), much prior research has modelled search as a single construct that combines a range of variables, such as cost; benefits; price dispersion; prior knowledge; constraints, etc. (Putrevu and Lord , 2001). While Kiel and Layton (1981) initially found five major determinants of search (previous purchase history; demographic background; buyer personality; perceived risk; and perceived costs of search) and a formalised model of consumer information search containing five constructs (useable prior knowledge; prior memory structure; desire to seek information; cost of external search; and effectiveness of search) was tested using automobile purchasers which assumed that “consumers seek information in order to make a better, more satisfying purchase decision” (Punj and Staelin, 1983 pg 367), an extensive review of earlier research was not undertaken until 1987 when Beatty and Smith (1987) categorised 60 variables from analysis of over 30 papers relating to external search during 1955-1983. The authors updated an earlier search classification (Moore and Lehmann (1980) cited in Beatty and Smith 1987) using a weighting system devised by Duncan and Olshavsky (1982) to identify seven determinants of external search effort: market environment; situational variables; potential payoff; knowledge and experience; individual differences; conflict resolution; and cost of search. Punj and Staelin’s (1983) model was further revised by Srinivasan and Ratchford (1991) to incorporate the elements of perceived risk and previous experience, with these two elements also being seen as inherent in search phase of consumer decision-making by Maute and Forrester (1991). Schmidt and Spreng (1996) reviewed past studies and found 20 determinants that they used to propose four major variables that mediated the antecedents of search: Ability to search; motivation to search; perceived costs of information search; and
benefits of search, while Moorthy, Ratchford and Talukdar (1997) introduced two further antecedents of relative brand uncertainty and consumer perceptions of the market prior to enacting search.

### 2.2.2 Extent of information search

In 1955, Katona and Meuller found that rather than carefully planned and executed information search and alternative evaluation, many purchases seemed to be made “in a state of ignorance or...indifference” (cited in Newman and Lockeman, 1975). Twenty years later, Newman and Lockeman (1975 pg 221) concluded that “much of our knowledge about the amount of information consumers seek before buying is tenuous at best”.

Newman and Staelin (1972) attempted to quantify the amount of pre-purchase information seeking, finding overall, little information seeking was carried out, agreeing with the Katona and Mueller study; however, they found that age and education were influential variables in the amount of information seeking behaviour. Westbrook and Fornell (1979) and Newman and Staelin (1972) also found age and education to be influential, having a positive effect on the amount of information sourced, which may be correlated with previous knowledge and experience in a product category. Maute and Forrester (1991) argue that due to the cost benefit of search, internal knowledge may be deemed less expensive than further search for an experienced buyer, especially for expensive and risky products, and they will also remain loyal to brands used in the past, as the cost and risk associated with investigating alternative brands is not worthwhile. Ratchford (1982 cited in Maute and Forrester, 1991) also indicated that limited search may be a modern coping strategy adopted by consumers due to an overload of available information. Duncan and Olshavsky (1982) state greater price dispersion and larger differences in products and sources of supply also leads to a greater search requirement, which is similar to Moorthy, Ratchford and Talukdar’s (1997) postulation relating to relative brand uncertainty. Newman (1977) stated that search activity increases when a consumer believes the purchase to be important; there is need to learn more about the product class; and information is easily obtainable (cited in Punj and Staelin, 1983).

### 2.2.3 Determinants of search behaviour

Punj and Staelin (1983) take the viewpoint that search is usually a purely functional operation used to obtain more tangible benefits from the resultant purchase, and while Duncan and
Olshavsky (1982) also indicate time and cost constraints usually make consumers place a high value on search efficiencies, they also see consumer self-confidence as influential. Lower self-confidence is seen by the authors as motivating consumers to seek out expert opinions and rely on others’ recommendations rather than undertake a personal search, whereby high self-confidence motivates personal search.

The perception of increased risk in a purchase decision is known to be influential in the extent of search carried out (Srinivasan and Ratchford, 1991) as increased risk is usually found to lead to greater search. A consumer with more knowledge about a product category (particularly the differences in various brand offerings) will have reduced risk and therefore search less. Although prior knowledge and experience of a product class has been shown to reduce risk (Newman and Staelin, 1972; Maute and Forrester, 1991) and subsequent search effort, Srinivasan and Ratchford (1991) indicate that greater knowledge may actually motivate an increase in search due to better understanding of the information they are processing, leading to a greater degree of evaluation. The authors (pg 241) state “more knowledgeable consumers structure the problem in richer, more complex ways, leading to more search”, and indicate that search for these consumers may be an interesting and intrinsically motivating process.

Newman and Staelin (1972 pg 256) stated “a skilled buyer ...could gain much relevant information from a single source”. Punj and Staelin (1983) also found that experienced consumers did not seek less information, but sought more relevant information, and found that fixed search times benefit those with access to relevant information, as due to considering only relevant sources they have sufficient information to make an informed decision. The authors found it was the relevance of information from prior knowledge that leads experienced purchasers to engage in less external search but, interestingly, found that sometimes experienced consumers were no more likely than inexperienced consumers to have access to relevant information. Experienced consumers will often have developed procedures to reduce the information required, simplifying the decision-making process (Srinivasan and Ratchford, 1991; Klein and Ford, 2003). From the indications of Srinivasan and Ratchford (1991) and Newman and Staelin (1972) regarding experienced buyers’ simplification of the decision process and skill in sourcing relevant information, experienced buyers probably have a better idea of where to find information relevant to their search.
2.4.1 Patterns of Information Search

Howard and Sheth (1969 pg 27) outline the difference in search intensity undertaken during extensive problem solving (which usually occurs prior to establishing a set of choice criteria) as opposed to limited problem solving (which assesses alternatives against the choice criteria once the criteria have been set), and Hawkins, Best and Coney (1992, pg 440) show that higher involvement purchases tend to use an extensive problem solving process. Studies relating to search patterns used by buyers tend to focus on higher involvement purchases such as consumer durables (usually furniture or appliances) and automobiles (Beatty and Smith, 1987). This is due to the more extensive problem solving undertaken in higher involvement purchases; this is of more interest to researchers as the search patterns are more defined and utilise a greater number of information sources (Hawkins, Best and Coney (1992, pg 466).

Claxton, Fry and Portis (1974) identified three main information gathering patterns among buyers of durables (furniture and appliances):

- Non-thorough – few retail visits and reliance on a few out-of-store informational sources
- Store-intense – mainly reliant on retail visits
- Thorough and balanced – intensely searching both retail stores and out-of-store information sources.

Westbrook and Fornell (1979) expanded this search pattern categorisation by characterising out-of-store information sources into personal information sources (information gathered from peers and family) and neutral information sources (marketing literature and factual information about the product), and four search pattern segments were identified:

- **Objective shoppers** – highly reliant on retail visits and neutral information sources, with little reliance on personal sources
- **Store-intense shoppers** – highly reliant on retail visits, and reliant on personal sources, but less reliant on neutral information sources
- **Personal advice seeker** – few visits to retail stores, highly reliant on personal sources and virtually no neutral information sources
- **Moderate shopper** – indifferent to any particular information source, but seem to split their search effort between personal and neutral sources, with a few retail visits.
An Australian study of information seeking behaviour during car purchase (Kiel and Layton, 1981) characterized consumers into three search pattern types:

*Low searchers* – seek minimal in-store, personal and neutral sources, and are quick to reach a purchase decision

*High searchers* – maximize their information seeking efforts across all source areas and greatly deliberate over their purchase decision

*Selective searchers* – utilize one information search source at the expense of the other information sources available to them.

It appears Westbrook and Fornell’s (1979) study expanded Claxton, Fry and Portis’ (1974) Store-intense shopper into the two searcher styles of Objective and Store-Intensive shoppers, as both are highly reliant on retail store visits, but differ in their use of personal and neutral sources. These searcher styles appear to be opposites to Kiel and Layton’s (1981) Low searchers, and they may display less self-confidence in their knowledge of the product category or their ability to source information themselves and come to an informed decision (Duncan and Olshavsky, 1982), in a similar manner to High searchers and Thorough and balanced shoppers. These latter two search styles seem to be very analytical in nature, and may enjoy the search process and have high interest in the product category. Low searchers, Non-thorough and, to some degree, Moderate shoppers may possess higher self-confidence.

As can be seen from the variety of studies, the information search process is very complex, and many hypotheses abound, several of which are not yet proven. The body of knowledge within this research field aims to uncover and illuminate various pieces of a rather large jigsaw, as opposed to testing and refining any well-established model.

### 2.5 THE INTERNET AS AN INFORMATION SEARCH MECHANISM

The internet has become a global information network consisting of information on nearly every topic imaginable. As an information source, it is therefore highly useful, so long as consumers are able to find what they are looking for (usually using a search engine such as [www.google.com](http://www.google.com)) and can navigate the system simply and efficiently.

This section discusses the rapid integration of the internet into society, and its use as a tool to aid the information search process.
2.5.1 Diffusion of the Internet

In the 1960s, JCR Licklider of the US Defence Department Advanced Research Projects Agency conceived the Internet as “an experimental network of multi-access computers” that would create "communities of common interest” (Swanepoel, 1999 pg 6). However, until 1993, although a reality, it was still the domain of mainly academics, and government officials. In 1994, when the internet was initially commercialised and became publicly accessible (Klobas and Clyde, 2000; Lin and Lu, 2000), the number of commercial websites was estimated at 350. By 1996, this number had grown to 220,000, and by 2000 there were over one million commercial websites (Asch and Wolfe, 2001). The Internet is today an ubiquitous tool, used extensively by the Western world for information retrieval and communication, as well as growing in usage for e-business in order to purchase items directly, check accounts and pay bills.

2.5.1a Growth in Internet use

Predictions of internet growth during the present decade have varied. In a sample of 1996 surveys of US internet users, the results from the surveys varied from nine million to 35 million users (The Web, 1996). In 1998, IDC (www.idc.com) estimated world-wide internet user numbers at 100 million and predicted 500 million by 2003, while in 2000 the Computer Industry Almanac estimated 327 million online users, growing to one billion by 2003. The reality of this rapidly expected growth was somewhat different, however, with the actual number of internet users in the US calculated at 79.4 million in 1998, and 83.4 million in 2000 (Swanepoel, 1999; Bond et al., 2000).

Asch and Wolfe (2001) reasoned that these high growth rates as compared to earlier estimations were due to the traditional tendency of experts to underestimate the reach of disruptive technologies and indicated an exponential increase in the number of host computers during the 1990’s, from 100,000 in 1990, to ten million in 1995, and gave an estimate of 100 million during 2000. Although Internet World Stats (2006) (www.internetworldstats.com) show global uptake at 1,018 million users and 15.7% uptake, exact figures for the global usage of the internet are therefore difficult to estimate or know accurately, suffice to say that exponential growth has occurred over the past decade since the technology’s public introduction, and the technology is now well integrated into modern society.
2.5.1b Advantages for the internet as a marketing channel

The main advantages and disadvantages for using the internet as a distribution and communications channel include:

<table>
<thead>
<tr>
<th>Marketer Advantages:</th>
<th>User Advantages:</th>
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<tbody>
<tr>
<td>Interactivity</td>
<td>Interactivity</td>
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<tr>
<td>Global audience/ marketplace</td>
<td>24/7 access</td>
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<tr>
<td>Consumers who search for you rather than having to engage a consumer</td>
<td>Low set-up costs</td>
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<tr>
<td>Low set-up costs</td>
<td>Instant consumer gratification through downloads</td>
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<tr>
<td>Greater efficiency</td>
<td>Equal access to large and small firms</td>
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<tr>
<td>Enhanced profitability</td>
<td>Control of information and personalised information search response</td>
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<table>
<thead>
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<th>Disadvantages:</th>
<th>Disadvantages:</th>
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<tr>
<td>Difficulty in online shopping due to monetary exchange and lack of after sales service</td>
<td>Inability to trial and handle products</td>
</tr>
<tr>
<td>Language barrier in international trade and information</td>
<td>Difficulty in online shopping due to monetary exchange and lack of after sales service</td>
</tr>
<tr>
<td>Security concerns and lack of personal touch</td>
<td>Language barrier in international trade and information</td>
</tr>
<tr>
<td></td>
<td>Limited viewing capability for graphical images</td>
</tr>
<tr>
<td></td>
<td>Security concerns and lack of personal touch</td>
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Sources: (Van den Poel, 1999; Kyambalesa, 2000; Balabanis and Vassileiou, 1999)

Table 1: Main advantages and disadvantages for using the internet
These aspects (Table 1) were outlined during 1999 and 2000, and the internet has improved on a number of aspects in the past five years, such as monetary exchange (through secure credit card payment service and online banking) overcoming language barriers (a number of search engines are able to translate web pages) and graphical interface. However, security concerns, limited after sales service and the lack of a personal touch are still a barrier to wider usage (particularly of online shopping services) (Lassar et al., 2005; Chen, Gillenson and Sherrell, 2002).

2.5.1c Internet use in NZ

According to the 2001 census, 37% of New Zealand households have internet access, and this is heavily skewed towards those households that were younger than 65 years of age, and with an annual income of over $100,000 (Statistics New Zealand, 2002). However, a 2002 survey by E-government measured internet use at 71%, the highest penetration level of the 31 countries surveyed, and a significant increase on the 2001 census figures (InternetNZ, 2004). It appears that the rest of the world caught onto the internet wave during 2003 and 2004, as although 52% of households in New Zealand owned a computer, and 72% of the population had access to the internet, our 1st placing dropped to 13th in the world for per capita internet access (Internet NZ, 2005). New Zealanders are mainly accessing the internet for sending and receiving email, browsing, online banking and accessing information about products and services (InternetNZ, 2004).

New Zealand is currently estimated to have 3.2 million internet users (defined as those who have available access to the internet and a basic knowledge of how to use web technology), and a diffusion rate of 76% uptake by the population, indicating a growth in uptake of 285% since 2000 (Internet World Stats, 2006). Although we have 76% personal usage, which ranks us 2nd highest in the world to Malta, only around 53% of households are connected (Nowak, 2006) which ranks us eighth in the OECD for home connection rate.

The major inhibitor to personal household connection is our low level of broadband service (Nowak, 2006). The overwhelming majority of New Zealand households have a dial-up modem, ranking us 22nd out of 30 in the OECD for high-speed internet uptake. This factor is limiting the growth of new websites compared to other nations, with only 15 sites per 1000 population, which is less than half the OECD average for sites per capita. There may,
however, be more ‘New Zealand’ websites than the figures show, with many businesses hosting their sites offshore to avoid data cap fees (Nowak, 2006).

2.5.2 The internet and information search

Researchers have suggested that online searching may have unique characteristics in terms of search strategy and information processing (Mazursky, 2005). Peterson and Merino (2003 pg 108) state that “Recent research results suggest that the information search behaviours of consumers who use the internet when seeking information will be very different from those who do not use the internet when seeking information”.

Ratchford, Talukdar and Soo-Lee (2001) state that consumers choose sources that will convey the information needed in the most cost-effective manner, and Kulviwat et al. (2004) indicate that due to the greater information availability on the internet this tool should be preferred and substituted for other information sources, and lead to better decision-making. Although use of the internet in information search would be expected to reduce the use of search in other media, Ratchford, Talukdar and Soo-Lee (2001) found that rather than reducing their search efforts in other sources of information, those searching the internet utilised other search sources to a greater extent than those who did not use the internet, in other words, they searched more overall. Kulviwat et al. (2004) indicate that past research has found the level of information search that is conducted online by consumers depends upon their inherent ability to effectively screen information (citing Alba et al., 1997; and Bakos, 1997), and state that the internet can cause either a beneficial facilitation of information for those who can screen relevant information quickly, or alternatively, can seem to cause information overload. This concurs with Punj and Staelin’s (1983) proposition that extent of search is related to the relevance of information studied. Kulviwat et al. (2004) note that the internet doesn’t generate new information, but simply facilitates information exchange, allowing consumers to locate information more easily, and reducing frustrations with obtaining imperfect information.

In a study of the use of the internet for automobile purchases, Ratchford, Soo-Lee and Talukdar (2003) found that the main impact from the use of the internet on other sources of information was most influential at the dealer level, mainly because the dealer was the main source of information, and therefore felt the impact strongest. The dealer, however, gained efficiency from customers who had already performed an internet search, as they were more informed, and did not require as much of the dealer’s time to make a sale. However, the
increased knowledge also made the consumer feel more powerful and confident in the purchase process, resulting in lower margins for the dealer.

2.5.3 The impact of the internet as a decision-making support aid

Internet technology is presumed to aid information processing, and the integration of information during the consumer decision process (Kulviwat et al., 2004). The main benefits of the internet in aiding search include the ready availability of information; the provision of search engines; and the ability to allow online product trial (to some degree), all of which should aid in reducing risk and uncertainty regarding the purchase decision (Kulviwat et al., 2004). However, Peterson and Merino (2003 pg 100) state “There is a paucity of ...research indicating that the internet will in fact lead to more and better information which will lead to better consumer decision-making”. Haubl and Trifts (2000) found evidence that decision aids do not necessarily enhance consumer decision-making, and in fact may even reduce it. This is because an interactive technology requires consumers to learn a new search technique, and they must direct and manage their search process through the use of this new technique (Hodkinson, Kiel, and McColl-Kennedy, 2000). Similarly, Bhatnagar and Ghose (2004 pg 227) stated that “It is only conjecture that information obtained on the internet would somehow influence consumers’ subsequent purchase behaviour”, however, they found when testing this premise that the more time consumers spend on the web, and the more frequently they consult it, the greater the influence of the internet information on the purchase decision. The internet (and other interactive recommendation agent tools) often allows the ability to initially screen products while also allowing in-depth comparison between products, and can therefore allow better decision-making with less effort (Haubl and Trifts, 2000; Peterson and Merino, 2003).

Klein and Ford (2003) indicate that as more people experience online searching, it will lead to a greater population base of internet users, and a greater propensity to search for other products online also. We would therefore expect to see greater use of the internet as an information source in the future, as younger persons mature and a greater proportion of the population have grown up with the technology as a pervasive tool.
2.6 HOMEBUYER SEARCH BEHAVIOUR

As this study focuses on the search process for a new house, a review of the search process when looking for houses revealed few studies have been undertaken on this subject to date. The majority of studies relating to the search process for high-involvement consumer durables focus on automobiles and appliances (Newman and Staelin, 1972; Beatty and Smith, 1987).

2.6.1 Buyer search processes in the purchase of a new home

Palm (1982) outlines three types of studies investigating the role of information in house purchase behaviour during the 1970s and 1980s:

- Descriptive analyses of information sources used during the search process
- Models of information source usage
- Specific studies relating to information usage by real estate agencies (rather than the consumer)

Most of the early models relating to search propensity in housing markets follow traditional economic theories relating to search intensity and cost of search (Clark and Smith, 1982). Stigler (1961) (cited in Baryla and Zumpano, 1995) established that a buyer will first identify properties for sale and then seek sales price information for a set of suitable properties. The search time continues until the buyer feels that the effect of further search negates any price saving benefits. Therefore, if all prices are similar in a choice set of suitable properties, the search time will be short, but if there is wide discrepancy between prices, a longer search time will be necessary. Cubbin (1974) (cited in Baryla and Zumpano, 1995) established that higher priced houses sold faster, however Yavas (1992) (cited in Baryla and Zumpano, 1995) indicates search intensity increases (the number of houses visited in a certain time period, and the depth of information sought) but that price has virtually no effect on search duration. An alternative viewpoint by Elder (1999) (cited in Baryla and Zumpano, 2000) was that high income purchasers searched longer, and also with less intensity.

Previous studies have indicated various factors in the housing market besides the search cost that impact on both the length of search; and also the intensity of search. Clark and Smith (1982) in a review of these previous studies concluded that family size; length of residence; number of houses viewed; number of locations considered (e.g. suburbs); and household income all influenced the search duration.
Larger households are known to search for shorter lengths of time (Clark (1981) cited in Clark and Smith (1982)) and increase their search duration depending on the number of children, and size of house required (Clark and Smith, 1982), while demographic changes (such as the addition of a child) may influence the urgency with which a family needs to purchase a home (Baryla and Zumpano, 1995). However, the need for a larger home may require a greater number of factors to be considered, and therefore families will need to search longer to find the home that meets their requirements despite this urgency. This leads to tradeoffs in the features that can be incorporated to suit both price and timeline (Baryla and Zumpano, 1995; Clark and Smith, 1982).

It is usually believed that the more ‘efficient’ searches occur when the number of houses visited is low (Palm and Danis, 2001). One could expect that persons with higher incomes would search for longer, as they are more able to afford the search costs associated with longer search time, however, Clark and Smith (1982 pg 730) indicate that “the higher the income, the fewer houses seen”, stating that this is due to a known negative relationship between neighbourhood quality and search duration, as well as a known positive relationship between search duration and number of areas considered (citing Smith (1981)) as those with higher incomes probably live in nicer neighbourhoods, and are also more likely to search within their own neighbourhoods only. Despite these past indications, Palm and Danis (2001) found that those with higher incomes actually visited a larger number of houses than those with lower incomes.

Searching for a longer time (especially in a strong sellers’ market) will mean that some of the properties originally considered will have sold by the time a purchase decision is reached, inevitably leading to a greater number of houses being considered by a purchaser (Clark and Smith, 1982). Smith (1979) posited that the length of search is directly related to the probability of losing a vacancy to another bidder (cited in Clark and Smith (1982)). First home buyers may therefore cut short their search time period due to the anxiety of losing out to another buyer (Baryla , Zumpano and Elder, 2000) and may also search for a shorter time if there is low relative brand uncertainty (Smith and Mertz, 1980). In today’s housing market, it has been established that younger home buyers often struggle to enter the market (Findsen 2005 pg 17; DTZ New Zealand, 2004 pg 216), especially at the low-end price range. Entry-level houses can also be fairly similar in size, range of rooms and age, and this reduces brand uncertainty for buyers. On the other hand, first home buyers are less experienced in the market, and need to make themselves familiar with the market before being able to risk a
purchase decision (Findsen, 2005 pg 19; Zumpano et al., 2003). There is a known influence of prior market beliefs and market knowledge on housing search behaviour. In particular, belief regarding the purchase price necessary to gain the desired house (the reservation price) is known to impact heavily on search duration, and the type of property initially considered (Baryla, Zumpano and Elder, 2000; Baryla and Zumpano, 1995; Smith and Mertz, 1980). Buyers who believe it will cost them more to get the house than it actually does will have a shorter search time than those who underestimate the market price (Clark and Smith, 1982). Rothschild (1974) found that a homebuyer has a reserved price in mind initially, but this alters as the buyer becomes more aware of the intricacies of the market (cited in Baryla and Zumpano, 1995; Baryla, Zumpano and Elder, 2000). As purchasers become more knowledgeable about the market, their reservation price, and beliefs relating to appropriate property features and neighbourhood to reside in alter. Real estate agents use this aspect to influence purchasers’ beliefs regarding the market by showing houses in a certain order, reducing the geographic region a purchaser is exposed to, and causing the purchaser to increase search intensity in only a certain market segment (Smith and Mertz, 1980; Palm and Danis, 2001; Baryla, Zumpano and Elder, 2000), in order to return a higher commission to an agent. Smith and Mertz (1980) show how where there was a perception of increased mean price and price-quality covariance, this raised a buyer’s reservation price; and, conversely, the reservation price lowered if the buyer gained a perception of increased mean quality for a given price.

Despite this apparent ‘gate keeping’ nature of real estate agents in historically only disclosing to buyers that information that will ensure buyers purchase the highest priced house they can afford, studies show that using real estate agents afford purchasers a number of benefits, including a reduced search time (Baryla, Zumpano and Elder, 2000; Baryla and Zumpano, 1995); and increased likelihood of finding an appropriate property (Baryla, Zumpano and Elder, 2000); and by increasing search intensity, allowing a more informed choice, and reducing buyers’ perceived risk (Baryla and Zumpano, 1995).

There are many information sources available to home buyers apart from the real estate agent, including interpersonal contacts; print media; signage; and the internet. Prior to the introduction of internet real estate marketing, Smith and Clark (1982) sought to establish the information channels most used to source real estate information, and discovered that the most common sources were: real estate agents; driving around; and newspapers, and that all three had relatively equivalent importance to the search process. With the introduction of the
internet, Palm and Danis (2001) found the most important sources to be: driving around the neighbourhood; real estate agents; advice from friends and relatives; and the internet, in that order. Newspapers and newspaper realty stories were the least important sources of information. Findsen (2005 pg 86) found that the methods most employed by younger homebuyers to inform the housing search process were: real estate agents; multiple listings; driving past houses; the internet; and newspaper listings, in that order. It appears over time that the usefulness of the newspaper as a primary information source may have diminished, however, real estate advice and gaining knowledge of the area by driving around are still very important and well used in the search for housing information.

In terms of housing features that were most important considerations, Palm and Danis (2001) found neighbourhood characteristics, house appearance, number of bedrooms and bathrooms, overall size of house, and lifestyle fit were the most important factors considered, in that order. External landscaping aspects, and proximity to amenities were not considered important, unless this would impact on school zoning or on other lifestyle requirements.

2.7 THE RISE OF REAL ESTATE WEBSITES

As diffusion of the internet increases, availability of advertising and sales opportunities have also increased, leading to the introduction of business websites dedicated to providing information and product listings. The real estate market has been quick to adopt internet technology into its business and sales strategy. In January 1995, there were an estimated 100 US real estate websites, however, by December 1995, this had increased to 4,000 websites, and doubled by the end of 1996 to 8,000 websites. This adoption rate increased rapidly, so that in 1999, there were an estimated 200,000 US websites for real estate and, by 2003, 87% of realtors in the US had a website and the number posting listings on their personal web site had doubled from 25% in 2001 to 50% in 2003 (National Association of Realtors, 2003). By 2000, many smaller US realty firms were no longer providing their own website, but instead linking to larger online property databases (e.g. www.Realtor.com) due to the cost of maintaining a website, with most internet clients already searching the larger sites anyway (Bond et al., 2000) due to the advantages of centralised listings. US realtor websites initially only listed selected properties, but now most real estate listings are on the internet.
2.7.1 Real estate websites in New Zealand

One of the advantages for the realtor of an online property search is that a greater number of potential clients can be sought, and therefore a better purchase price obtained for the property. Similar to the situation in the US, New Zealand realtors were also quick to adopt the internet as a means of listing properties and thus gaining a wider potential market. Harcourts, a nationwide realtor, has featured all listed properties online since 1995, allowing New Zealand homebuyers to be able to use the internet to search for a home via a website database search function (The Christchurch Press, 1999).

During 1996, the Real Estate Institute of New Zealand (REINZ) entered a joint venture with Auckland Multiple Listing Bureau to provide online property listings from its member real estate agencies, with a service called Realenz (Vause, 1999). Unlike the US’s fast introduction of individual agency websites, the initial introduction of such sites in New Zealand was met with some reserve by members. They feared that the internet was an inappropriate sales media that could damage the professional ethos of the agency in terms of the relationships, contacts and advice provided to the public. They also feared that the public could receive too much market information, which could undermine agents’ knowledge powerbase of the market, or lead people to make ill-informed decisions (Vause, 1999).

In March 1999, Wellington real estate firm Leaders was first to offer a virtual tour through Wellington listed homes via a website, and also displayed their listed properties at a computer kiosk. This resulted in an increase of home purchase queries to 7,000-8,000 per week (Hucke, 1999). Also during 1999, the Harcourts website was advertised on television, doubling the amount of traffic to their website to 100,000 hits per week, a third of which were from potential international homebuyers (The Christchurch Press, 1999). The ease of use of a website to search for property over traditional channels (such as window listings, using an agent/broker or hardcopy newspaper and flyer advertising) is emphasised by Harcourts as one of the success factors of their website:

“Looking for a house is a traumatic experience...the site and systems supporting it have to make the process very very easy.”

“If technology can make the process easier, then it makes sense to use it.” (The Christchurch Press, 1999)
Today, it would be difficult to find a real estate agency in New Zealand that doesn’t have real estate listings on a website, and most are linked into the Realenz (www.realenz.co.nz) or open2view (www.open2view.com) multi-agency listing sites, or provide individual agency branch websites.

2.7.2 Increase in services and competition

In 1999, four years after the launch of their website, Harcourts were attracting more than 3 million hits per month, with 32% from offshore, and 41,000 unique visitors (The Christchurch Press, 1999). At the same time, Realenz was receiving 240,000 hits per day from 10,000 unique visitors, and had around 32,000 property listings in their database (Vause, 1999).

Hits for the month of December 2005 (Table 2) show the number of unique visitors has grown to more than 500,000 per month, and there are more players in the market:

<table>
<thead>
<tr>
<th>Website</th>
<th>URL</th>
<th>Hits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trademe Property</td>
<td><a href="http://www.trademe.co.nz">www.trademe.co.nz</a></td>
<td>170,343</td>
</tr>
<tr>
<td>Realenz.co.nz</td>
<td><a href="http://www.realenz.co.nz">www.realenz.co.nz</a></td>
<td>85,234</td>
</tr>
<tr>
<td>Harcourts.co.nz</td>
<td><a href="http://www.harcourts.co.nz">www.harcourts.co.nz</a></td>
<td>84,317</td>
</tr>
<tr>
<td>Open2view</td>
<td><a href="http://www.open2view.com">www.open2view.com</a></td>
<td>61,236</td>
</tr>
<tr>
<td>Barfoot and Thompson</td>
<td><a href="http://www.barfoot.co.nz">www.barfoot.co.nz</a></td>
<td>40,233</td>
</tr>
<tr>
<td>NZ Herald</td>
<td><a href="http://www.search4homes.co.nz">www.search4homes.co.nz</a></td>
<td>38,425</td>
</tr>
<tr>
<td>Real Estate NZ</td>
<td><a href="http://www.allrealestate.co.nz">www.allrealestate.co.nz</a></td>
<td>35,487</td>
</tr>
</tbody>
</table>

(Source: Gibson, 2006c)

Table 2: Real Estate website hits for the month of December 2005

Sinclair (2000) indicates that, although alternative websites and internet sales may seem simple, and a fast way to a ‘quick buck’, the ‘print mentality’ of the public means that real estate agents still play a vital role in negotiating and delivering a full, high-quality internet service, as the internet is not yet seen by buyers as delivering on all required purchase aspects.

The introduction of the internet into the property market was predicted to disintermediate sales agents as the middle man in the negotiations. However, the buying process appears to be becoming more complex, as rather than the internet replacing the role of the estate agent, Thomas Stevens (US National Association of Realtors president) states recent survey findings show “Buyers who use the Internet in searching for a home are more likely to use a real
estate agent than non-Internet users, and consumers rely on professionals to provide context, negotiate the transaction and help with the paperwork” (quoted in Molony, 2006). Ann Pettijohn (California Association of Realtors president) concurs with this finding, stating “While internet buyers considered online information to be valuable, they ultimately turned to realtors for both their interpretation of that information, and for their expertise and judgement” (Evans, 2006). Bond et al. (2000 pg 204) states “it would appear that brokerage firms that operate without listing their properties on a website do so at great economic risk”.

The authors found the main reasons realtors gave for having property information on a website included: another channel to reach potential customers; simply the way business is done; fear of losing business if they don’t have a website; and expectation of reduced transaction costs. This contrasts with the initial New Zealand reaction to the introduction of Realenz, where agents feared disintermediation and that the internet was not an ‘appropriate’ marketing tool.

How much longer the agency-run websites remain the simplest, cheapest and easiest method for listing and selling a home remains to be seen, however, with the introduction of Trademe Property in June 2005. This move was foreseen by Myers and Crowston who, in 2004, indicated “It may be just a matter of time before TradeMe or some other non-real estate company takes a leading role in organising the FSBO market for real estate” (Myers and Crowston, 2004 pg 10). When Trademe Property was launched, REINZ president Howard Morley indicated that the site would be complementary rather than a competitor to the traditional real estate sector sites, stating that “quite a lot happens between finding a property, then inspecting it, negotiating it, closing the deal and buying it” (The New Zealand Herald, 2005). At that time, Realenz was receiving 131,000 unique visits per month, and Open2view 78,000 per month (The New Zealand Herald, 2005). By January 2006, Trademe Property was receiving 170,000 unique hits to Realenz’s 85,000 and Open2view’s 61,000, with 1,100 individual real estate agents from well-known agencies (including Ray White and First National) having listed properties on Trademe Property (Gibson, 2006c).

2.7.3 Internet marketing and the real estate consumer

According to Jason Wills (Harcourts’ 1999 IT Manager), the firm had 30 computers nationwide in 1996, and did most sales administration by fax (The Christchurch Press, 1999). Like many sectors, the rise of business computing, and latterly internet and mobile communications, is changing the nature of marketing, opening up new means of reaching and
communicating with customers. The internet allows consumers to not only search for information, learn about the market and scope potential properties, but also has the ability to show friends and family all over the world around their new property at the click of a button (Vause, 1999).

The way consumers find out about property, and interact with agents is also changing. During 2004, the US California Association of Realtors discovered 56% of American homebuyers used the internet when buying a home, double the percentage using the internet in a similar 2000 study (Evans, 2006). A 2006 study by the US National Association of Realtors (Molony, 2006) indicated that nine out of ten American home buyers still used a real estate agent, but the proportion of buyers first learning about their new home from the internet has risen dramatically in the past nine years, from 2% in 1997, to 15% in 2004, and 24% today. This compares with 36% who first heard about the home from an agent, and 15% who found the property from ‘for sale’ signs.

The internet is also attracting overseas purchasers to investigate real estate potential in New Zealand, and websites allow both a wider range of clientele, and the ability to sell high-value properties at seemingly ridiculous prices (refer bullets below). The internet also expands the potential market awareness and provides an alternative sales option for ‘difficult’ sites with few NZ buyers, especially million-dollar waterfront and rural locations (Swanepoel, 1999). During 1999 - 2001, newspapers reported a trend of overseas buyers negotiating offshore, sometimes only physically viewing these properties once over a period of 1-2 days (if at all) and purchasing the property for very large sums of money. Examples include:

- a Harcourts agent in Gore, who in 1999 received 670 enquiries for a rural property in a two month period, leading to a $3 million sale (Myers and Crowston, 2004).
- an article from December of 2001 referring to an English gentleman paying $1.18 million for a property in Castor Bay that was first viewed on a Bayleys internet site. Bayleys were at that time receiving four million hits per month on their site, with two thirds coming from offshore (Miriyana, 2001).
- an English couple reported to have purchased a $1 million Tauranga property via the website without ever coming to New Zealand to view it. (Bay of Plenty Times, 2001)
The percentage of homes in NZ selling through the internet rises each year, from 7-10% in 1999 to Graeme Woodley’s (REINZ president) estimate of 15-20% in 2002 (Daniels, 2002). It appears then that technology will continue to change the face of the New Zealand real estate sector, and the expectations and behaviour of property buyers as they adopt new technology.

### 2.7.4 Internet usage in home purchase decisions

Factors determining the use of the internet in the search for a house have been shown to indicate that younger age (Littlefield, Bao and Cook, 2000; Palm and Danis, 2002; Zumpano et al., 2003; Palm and Danis, 2001); male gender (Palm and Danis, 2002); dissatisfaction with a realtor (Littlefield, Bao and Cook, 2000; Zumpano et al., 2003); being a long way from the market (Zumpano et al., 2003); having access to, and previous use of the internet (Littlefield, Bao and Cook, 2000) are influential in increased likelihood to use the internet.

The internet has a number of benefits over other information channels such as exposing a greater number of buyers to view a larger range of properties (Palm and Danis, 2002), however, although this may allow more optimal matching of properties between buyers and sellers, it can also mean a longer time to find a property as there is greater competition due to higher market awareness of the property, and additionally, this awareness may draw ‘window shoppers’ instead of genuine buyers (Ford, Rutherford and Yavas, 2005). However, greater competition (even if it is just the perception of competition) leads to higher prices being achieved by internet listings over those not listed (Ford, Rutherford and Yavas, 2005; Zumpano et al., 2003; Palm and Danis, 2002), but internet listings take longer to sell (on average 6 days longer) (Ford, Rutherford and Yavas, 2005).

Anglin (2004) states that improvements in search technology allows buyers to inspect more houses in a shorter time, thus leading to search efficiency, and found that an improvement in a real estate search technology allows inspection of property in a shorter timeframe. However, (Ford, Rutherford and Yavas, 2005) state lower search costs from internet technology leads instead to more search by buyers, as the degree of search intensity is related to time and cost of search (Zumpano et al., 2003). Those who have limited time will search more intensely, as will those with more search costs, such as out of town buyers (Zumpano et al., 2003; Elder, 1999 cited in Baryla and Zumpano, 1995). The internet is therefore a useful tool to reduce search costs, and also reduce risk through more objective market knowledge by allowing a purchaser independent advice from that available from the real estate agencies. Palm and
Danis (2002) found that the internet is indeed used more by out of town buyers to inform them of the market, as well as newcomers to an area. Baryla and Zumpano (1995), however, found that using a real estate agent can also allow out of town buyers to quickly get up to speed with the market, and significantly reduces the knowledge gap between the out of town buyers and local buyers.

The internet is not expected to totally replace the role of the real estate agent, as house purchase is a very complex affair and people still want expert help and advice through the buying process (Swanepoel, 1999; Patton, 1999). Zumpano et al. (2003) found that using a real estate agent did not discourage people from also using the internet. The fact that houses are individual rather than commodity items also presents challenges to full e-business transactions via the internet (Swanepoel, 1999), as these types of products are difficult to market effectively via the web. Certainly for unique products, representing every aspect of them is important, so buyers can be certain of what they are getting. Palm and Danis (2001) highlight this point, showing that personal visits to the home were important for a purchaser to gain an impression of not only the house itself, but also the surrounding neighbourhood. Unless buyers are very knowledgeable about the street in question, they will need to view the location (by driving around or by open home) and this may be one reason for Palm and Danis’ finding that the use of the internet did not reduce the search efficiencies in terms of the number of homes visited. Zumpano et al. (2003) also raise the point that while pre-screening via the internet should reduce the number of open homes visited as it allows buyers to only visit ‘high-fit’ properties, the search may also uncover a greater number of homes they would like to visit. Palm and Danis (2002) also highlight the inquisitive nature that the expanded property list brings out, agreeing with Zumpano et al.’s (2003) viewpoint.

Allowing buyers greater access to information is seen as a way to reduce search inefficiencies (Smith et al., 1982). Certainly first home buyers are known to search more in general (Zumpano et al., 2003) due to their lack of knowledge and experience in the market, however, this may be related to age, as first homebuyers are usually younger and using the internet anyway. The internet was also cited as being used as a pre-screen tool, to narrow down property choices (Zumpano et al., 2003) or to augment already available property information (Littlefield, Bao and Cook, 2000). Findsen (2005) agrees, indicating that younger home owners are quite risk averse and prefer doing their own ‘homework’ first before consulting with a professional (pg 19).
Three recent studies outline the usage of the internet in informing home purchase decisions. These investigated homebuyer internet use in home purchasing within the United States.

Littlefield, Bao and Cook (2000) examined the main factors influencing the use of the internet as an information channel in home purchase amongst homebuyers in the Eastern United States. The authors noted the increasing number of websites dedicated to real estate, which is theoretically offering consumers convenience and efficiency in house purchase. This study investigated whether the existence of this information was being translated into consumer uptake of the information available when purchasing a house - “Availability does not necessarily mean that consumers will automatically utilise Internet real estate information” (pg 576). The study examined the following factors as indicators of the likelihood of internet use in home purchase: age; awareness of information on the internet; access to the internet; previous internet use in home purchase; perceived usefulness; and real estate agent dissatisfaction. The authors found that use of internet real estate information was not universally accepted by home buyers, with fewer than 40% of those surveyed having used the internet to aid in house purchase, and just over half indicating they intended using the internet in future home purchases. The authors also found that younger homebuyers had greater access to internet facilities, and were more aware of the available internet real estate information than older home buyers. There was a positive correlation between access and usage, and awareness and usage. Those with previous use of the internet for home purchases were more likely to use the internet in future, but previous use did not lead to a higher perceived usefulness of the internet in home purchase decisions over those who had not previously used it for this purpose. The internet was perceived as useful for home purchase information, and younger homeowners were more likely to use the internet.

Palm and Danis (2002 pg 539) explored “the extent to which homebuyers use the Internet as an information source, as opposed to more conventional sources of information”. The study surveyed people who transferred house in Wake County, North Carolina, during 1999. The authors posited that low familiarity with the future residential neighbourhood would lead to more frequent internet use, and that internet users would visit fewer houses and would pay less for their chosen homes than other buyers, due to the efficiencies in search information available from the internet search engines. The authors found that people moving inter-state were indeed more likely to use the internet; men and younger homebuyers were also more likely to use the internet, however, internet users did not visit fewer homes. In fact, they visited more homes than those using more conventional channels. It appears from this study
that the internet is used to gather information prior to a visit, and may even stimulate or encourage visits to a wider range of homes than the choice set, rather than increasing search ‘efficiencies’. There was also no significant difference in house price paid between those using different search channels, however those who used an agent only, or a combination of an agent and the internet, paid less for their homes than those using the internet alone, indicating that agents are still an effective channel, and offer other benefits over the internet alone (Palm and Danis, 2002).

Ford, Rutherford and Yavas (2005) investigated the effect of internet listings on time to sell property and found that houses listed on the internet take slightly longer to sell, and sell for a higher price. The authors suggest this is because internet buyers are considering a greater number of purchase options, due to the larger information base of the internet, and therefore the time required to find their dream property takes longer, and this impacts on the sellers’ time to find a buyer. Ford, Rutherford and Yavas (2005) indicate that sellers often list on the internet thinking that the listing will allow them to find an optimal trading partner quicker, but internet exposure could attract a greater number of buyers who cannot meet the desired selling price, and therefore time is wasted through a greater number of negotiations with non-buyers. This viewpoint is vastly different from both anecdotal evidence from real estate agents, and also does not appear to account for websites that allow consumers to pre-screen their purchase options, or account for the pre-decisional constraints aspects indicated by Punj and Brookes (2002).

The internet is therefore becoming a useful technology for retrieval of information by buyers in the real estate sector, but whether it can fully replace both the agent or physical visits in terms of fully informing the buyer remains to be seen. To consider the impact and how uptake of such a technology is likely to impact on the consumer decision-making process, in particular the search process, it is important to understand what drives the usage of these types of technologies, and whether purely functional elements, or the novelty and enjoyment in using a real estate website is a primary motivator also. The following section considers these aspects, in terms of how innovations are diffused through society.
2.8 INNOVATION DIFFUSION THEORY

Innovation diffusion is an important aspect of consumer behaviour and marketing due to its ability to change traditional purchasing patterns and modes of gaining and acting on information, particularly advertising media. The internet is a relatively recent technology, being publicly available for only a little over a decade, and this study focuses on the use of the technology for purchase and information search using real estate websites, and concerns the factors influencing uptake of the internet for this purpose.

Gatignon and Robertson (1991) state that much of the theory, modelling methodology and empirical findings of innovation diffusion are multidisciplinary, and are drawn extensively from consumer behaviour and marketing papers, as well as economic, sociological, geographical and organisational theories relating to spatial distribution and network commonalities. Karlsson (1988, pg 15) cites Giliches (1957) and Mansfield (1961) as pioneers of the prevailing interpretations of diffusion patterns for innovations. However, Rogers (1995, pp 31-35) indicates that research into innovation diffusion began in rural sociology in the 1940s, citing Ryan and Gross’ investigation of diffusion of hybrid corn seed in 1943. The work of Rogers (1963); Rogers and Shoemaker (1971); and later work of Moore and Benbasat (1991) has further developed the theoretical model, allowing the diffusion model to be applied in a wide variety of disciplines such as education, public health, communication, marketing, geography, general sociology, and economics (Rogers and Scott, 1997).

This section discusses the theory relating to how new technologies and tools become commonly used within society. Carr (2004) outlines four main theories that have emerged concerning the adoption/ diffusion process:

*Rate of Adoption Theory* – That the rate of adoption follows a generic ‘S curve’ with gradual growth, followed by rapid expansion, and then a stabilization when almost all have adopted, and finally a decline as early adopters move on to adopt a newer technology.

*Innovation Decision Process Theory* – that potential adopters progress through five stages during the diffusion process:

- **Knowledge** or awareness of the innovation
- **Persuasion** of the innovation’s value
- **Decision** to adopt it/ reject it
Implementation of the innovation

Confirmation of the decision to adopt or reaffirmation to reject

*Individual Innovativeness Theory* – that the risk-taking nature of consumers differs between members, and that those who are more risk-taking than others will adopt the technology earlier than those who are inherently more risk-averse

*Perceived Attributes Theory* – That five attributes are judged when a user examines a technology - that it can be trialed; observed; is not overly complex; has a relative advantage over present technology; and that it is compatible with its potential use environment.

These four theories will be outlined in further detail during this section. Firstly, an overview of the process of technology adoption, and innovation diffusion within a society will be outlined; followed by two key diffusion models, the epidemic and demand models, with particular regard to the aspect of information exchange in driving the basic model. Secondly, an overview of various characteristics present in different characteristics of adopters and non-adopters of technologies is given, and the perceived characteristics of more successfully diffused technologies discussed.

### 2.8.1 Technology Adoption

The transferral of a technological innovation into the marketplace usually occurs once the innovation is commercialised into a product and sold in the marketplace (Rogers, Takegami and Yin, 2001). This comes at the end of the standard development process involving applied research to develop the technology, the application of the technology into a useful form (product or service) and launch.

### 2.8.2 Innovation decision process theory

When a technology is being selected by an individual, a decision process occurs as the consumer decides whether to adopt the technology or not. The route a technology idea or innovation takes to become adopted by an *individual* can be characterised by a number of steps, similar to those of the buyer decision-making process discussed earlier (Rogers, 1995; Gatignon and Robertson, 1991; Ropke, 2003):

1. Awareness/ knowledge
2. Interest /persuasion
3. Evaluation /decision
4. Trial/ implementation
5. Adoption/ confirmation

The innovations must become known to a consumer, usually through dedicated advertising, marketing promotions, word of mouth or social change campaigns. Not only are marketers and sales distribution networks involved in the process, but potential consumers become aware of the innovation through social communication channels such as mass media, colleagues and friends, and begin to conceive and interpret various social situations in light of the new possibilities the technology offers. At this stage, new innovations are “assessed in relation to themes and the problematiques of everyday life” (Ropke, 2003, pg 175). Novel aspects of the innovation can be met with resistance, trial, or excitement regarding possible uses, and discussion with peers will begin to form attitudes towards the innovation. Family negotiations often ensue if the product is a household purchase. A decision is eventually made by the individual or family concerned to either adopt or resist the adoption of the innovation into everyday life.

Although the list is similar to the one above, Karlsson (1988 pg 33) expands on the five classic stages, as once the adoption stage is complete, the consumer often adapts the use to suit a particular purpose, and the technology needs to become integrated into the lifestyle and everyday functions that the consumer carries out, in order to gain the most benefits:

1. Awareness
2. Interest
3. Search for solutions
4. Trial
5. Evaluation
6. Adoption
7. Adaptation
8. Implementation

The last two items relate to the fact that once a technology is adopted, it must be adapted into the everyday lifestyle and uses the consumer has for it, as well as the consumer behaviour adaptation of the individual that occurs as a result of adopting the technology (e.g. they may do something they do everyday in a different manner due to the uptake of a new tool or device). The implementation stage is similar to the confirmation stage listed in the original
five stages, as this is where the adopted behaviour becomes more than just a casual or novel usage, and the technology is now embedded (routinised) into the everyday.

Gatginon and Robertson (1991 pg 319) state that much of the traditional learning around this hierarchy of needs model has ignored behavioural decision theory and information-processing theory approaches to innovative decision processes. However, these can be quite useful, as the innovators and early adopters may process information differently than later adopters, and appear to be motivated more by mass media messages and may process or be influenced by both this information and interpersonal information sharing in a different manner to non-innovative adopters. Both Moore (1998 & 1999) and Weiber (1995) (cited in Katzy, 2003) realised that the diffusion process is not simply a set of stages in which various adopter-types are prominent, but instead entails risk in moving between the various phases, as there are different innovation attitudes and behaviours involved between the different social groups of adopter types. Katzy (2003) states that Moore “concluded that the single phases of adoption do not follow each other continuously but are separated by gaps of uncertainty” (pg 3) and discusses the concept of ‘Moore’s chasm’ which indicates that there is a lag time between the phase when early adopters and innovators have adopted the innovation, and when the early majority feel able to adopt it. Similar to generic consumer decision-making, Gatignon and Robertson (1991) conclude that the degree of information search and processing seems to depend on consumer knowledge, uncertainty, and the importance of the adoption decision to the consumer, and that there appear different information processing steps between familiar and innovative products.

2.8.3 Innovation Resistance

Consumers who delay adoption indefinitely, or decide not to adopt a technology or innovation that others in a social system adopt, are dubbed ‘non-adopters’. (Ram, 1987) states the emphasis in literature has a pro-innovation bias and appears to focus on characteristics of those who adopt, especially innovators and early adopters. This is in recognition that these innovators and early adopters have a heavy influence on increasing the adoption rate, and are the tipping point behind the exponential growth in adoption occurring when early and late majority adopt. However, a few researchers have instead focussed on the non-adopting members of a social system, and reasons for why they may choose not to adopt. Gatignon and Robertson (1991 pg 325) indicate that non-adopters can be either rejecters, or postponers, and that the two are very different. Rejecters are not the opposite of adopters, they behave in a
different manner, often trialling early and deciding not to adopt, or resisting adopting the technology until social pressure makes it impossible for them to continue in the social system without adopting. In this way, some late adopters are actually rejecters, but have been forced to adopt through social norm pressure (and may continue to resent the technology adoption decision). Other late adopters process information more slowly. They remain undecided until they have either sufficient information to make a decision, or sufficient information processing time to reach a decision. Sheth (1981) (in Gatignon and Robertson, 1991 pg 325) explains resistance as being caused by perceived risk associated with the innovation, and also the strength of current behavioural habits associated with the existing technology.

2.8.4 The innovation diffusion process

Innovation diffusion concerns the processes required for a new idea, technology or new behavioural technique to become common practice within a society. Diffusion is defined as “the process by which (1) an innovation is (2) communicated through certain channels (3) over time (4) among the members of a social system” (Rogers and Scott, 1997 pg 4). How this occurs, and the rate at which it occurs is of interest to economists, social and behavioural scientists and marketers as knowledge concerning the speed by which a technology or innovation is commonly used and practised within a society can greatly aid in forecasting models and sales strategies (Gatignon and Robertson, 1991).

Although two technologies may be released at the one time, they may take a different rate to be diffused, despite both appearing useful and beneficial. Geroski (2000) states that “unlike molecules which act and react mechanically, people try to think before they act and this can be a very slow and unpredictable business for some of them…..sometimes it takes an amazingly long period of time for new technologies to be adopted by those who seem most likely to benefit from their use” (pp 603 and 604). The human element of diffusion is recognised in most innovation diffusion literature as being the ‘social system’ in which the diffusion takes place. Gatignon and Robertson (1991 pg 318) define this social system as “a set of people with shared sense of commonality who tend to interact over time”, and states that most consumer research is concerned with sets of these social systems termed in marketing literature as market segments.

Three major characteristics of the social system affect the diffusion process - the social system’s values and norms; the evolution of these norms over time; and the homogeneity of
the social system (Gatignon and Robertson, 1991 pg 319). The diffusion process is therefore concerned with the aggregate adoption curve over time for the innovation, i.e. the rate of market penetration within the social system/ market segment rather than individual acceptance or uptake of the technology (Gatignon and Robertson 1991 pg 319; Rogers, 1995).

Most empirical studies into innovation diffusion have focussed on either the speed of diffusion (diffusion rates for different innovations), or determining what the buyer characteristics are that determine the length of time before a buyer adopts the innovation (Karlsson, 1988). Research into innovation diffusion is therefore concerned with:

- The rate of adoption (i.e. how quickly the innovation is spread throughout society) (Karlsson, 1988; Rogers, 1995)
- The pattern of adoption curves (number of adopters over time) (Gatignon and Robertson, 1991 pg 319)
- The size of the market potential (number of potential adopters still in the system (non-adopters)) (Gatignon and Robertson, 1991 pg 319)
- The perceptions and characteristics of various adopters/ non-adopters (who affect the rate of adoption) (Karlsson, 1988)
- The factors concerning the rate of adoption/ diffusion (what factors enhance or detract from the innovation being diffused) (Karlsson, 1988).

This study is mostly concerned with the last two aspects listed, as we wish to investigate the determinants behind real estate website adoption behaviour.

One framework first proposed in 1985 by Gatignon and Robertson that seeks to explain how various elements impact on the consumer diffusion process is shown in Figure 10 (Gatignon and Robertson, 1991):

![Fig 10: The Consumer Diffusion Paradigm](Source: Gatignon and Robertson, 1991, pg 317)
This framework combined eight key elements, outlining how the rate of individual adoptions influences the overall diffusion process within the social system, and showing that, within a social system, three key characteristics influence an individual’s willingness to adopt a technology (Gatignon and Robertson, 1991 pg 317):

- The personal influence exerted/transmitted to members of the system
- The personal characteristics (innovativeness) of the member of the social system
- The perceived characteristics of the innovation itself

These three key characteristics are also given by Teo and Pok (2003) as the three main aspects influencing innovation adoption and diffusion.

Similarly, Rogers (1995) states that the rate of innovation adoption is influenced by five aspects: the perceived attributes of innovations; the nature of the social system (values and norms present); the extent of change agents’ promotional efforts; the type of innovation-decision (optional, collective or authoritarian); communication channels present in the social system (mass media or interpersonal). The first of these aspects is the same as that of Gatignon and Robertson (1991), the following three relate to Gatignon and Robertson’s personal influence characteristic, while Rogers introduces a new aspect in the element of communication channels in underlying the extent of personal influence transmitted. Xu and Quaddus (2004) reiterate these aspects in the context of influences of adoption and diffusion of a knowledge management system, stating: market environment (similar to Rogers’ change agent promotional efforts); individual factors (similar to personal innovativeness); organizational characteristics and managerial influence (similar to the social values and norms present, personal influence exerted and communication channels present); and the perceived innovation characteristics as the five key influences. Another influential aspect of the diffusion process is the process improvements inherent in the early diffusion stages and versions of the new technology, as the ‘bugs’ of a new technology are worked through. (Gatignon and Robertson, 1991; Nevers, 1972).

The following sections describe these three main aspects in more detail. Firstly, the influence of interpersonal communication and mass media messages on the rate of adoption (in terms of social influence, perceived risk of adopting something ‘new’, and peer pressure) is initially discussed; secondly, characteristics of individual adopters that tended to make them more, and
less, willing to adopt technology are examined; and thirdly, the characteristics of the innovation itself, in terms of the ‘perceived characteristics of innovations’ for information technologies, are outlined.

2.8.5  **Societal information exchange and rate of adoption.**

Gabriel Tarde, in 1903, observed that the cumulative rate of innovation diffusion throughout society over time follows an S-shaped curve (Figure 11), and that the rapid rise in slope of the S-curve occurred when opinion leaders in a system adopted a new idea (Tarde, 1903 cited in Rogers, 1995 pg 40):

![Fig 11: Diffusion rate of technology adoption](image)

Bass (1969) put forward a model that theorised potential adopters of an innovation were influenced by two major communication channels – interpersonal communication, and mass media messages. In his model, he shows that although mass media messages trigger adoption, interpersonal communication soon becomes key to continued adoption. Geroski (2000) also states that there is a recognised time lag in the time it takes for information to spread between members of a system, and the subsequent adoption of the innovation, indicating that awareness alone via mass media is but one key in the process of diffusion. Bass (1969) indicates that later adopters (imitators) become more pressured to adopt as the number of previous adopters increases over time within the members of the social system, and they learn and are heavily influenced by those who have already bought.
The Bass model is therefore an *epidemic* or learning model, with the diffusion process seen as a learning process by which leaders and followers (Bass’ innovators and imitators) accumulate and disseminate information (Karlsson, 1988).

An extension to the Bass model was made by Dodson and Muller (1978), which included a framework for repeat purchases, in a *demand* model. The basic assumption in most models is that upon learning of the existence and characteristics of a new technology, a potential adopter will acquire the technology when the uncertainty regarding benefit of adoption (perceived risk) is reduced below some threshold value. The type of information deemed necessary before a decision is made to adopt needs to be such that it persuades and causes action (Geroski, 2000). Karlsson (1988) states the stages that precede acceptance of a new technology by a potential user involve mainly information exchange, and also possibly trial. These are two risk-avoidance strategies employed by later adopters. Risk-takers will adopt earlier and rapidly, and risk averse users will adopt later and at a more gradual rate.

2.8.5a **Critical Mass**

Critical mass is defined as “*the minimal number of adopters of an interactive innovation for the further rate of adoption to be self-sustaining*” (Mahler and Rogers, 1999, pg 721). Internet sales and marketing is one technology which relies absolutely on a base of adopters to operate effectively.

The diffusion of technologies that rely on network externalities is very dependent on whether other social system members adopt these technologies (Gatignon and Robertson, 1991 pg 318). The rate of adoption of an interactive technology (one that requires other users of the innovation in order to be effective or useful to the individual) differs from the standard diffusion model in two ways:

- Firstly, the commitment to adopt is influenced more by the perceived number of others who have already adopted, than on the actual number who have adopted. If the potential adopter believes a high (or low) number of users already exist, this will positively (or negatively) affect the perceived usefulness of the innovation.
- The rate of adoption tends to be slower over the early adoption period than non-interactive innovations, but increases rapidly once a critical mass has been achieved. Weiber (1995) argued that it is the very factors which inhibit adoption at
early adoption phase that lead to its rapid adoption post-critical mass (cited in Mahler and Rogers, 1999).

Geroski (2000) picks up on Weiber’s point by introducing the concept of an information cascade, whereby the later adopters use the early adopters’ previous knowledge and research about a product to inform their choice. Geroski therefore divides the technology adoption into three phases:

- an *initial choice* being made between alternative solutions/ technology options by initial adopters
- the preferred choice being ‘locked in’ within the social system by early adopters
- an *information cascade/ bandwagon* stage whereby later adopters will adopt when the alternative choices (and therefore risks) have been significantly reduced (Geroski, 2000).

Geroski (2000) indicates that once critical mass is reached, the perceived risk in adopting drops significantly, and the expected value associated with adopting the technology increases. Similarly, Yang and Yoo (2004) indicate that with word-of-mouth information exchange comes a change in attitude, as people do not just give objective information to one another, but express their thoughts and opinions as they give it. In this way, later adopters are jumping on the bandwagon of popular choice, and removing risk by accepting the most popular option.

2.8.5b *Adopter characteristics*

Mahler raises the issue of why anyone would adopt an innovation before critical mass has been reached, given the lessened risks and greater perceived usefulness of adopting once this has been achieved. He acknowledges that individuals vary in their resistance thresholds, as indicated in the early adopter to laggard characterisation of individual adopter types (Mahler and Rogers, 1999). Another reason may be that not all those who adopt early have early adopter characteristics, but may instead perceive that critical mass has already been attained (i.e. they think that more people have adopted the innovation than has actually occurred).
2.8.5c Individual innovativeness theory

Geroski (2000) outlines the importance of distinguishing the different triggers for adoption between those adopting early and those who adopt later. Word of mouth diffusion processes are known to be the greatest social influence of adoption, however, early adopters are obviously more influenced by mass media and trial processes than by interpersonal communications, as in order for word of mouth to have influence in the social system, a body of early users must already have adopted (that is, the early adopters cannot be influenced by the word of mouth messages from early adopters). Geroski (2000 pg 606) therefore concludes “Since early adopting individuals have evidently chosen to use the technology despite not having had access to the experience of a previous user, it seems clear that they are somehow different from subsequent users”. Lassar, Manolis and Lassar (2005) cite Midge and Dowling (1978) in determining innovativeness of an individual in terms of the level of decision independence to other’s personal influence within the social system.

Rogers (1995 pp 262-265) categorises and describes five different types of innovation adopter:

**Innovators** – at 2.5% of the population, these people are the first to adopt a new innovation, and are described by Rogers as venturesome individuals who may be seen as lonesome outsiders in a social system.

**Early adopters** comprise 13.5% of the population and socially respected by their peers. They are often opinion leaders, and are also more integrated into social systems than the innovators.

**The Early Majority** comprise around a third of the population (34%), and adopt an innovation at around the mid-point of the adoption cycle, however they are differentiated from the Late Majority in that they adopt just prior to the average time. These people are an important link in the diffusion process, as they follow opinion leaders, and exert social pressure on slower adopters through peer influence. Their innovation decision process time is longer than earlier adopters.

**The Late Majority** also comprise 34% of the population, but are differentiated from the Early Majority in that they adopt just after the average time. These people are sceptical about the innovation, and bend to peer pressure, or the increasingly apparent need to adopt to continue as part of the social system. Often these people have scarce financial resources, and therefore their perceived risk of adoption needs to be low before they adopt an innovation.
Laggards are characterised by following traditions and using known and comfortable technologies. They comprise 16% of the population, and are unique in that they often are very individualistic, possessing nearly zero response to opinion leadership. They can often be isolated in terms of social systems, in that they do their own thing, and tend to be suspicious of innovation and change. Laggards adopt late in the product life cycle, long after their initial awareness of an innovation, and can sometimes adopt ‘old’ technologies – in other words, they sometimes adopt when a technology is on its way out.

Feick and Price (1987) (cited in Lassar, Manolis and Lassar, 2005) refer to earlier adopters as ‘Market Mavens’ – those at the forefront of market information, and who initiate discussions with peers regarding product information, and will source information for peers. Market mavens are therefore seen as the ‘voices of authority’ on the product category, and will influence rather than be influenced by the decision processes of other members of the system. Lassar et al. (2005) indicates that it is also the innate innovativeness of a consumer (reception to new ideas and the ability to make decisions independently) that separates innovating consumers from other adopters.

Rogers outlines characteristics of earlier adopters, indicating their socioeconomic, personal and communication character traits (Rogers, 1995 pg 269-274):

- **Socioeconomic** – Age is not an indicator of adoption characteristics, however, those with more formal education and literacy, and higher social status and income are more likely to adopt early.

- **Personal variables** – people who are positive, adaptable, and easygoing (empathetic, less dogmatic, can adapt to change, and deal easily with abstract ideas) are more likely to be earlier adopters

- **Communication style** – Those who are more socially integrated and connected, and are exposed to more change agents and mass media influences are more likely to adopt earlier. Also, early adopters actively use these channels to seek information, and want to learn about innovations.

Gatignon and Robertson (1991 pg 326) indicate that knowledge of the product category, familiarity and experience with the product category, interest in the product category, being a heavy user of the product category and having a different cognitive style from others (less planning, deliberation and observation) characterise the innovating consumers of a product category. Also, higher income, higher education level, younger age, greater social mobility,
risk taking and opinion leadership tend to be variables that distinguish innovators from later adopters and non-adopters (Gatignon and Robertson, 1991 pg 320). Chao and Gupta (1995) indicate that a larger search for information by educated people is due to the educated person’s propensity to engage in more meaningful searches for information. Lower educated consumers have been found to be less efficient shoppers, and have less ability to process information in the search, despite being just as motivated to search.

Carr (2004) indicates that there is also a distinct difference between the early adopters, and the early majority that should be understood, as this phase is the greatest potential for non-successful diffusion. Carr tables these differences as in Table 3:

<table>
<thead>
<tr>
<th>Early adopters</th>
<th>Early majority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technology focused</td>
<td>Not technology focused</td>
</tr>
<tr>
<td>Proponents of revolutionary change</td>
<td>Proponents of evolutionary change</td>
</tr>
<tr>
<td>Visionary users</td>
<td>Pragmatic users</td>
</tr>
<tr>
<td>Project oriented</td>
<td>Process oriented</td>
</tr>
<tr>
<td>Willing to take risks</td>
<td>Risk averse</td>
</tr>
<tr>
<td>Willing to experiment</td>
<td>Wanting proven applications</td>
</tr>
<tr>
<td>Individually self-sufficient</td>
<td>Require technical support</td>
</tr>
<tr>
<td>Communicate horizontally, across</td>
<td>Communicate vertically, within a</td>
</tr>
<tr>
<td>disciplines</td>
<td>discipline</td>
</tr>
</tbody>
</table>

Source, Carr (2004)

Table 3: Difference in adopter characteristics between early adopter and early majority

2.8.5d  Adopter characteristics of IT

Similar to Rogers’ (1995) general characterisations of IT adopters, Dickerson and Gentry found that adopters of home computers have higher income, were middle-aged, more educated, and were information seeking opinion leaders (Dickerson and Gentry, 1983). This section expands on the earlier discussion relating to individual adopter characteristics, indicating those attributes which are particularly relevant in IT adoption. Alongside individual innovativeness, research indicates that individual characteristics such as age, education level, and previous technical experience and interest are of particular relevance in characterising adopters of IT innovations.
A number of consumer behaviour studies have indicated purchase behaviour differences between different age-groups. The tendency for middle-aged persons to adopt home computer technology in the 1980’s is consistent with earlier findings from Labay and Kinnear (1981) (cited in Dickerson and Gentry, 1983) stating early adopters ranged from 30-50 years of age, and Rogers and Shoemaker (1971) (cited in Dickerson and Gentry, 1983), who found that middle aged persons had the greatest propensity to adopt technological innovations. Dickerson and Gentry (1983) propose that this is because of the perceived financial risk involved with technological innovations (particularly during the 1970s and 1980s), as they found the early adopters in other non-complex and non-financial risk innovations (such as bank cards and ATM machines) were younger aged.

Wood (2002 pg 78) states “It would be surprising then if age effects did not play a role in consumer’s beliefs about, opinions on, and adoption of, e-commerce”. In 2002, Wood indicated that the nature of youth can have an innovative influence on social change, and also cited the work of Ryder in observing behavioural differences of different generations: “Older society members are behaviourally efficient, while younger members are behaviourally flexible” (Ryder, 1965 cited in Wood, 2002 pg 78). Curzon et al. (2005) found that older members of society, although being very positive in their attitude towards the benefits of using websites, felt tried and true methods to be “quicker, less frustrating, and fitted in with their lifestyle and requirements for reassurance” (pg 663). In particular, speed of obtaining information and physically talking and interacting with people face to face were of greater importance to older persons (Curzon et al., 2005). It could therefore be expected that, for older consumers, perceived usefulness and perceived ease of use would better explain attitude and behavioural intention, as these relate to behavioural efficiency whereas for younger consumers, social norms and the intrinsic motivators or curiosity may be more relevant in explaining behaviour.

This was found to be somewhat true of internet users by Teo, Lim and Lai (1999) who found older users accessed the internet for a lesser number of hours per day, and for a lesser number of tasks, than their younger counterparts.

Agarwal et al. (1998) states that subsequent tests of Rogers’ (1995) five adopter types have produced mixed results in the domain of IT, and the authors set out to investigate how early adopters of IT differ from other potential users for the same set of variables. They found that early IT adopters exhibited greater personal innovativeness in the IT domain, and a more
positive attitude towards using the IT innovation. This agrees with the earlier work of Dickerson and Gentry (1983), who found that past experience with a technical innovation in one product class indicated a higher likelihood to adopt an innovation in a similar product class. They found that home computer adopters had previous experience with other technical products than non-adopters. Thus people who already own and use computers would be more likely to use email and internet, and those who already use the internet for other purposes would be more likely to explore and adopt its use for home shopping.

A study by Sultan (2002) confirms these aspects of age, attitude towards IT and prior technical experience. He found that early adopters of the internet were mature and relatively affluent, and had a technological orientation (interest). Although they are interested in new technology, the early adopters had only ‘average expertise’ in IT, but were motivated to use the internet as home use of the internet was considered ‘fun’ (Sultan, 2002).

Lassar et al. (2005) indicate that higher buying impulsiveness and high opinion leadership were determinants of those who used the internet to purchase online. In a study of determinants for self-service technologies, Curran and Meuter (2005) found usefulness, ease of use, availability and convenience played a significant role in customer satisfaction.

### 2.8.6 Perceived Attributes Theory

The characteristics of an innovation, as perceived by the members of a social system, determine its rate of adoption. This concept has been a common theme underlying the various streams of research into technology adoption (Agarwal and Prasad, 1997). Rogers (1995) indicates five characteristics that affect the rate of adoption of innovations: Relative advantage; Compatibility; Complexity; Trialibility; and Observability. The following definitions of these characteristics are as outlined by Rogers and Scott (1997):

1) **Relative advantage** is the degree to which an innovation is perceived as better than the idea it supersedes. The greater the perceived relative advantage of an innovation, the more rapid its rate of adoption will be.

2) **Compatibility** is the degree to which an innovation is perceived as being consistent with the existing values, past experiences, and needs of potential adopters. An idea that is incompatible with the values and norms of a social system will not be adopted as rapidly as an innovation that is compatible.
3) **Complexity** is the degree to which an innovation is perceived as difficult to understand and use. New ideas that are simpler to understand are adopted more rapidly than innovations that require the adopter to develop new skills and understandings.

4) **Trialability** is the degree to which an innovation may be experimented with on a limited basis. An innovation that is trialable represents less uncertainty to the individual who is considering it for adoption.

5) **Observability** is the degree to which the results of an innovation are visible to others. The easier it is for individuals to see the results of an innovation, the more likely they are to adopt it.

Innovations that individuals perceive to have greater relative advantage, compatibility, trialability, observability, and less complexity will be more likely to be adopted.

The above list is a modification of Rogers’ original five characteristics from 1961, where divisibility has been replaced by trialibility, and communicability with observability. Fliegel and Kivlin (1966) expanded this list to include timesaving and avoidance of discomfort, while Hirshmann (1981) introduced the symbolic and technological characteristics, depending on how innovations were generated (both cited in Dickerson and Gentry, 1983). In the early 1900’s, Tarde used the term ‘imitation’ to define the process of diffusion, and noted that the more similar an innovation is to already accepted ideas, the higher its adoption, thus positing the need for compatibility (Rogers 1995 pg 40).

Carr (2004) outlines the two schools of thought as to the primary causes of social change. One school, the *Determinists*, argue that it is the innovation’s superior technical characteristics that drive the adoption process in the social system. On the other hand, *Instrumentalists* believe that the desire for change and improvement within the social system drives the need to innovate and adopt new ways of doing things. Innovative technology is therefore valued as a tool to enable desired progress and social change. These two views comprise a technology push versus market pull theory. The determinists’ views relate to Rogers’ (1995) characteristics which look at the characteristics of an innovation, while the instrumentalist’s viewpoint incorporates aspects relating to the impact of the innovation on societal progress.

Tornatsky and Klein (1982) (cited in Taylor and Todd, 1995a) and Rogers (1983) found that three characteristics from Rogers’ 1961 perceived attributes list are particularly salient in influencing innovation adoption: relative advantage, complexity, and compatibility and these...
three influence attitude formation during the persuasion stage of the adoption decision process. In addition to the original five from Rogers’ 1961 studies, Tornatsky and Klein introduced a further five – cost; communicability (related to observability); divisibility (related to trialibility); profitability; and social approval (similar to compatibility but in terms of compatibility with socially accepted norms and behaviour) (Moore and Benbasat, 1991).

Cost and profitability are not seen to be important for an individual adoption decision-making, as this is related to organisational adoption. The other extensions found by Tornatsky and Klein that do relate to individual adoption may therefore be due to Rogers’ determinist viewpoint, focussing on the characteristic features of the innovation itself rather than on the perception of use characteristics (Moore and Benbasat, 1991).

Moore and Benbasat (1991) reviewed both Rogers’ (1961) and Tornatsky and Klein’s’ (1982) work to develop an instrument to measure perceptions of adopting an IT innovation (Moore and Benbasat, 1991). Due to the relatedness of some of the Tornatsky and Klein constructs to those of Rogers’ earlier work, and as cost and profitability were concerned with more organisational constructs, this resulted in the introduction of seven key constructs expanding the focus from solely the innovation itself, which Moore and Benbasat call ‘the perceived characteristics of innovating’ or PCI, that influence adoption of information technology: Relative advantage; Ease of use (similar to complexity, but encapsulates the users perception of degree of an innovation being free of effort); compatibility; image (the perception that using an innovation will contribute to increased social status); trialibility (the perceived ability of adopters to experiment with an innovation prior to purchase or committing to use); result demonstrability (the tangibility of the results of using an innovation); and visibility (the extent to which the adopters see the innovation as being visibly adopted) (Moore and Benbasat, 1991). Note that the last two are a further deconstruction of Rogers’ original observability characteristic. Another characteristic, voluntariness, was also introduced by Moore and Benbasat (1991), but has so far not been adequately proven (Taylor and Todd, 1995a). A study by Gerrard and Cunningham (2003) (cited in Lassar et al. 2005) found that perception of convenience, less complexity and greater compatibility of (in their case, internet banking) were seen as major determinants of adoption by users, thus concurring with Tornatsky and Klein.
In evaluating alternatives, and coming to a preferred choice of brand, colour, style, and so on of a particular product, the attitudes towards and beliefs regarding the various characteristics of the various product offerings have a major impact on the final choice and purchase intent (Kotler, 1986 pg 182). Howard and Sheth (1969) stated that consumers use both past experience and surrounding environmental influences to inform their choice criteria, and their 1969 model of consumer decision-making also posited attitude to be an antecedent of purchase intention, and intention an antecedent of actual purchase (Howard and Sheth, 1969 pp 30-38). This concept has been both proven and used in subsequent models of consumer behaviour such as the Theory of Reasoned Action and Theory of Planned Behaviour – refer to section 2.10.1 and 2.10.2 of Fishbein and Ajzen (1975), and Ajzen (1985, 1991 cited in Taylor and Todd, 1995), who showed how behavioural intent was influenced by attitude, and is continued in Davis’ (1989) Technology Acceptance Model (refer to section 2.11.1).

East (1990) states that purchase behaviour is driven by the salient attitudes and beliefs (those that come to mind easily) regarding the purchase and use of a product or service, while Sirakaya and Woodside (2004) note that both internal processes (attitudes, motivations, beliefs and intentions) as well as external variables (such as time, pull factors and marketing mix) influence decision-making.

As attitude is a key construct in the Technology Acceptance Model (Yang and Yoo, 2004), and is used to mediate behavioural intent, an overview of attitude, and the impact of this on intent and final behaviour follows.

### 2.9.1 Attitude

Many have developed definitions that try to capture what an attitude is, most incorporating an aspect of an individual’s response to stimuli (Foxall and Goldsmith, 1994 pg 93). Walters (1974 pg 159) states that attitude is a component of consumer awareness, resulting from mental interpretation of stimuli.

Behavioural scientists do not yet agree as to the fundamental components of attitude (Foxall and Goldsmith, 1994, pg 94) with some arguing for a uni-dimensional affective component only, while others opt for a multi-dimensional theory. Lawson et al. (1996, pg 436) states
there are four commonly accepted parts to the various definitions and theories regarding attitudes:

- A feeling/ evaluative reaction – how positive or negative; pro or con; favourable or unfavourable a person feels toward an object
- A learned disposition – how a person consistently responds to an object or class of objects
- Comprises three components – namely affective; cognitive and behavioural
- Multi-dimensional – a more recent theory that attitude is a function of a range of beliefs, and therefore a composition of the evaluation and strength of each belief aspect.

Triandis (1971) states that attitudes are inferred from what a person says and feels about an object, and statements of their behaviour towards the object. They are formed in order to meet an individual’s need to ascribe meaning to their behaviours. Triandis (1971) outlines three components to attitudes:

- Affective (feelings) – how using the object makes them feel, and how much they like it
- Cognitive (thoughts and beliefs) – the ideas, beliefs and metaphorical characteristics of the object
- Behavioural (actions) – the predisposition towards taking certain actions with regard to the object.

Agarwal and Prasad (1997) support a multi-dimensional viewpoint by stating social psychologists have found attitude to have cognitive elements and affective components, but their article does not mention the behavioural component of attitude. Foxall and Goldsmith (1994 pg 94) indicate that a multi-dimensional model is preferred by marketing managers as while the affective component discovers how the consumer feels about the product, the cognitive and behavioural aspects allow marketers to also understand consumers’ overt marketplace behaviour in terms of brand and outlet beliefs, and actual purchase behaviour.

Consumer behaviour is known to be best predicted by measuring the consumer attitude towards the behaviour of using the service or product, rather than by their attitude to the product or service itself (Mathieson, 1991). Attitude to a technology therefore appears to incorporate aspects of both the cognitive and affective elements while using a technology, as well as the learned disposition towards use, rather than an attitude to the hardware itself.
this way, it appears attitude is formed from perceptions and experiences of the technology, and reinforced through behaviour as a learned disposition.

2.9.1a Prediction of Behaviour from Attitude

Change in the cognitive component occurs through mass media messages and personal interaction with the object (observing and absorbing new methods or information regarding the object). Change in the behavioural component occurs as a result of social norms and regulatory/policy changes – i.e. the individual is forced to behave in a certain way to fit into society (either within a social class grouping, or within society as a whole) (Triandis, 1971). While there is a recognised link between intention to perform behaviour (e.g. use a technology), and the actual behaviour being carried out, often the behaviour is not carried out even when the intention to behave in a certain manner appears strong (Hansen, Jensen and Solgaard, 2004).

Based on dissonance theory (the tendency for individuals to seek consistency among their beliefs and attitudes which leads to corrections to eliminate the inconsistency (or dissonance)) (Festinger, 1957 cited in East, 1990), it would appear that a change in attitude is the only component necessary to effect a change in behaviour. Change in the affective component occurs through exposure to the object, and a person’s positive or negative experiences as a result of exposure to it.

Behaviour is determined by what people would like to do (personal motivation) and what they think they ought to do (from social norms). Therefore behaviour is a function of not only attitude, but also social norms; personal habits; and an individual’s perception of reward or discipline when acting out the behaviour in terms of either external (e.g. praise from peers or superiors) or internal (personal satisfaction) forces (Triandis, 1971). When these four elements (attitude, social norms, habits and reward) are in alignment, and consistent with the behaviour, then the consistency between attitudes and behaviour is present. If not, then attitude and behaviour are inconsistent, and the behaviour more difficult to predict from attitude alone. Ajzen and Fishbein (1980) posited that external variables (such as personality, demographics and class or nationality) influence behaviour indirectly, as they relate to relevant beliefs (cited in East, 1990). Therefore, according to Ajzen and Fishbein, beliefs mediate these external variables. However, East (1990) cites a number of studies (Fredierick and Dossett (1983); Crosby and Muehling (1983); and Moreton and East (1983)) that show
that external variables, in particular past experience, can have a direct influence on behaviour, not mediated through attitude and behaviour alone. In particular, Crosby and Muehling (1983) found external variables improved prediction of behaviour directly (cited in East, 1990) and East (1990 pg 108) states “clearly some influence does take place outside the cognitive paradigm specified by Ajzen and Fishbein”. Attitude alone therefore appears to have only a weak link to actual behaviour, and the direct influence of other factors which are not mediated by attitude seems most likely.

2.9.1b Behavioural Intention and Actual Behaviour

Gollwitzer proposed a concept to understand the process whereby intentions become actions, called implementation intention (Gollwitzer, 1993 cited in Hansen, Jensen and Solgaard, 2004). These implementation intentions mediate the intention \( \Rightarrow \) behaviour relationship (Hansen, Jensen and Solgaard, 2004) by helping to maintain behavioural intentions through self-regulating behaviour (Sniehotta et al., 2006). Hansen et al. (2004) describe individuals with low action controls as state-oriented whereas high action control individuals are described as action-oriented. Action-oriented people have less difficulty initiating the actions needed to perform the behaviour, and tend to persist until the behaviour is completed. They are also able to stop behaviours that are not beneficial in attaining their goal (bad habits and distractions) and are more objective about past negative behavioural experiences.

2.10 SOCIAL COGNITION MODELS

Social cognition relates to how people process social information. The theory of social cognition proposes that behaviour change is affected by environmental influences, personal factors, and attributes of the behaviour itself (Bandura, 1986). Models relating to mental processes that impact on a person’s beliefs and attitudes relating to social judgements and perceptions, such as the models outlined below, are termed social cognition models (Sniehotta et al., 2006; Grizzell, 2003).

2.10.1 Theory of Reasoned Action (TRA)

Fundamental theories relating to attitude, intention and behaviour have been extensively reviewed in a number of consumer behaviour texts (e.g. Hawkins, Best and Coney, 1992;
Kotler, 1986; Engel, Kollat and Miniard, 1990.). One of the most influential models, the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975), and derivatives of this model are explained here as this model is a precursor to the Technology Acceptance Model (which is outlined in more detail in section 2.11.1), used to explain the behavioural intention to use an information technology.

In terms of models for attitude and behaviour, Fishbein and Ajzen’s (1975) Theory of Reasoned Action (TRA) model (Figure 12) is one of the most widely studied and concerns behavioural, attitudinal, subjective norm, and intentional determinants. The TRA indicates that two constructs, subjective norms (SN) and attitude (A) towards behaviour are the primary influences forming a behavioural intent. It proposes that “a person’s attitudes toward a technology play an important role in determining their behaviour towards it” (Flett et al, 2004 pg 200) and that behavioural influence of other external variables are mediated through these two primary constructs. Fishbein and Ajzen (1975) argue that intention is the sole determinant of behaviour, and the subsequent extensions of this original model, the Theory of Planned Behaviour (TPB) (Ajzen, 1985 cited in Taylor and Todd, 1995a) and the Technology Acceptance Model (TAM) (Davis, 1989) continue this assumption, although TPB identifies volitional control as a secondary determinant. These three models all see attitude as an affective response that mediates between beliefs and behavioural intention. The TRA is a generic model "designed to explain virtually any human behaviour" (Ajzen and Fishbein, 1980 pg 4 cited in Davis, Bagozzi and Warshaw, 1989) however, support for the TRA model has been shown in the context of information systems (IS) through empirical studies that favour the attitude$\Rightarrow$behavioural intent and behavioural intent$\Rightarrow$actual usage relationships (Davis, Bagozzi and Warshaw, 1989). The TRA model therefore uses Attitude (A) and Subjective Norm (SN) constructs as a predictor of behavioural intention (BI), which in turn indicates expected behaviour (B) (i.e. behaviour is a direct function of behavioural intention).

![Fig 12: The Theory of Reasoned Action (adapted from Fishbein and Ajzen, 1975)]
2.10.2 Theory of Planned Behaviour (TPB)

Ajzen’s formalised adaptation of the TRA to account for situations where an individual might not have complete control over the behaviour was postulated as the Theory of Planned Behaviour (TPB) (Ajzen (1985, 1991) cited in Taylor and Todd, 1995a), as Ajzen saw this aspect as a limitation of the TRA. The TPB model (Figure 13) introduces a new construct named Perceived Behavioural Control (PBC), in addition to the two constructs of Attitude (allowing for behavioural beliefs) and Subjective Norm (allowing for Normative beliefs) present in the TRA. This new construct is used to encompass the two determinants of ‘facilitating conditions’ (which take into account availability of resources needed to undertake the behaviour) and ‘self efficacy’ (which takes into account the person’s self confidence in their ability to carry out the behaviour) (Taylor and Todd, 1995a). Self-efficacy is a central tenet of social cognition theory (Grizzell, 2003), and therefore the TPB challenges this aspect, in questioning this underlying assumption. Teo and Pok (2003) cite both Mathieson (1991) and Moore (1991) as having shown both subjective norms and perceived behavioural control as being influential on IT behaviour.

Both the TRA and the TPB treat the weighting of the constructs equally, however, this integration of an individual’s beliefs has been criticised as it may obscure the true influence of each belief on behavioural intention. Taylor and Todd (1995a) indicate that this is because an individual may place a different emphasis on each component for any given product.

2.10.3 Decomposed Theory of Planned Behaviour (DTPB)

Several researchers have attempted to ‘decompose’ the three constructs of the TPB in order to better explain belief structures and intention. A number of attempts have been made to better predict behavioural intention through examining decomposition and crossover effects (Taylor
In justifying a study of TPB, Taylor and Todd (1995a) cite the work of both Bagozzi (1981; 1982; 1983) and Shimp and Kavas (1984) in opting for multidimensional constructs (Taylor and Todd, 1995a). Taylor and Todd state Bagozzi (1981; 1982; 1983) found that “when constructs were combined into a unidimensional construct, invalid results were obtained” (Taylor and Todd, 1995a pg 140).

In addition to the decomposition of Perceived Behavioural Control into determinants of self efficacy and facilitating conditions, the decomposed TPB model (Figure 14) also decomposes the Attitude construct into three key determinants (as determined by Tornatsky and Klein, 1982 cited in Taylor and Todd 1995a) – Relative Advantage, Complexity and Compatibility; while the Subjective Norm construct is held as a unidimensional construct.

Sniehotta et al. (2006) indicate that these social cognition models only elaborate the constructs that occur at the pre-intent phase of decision-making, although post-intention constructs more accurately approximate actual behaviour, stating that to overcome this limitation “identifying psychological constructs and processes that are located between intentions and behaviour seems to be a promising approach to bridge the gap between intention and behaviour” (pg 88). Many of these constructs are self-mechanising, or situational, and involve aspects of action control and the market environment, rather than individual attitudes and subjective norms. It is important, therefore, for the models to be used
in the context of both the market environment, and other moderating factors that may impact directly on actual behaviour.

### 2.11 EXPLAINING THE BEHAVIOURAL INTENT TO USE AN INFORMATION TECHNOLOGY

Theories that draw on the constructs of behaviour prediction, user acceptance and innovation adoption are relevant in the understanding of factors influencing individuals’ acceptance of and reasons for using an innovation (Chen, Gillensen and Shernell, 2002). As stated, social psychology has established that behaviour is predicted by an individual’s attitudes toward the behaviour, as opposed to attitudes to the objects involved in the behaviour (Triandis, 1971; Mathieson, 1991). The theory that a set of attitudinal belief structures can be derived from the literature into Perceived Characteristics of Innovations (PCI) has been used extensively to study the adoption of computer technology to good effect (Davis, 1989; Davis, Bagozzi and Warsaw, 1989; Mathieson, 1991). To determine what motivates individuals to use IT or computer technologies, a number of models have subsequently been developed.

The theory of reasoned action (TRA), theory of planned behaviour (TPB), and innovation diffusion theory (IDT) have all been used to understand individuals’ uptake and use of computing and related information technology innovations (e.g. Dishaw and Strong, 1999; Teo, Lim and Lai, 1999; Mahler and Rogers, 1999; Igbaria, Iiavari and Maragahh, 1995; Agarwal and Prasad, 1997). Davis (1989) introduced an IT-specific theory in the Technology Acceptance Model (TAM), which has also been applied to explain computer acceptance, as well as related IT fields such as internet, online shopping, e-commerce and internet banking.

This section explores the Technology Acceptance Model (TAM), outlining the validity of the model, its use and success in indicating uptake and use of a number of IT devices, including the internet, and how it has been recently extended to include more customised constructs in order to better explain use of newer information technologies. Of particular interest to this study is the use of the TAM in explaining the use of the internet, and the extension of the TAM to explain intrinsic motivations for using IT.
2.11.1 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a derivation of the earlier Theory of Reasoned Action (TRA) for explaining the behavioural intent relating to IT usage (Davis, 1989) (refer to section 2.10.1). The TAM (Figure 15) uses only two determinant factors for attitude — namely perceived ease of use, and perceived usefulness — and further posits that perceived usefulness is also a direct construct influencing behavioural intention, aside from attitude. The Subjective Norm construct of the TRA is not included in the TAM model because a number of studies (e.g. Mathieson, 1991; Davis, Bagozzi and Warshaw, 1989) have shown Subjective Norm not to be significant in explaining IT adoption. TAM is therefore considered to be a special case of TRA (Dishaw and Strong, 1999; Taylor and Todd, 1995). It deviates however, in that where TRA claims attitudes completely mediate behavioural intention, in the work setting (the environment in which TAM was originally developed), workers’ perceived usefulness of the technology may influence intention to use IT technologies regardless of workers’ attitudes towards the computer technology (Taylor and Todd, 1995).

![Fig 15: The Technology Acceptance Model, as devised by Davis (1989)](source: Davis, Bagozzi and Warshaw (1989))

The Technology Acceptance Model also differs from the Theory of Planned Behaviour in that it assumes that behaviour is voluntary on the part of the user, and therefore, the Perceived Behavioural Control (PBC) construct of the TPB is not a determinant.

Chen et al. (2002) states that TAM theory is complementary to the theory of Innovation Diffusion Theory (IDT) in that “IDT involves the formation of a favourable or unfavourable attitude toward an innovation; however, it does not provide further evidence on how the attitude evolves into the accept/reject decision. TAM..... provides theoretical linkages among beliefs, attitude, intention, and action.” (Chen, Gillenson and Shernell, 2002 pg 708). The TAM therefore seeks to understand the consumer’s psychological and behavioural incentives to use IT technology, and posits that two determinants together explain a person’s attitude...
towards adopting and using a technology, through incorporating the three key PCI identified by Tornatsky and Klein (1982) of relative advantage, compatibility and low complexity and fitting these to the constructs of perceived usefulness and perceived ease of use to explain attitude:

**Perceived Ease of Use** is “the degree to which a person believes that using a particular system would be free of effort” (Davis, 1989 pg 320) and is synonymous with the complexity and compatibility PCI (Chen, Gillenson and Shernell, 2002).

**Perceived Usefulness** is “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis, 1989 pg 320) and is synonymous with the relative advantage PCI (Chen, Gillenson and Shernell, 2002).

Like the TRA, the attitude construct in TAM remains the driver behind the intention to use the technology, and Behavioural Intent determines usage. However, it differs from the TRA in that intent is seen as being determined directly by attitude, as well as perceived usefulness (Davis, Bagozzi and Warshaw, 1989).

Attitude has been shown to predict adoption and usage behaviour of IT (Dishaw and Strong, 2002). The TAM proposes that the easier a technology is to use, and the more useful it is perceived to be, the more positive is the individual’s attitude towards the technology. Additionally, the more positive their attitude, and the more positive the perception of its use, the more they will intend to use it. Ergo, usage of the technology increases by the individual (so long as action control remains strong), and once a critical mass of adopters is reached, the technology is soon diffused throughout society.

Triandis (1971) stated that personal convictions, social norms and habits also influence actual behaviour alongside attitude. However, Davis (1989) suggested that social norm was not as relevant in the formation of behavioural intent to use an IT. Given that Davis (1989) found little influence of social norms for IT adoption, and habits may not yet be formed for newer technology uses (although experience in similar product classes is known to have an impact) (Fenjchel, 1981), it was posited that reward and attitude would be the major influences in IT usage. Yang and Yoo (2004) suggested that Davis, Bagozzi and Warshaw (1989) did not find a significant influence of attitude because the cognitive attitude component was offset by the significant influence of affect (Yang and Yoo, 2004), suggesting that the cognitive and affective aspects of attitude were separate constructs, showing that user beliefs and attitudes
are not interchangeable in an IT context. They found, however, that rather than the affective aspect of attitude having a significant impact, it is actually the cognitive aspect that explains IT usage, and that the affective aspect has little relevance, and is a dependent variable rather than a mediator (Yang and Yoo, 2004).

2.11.2 Model validity

In 1995, Taylor and Todd undertook a ‘test of competing models’ to compare the TAM to both TPB and the Decomposed TPB in explaining student’s use of a Computing Resource Centre (Taylor and Todd, 1995). Their results indicated that all three are comparable models, however, the decomposed TPB better explained behavioural intention than the other two models, although only slightly:

- TAM – explained 52% of variance for behavioural intention
- TPB – explained 57% of variance for behavioural intention
- DTPB – explained 60% of variance for behavioural intention

Additionally, this work supported Davis’ claim that adding subjective norm and perceived behavioural control constructs to the TAM model did not increase the ability to predict IT adoption behaviour substantially (Davis, 1989). Additionally, while the TPB model helps to better understand the SN and PBC constructs, Taylor and Todd’s results indicated that it takes a further seven constructs in the decomposed TPB model to increase predictive behaviour just 2% over the TAM. Taylor and Todd concluded “In short, if the central goal is to predict IT usage, it can be argued that TAM is preferable, however, TPB decomposed provides a more complete understanding of determinants of intention” (Taylor and Todd, 1995 pg 169).

In contrast to the findings of Taylor and Todd, in a comparative study between TAM and TPB where students could use either a spreadsheet or calculator to complete a task, Mathieson had earlier found that TAM appears to explain behavioural intention slightly better than TPB, and the TAM model also explained attitude to using an information system much better than the TPB (with explained variance of 0.727 vs. 0.388) (Mathieson, 1991). This appears to agree with Davis, Bagozzi and Warsaw’s suggestion that the TPB’s handling of social issues is relatively poor (Davis, Bagozzi and Warsaw, 1989). Mathieson concluded that TAM ought to be the model of choice if attitudinal variance is a main interest. Agarwal et al. (1998) questioned the appropriateness of using TAM to predict future use intentions as their findings were unable to find any distinction between PU and PEOU in those who had already adopted
the IT innovation. They suggested using TAM for predicting non-user adoption rather than current user adoption behaviour. However, this is a singular cautionary note amongst a number of studies showing TAM used to good effect in explaining behavioural intentions towards IT (Agarwal et al., 1998).

Yang and Yoo (2004) emphasise the need to ensure the distinction between the affective and cognitive elements of attitude are not overlooked in research involving attitudes towards using an information system (IS) or information technology. The finding of Davis, Bagozzi and Warshaw (1989) that attitude itself is not significant in explaining IS usage behaviour is challenged by Yang and Yoo, who found that using the cognitive dimensions of attitude in their study allowed attitude to explain twice as many variances as perceived usefulness, but the affective component did not explain IS usage at all (Yang and Yoo, 2004). They therefore proposed that for IS studies using the Technology Acceptance Model, the affective attitude should be taken as a dependent variable rather than a mediator, however focus should be on the variables relating to cognitive elements of attitude (Yang and Yoo, 2004). This indicates the difference between IS and IT, and may also explain why Taylor and Todd (1995) had a higher rate of variance explained by a decomposition of the theory of planned behaviour, as this model includes aspects of compatibility and complexity directly, as well as relative advantage.

Taylor and Todd (1995a) inferred that a search for a ‘best’ model depends on what the model is to be used for, as certain situations of use, or use environments will affect both the Perceived Behavioural Control and the Subjective Norm applicability of any model (Taylor and Todd, 1995a).

2.11.3 Applications of the Technology Acceptance Model

The Technology Acceptance Model (TAM) has been used for the past 15 years to explain consumer behaviour across a fairly broad category of innovations, mainly relating to ICT and IS systems, but other industries also. For example, Flett et al. used the TAM to explain the adoption of dairy technologies (Flett et al., 2004). Xu and Quaddus (2004) state “TAM has been widely applied, and there are a large number of studies in support of TAM” (pg 8). Xu and Quaddus (2004) outline 13 examples of information technologies that have been successfully studied that support and validate the TAM model, from databases and spreadsheets to facsimiles, email, and e-commerce.
More recently, TAM has been used to understand behavioural intention to adopt e-mail (Adams, Nelson and Todd, 1992); e-finance (Konana and Balasubramanian, 2005; Luarn and Lin, 2005), online shopping (Shang, Chen and Shen, 2005; Chen, Gillenson and Shernell, 2002), internet (Moon and Kim, 2001; Lin and Lu, 2000), and handheld and wireless devices (Bruner and Kumar, 2005):

**E-mail** – Adams, Nelson and Todd (1992) replicated Davis’ TAM model to explain voice and e-mail usage stating “it appears the ease of use and usefulness scales developed by Davis fared well in this replication.....it indicates the general applicability of these scales for different research types of questions” (pg 231). However, the authors proposed that the model relationships between ease of use and usefulness were “more complex than is typically postulated” (pg 245).

**E-finance** – In an application of TAM to explain mobile banking, Luarn and Lin (2005 pg 887) “successfully applied the TAM in a new IS context (i.e. mobile banking)” finding that Perceived ease of use and Perceived usefulness were significant in explaining behavioural intention of using mobile banking services.

**Online shopping** – Shang, Chen and Shen (2005) investigated the determinants of attitude on actual online shopping behaviour, as they perceived the impact of the WWW on shopping behaviour from recent studies to be inconclusive. Using a web-based survey, they found that their study agreed with the TRA and TAM argument that the effects of external variables are mediated by an individual’s cognitive beliefs. In this study, cognitive absorption (the extent of attention conducive to flow experience during use – ‘losing oneself in the activity’) was found to be mediated by perceived ease of use. Chen, Gillenson and Shernell (2002) also stated that consumer acceptance of virtual stores have been mixed and inconclusive. Using the TAM model and a web-based survey to understand factors influencing the use of virtual stores, they concluded that “The classic theories on technology acceptance and Innovation Diffusion Theory are still valid in explaining and predicting user behaviour in the business-consumer electronic commerce context” (pg 715). Chen, Gillenson and Shernell (2002) found acceptance was determined by attitude, and use of virtual stores can be predicted from intention.
Internet – Lin and Lu (2000 pg 199) stated that “though some researches (sic) further modified the TAM recently and extended its application to the internet arena.....related studies of the usage behaviour in the Internet is still primitive”. They carried out a study of website users, finding the TAM fully mediated the usage behaviour, accounting for 64% of variance in usage. Moon and Kim (2001) empirically validated the TAM in the WWW context by surveying university students, however, TAM explained just 35% of variance in behavioural intention.

Handheld devices – Bruner and Kumar (2005) applied the TAM in the consumer context of a handheld internet device. Undergraduate students used a PC, a PDA or a wireless phone to navigate websites, and the results showed support for the classic attitude ⇒ intention ⇒ behaviour route.

2.11.4 Extending the TAM

There have been several research studies undertaken in the past decade to extend the TAM to include constructs other than only Perceived Ease of Use (PEOU) and Perceived Usefulness (PU) in explaining attitude towards use and behavioural intent to use an information technology. Xu and Quaddus (2004 pg 7) state that “the role of external variables has not been well explored in TAM” and Konana and Balasubramanian (2005 pg 510) state that TAM has recently been “expanded in multiple directions” in order to incorporate various other important direct and indirect influencers of attitude and behavioural intent.

- In 2000, Venkatesh extended the TAM to include social norms and developed the TAM2 (Venkatesh, 2000 cited in Konana and Balasubramanian, 2005).
- Chen, Gillenson and Sherrell (2002) extended the TAM to include a compatibility construct as a direct influence on attitude, in order to better explain online shopping behaviour.
- Extension of the TAM by including elements of PBC (self-efficacy, perceived credibility (banker trust and security) and financial cost) was undertaken by Luarn and Lin (2005) in explaining behavioural intent to use mobile banking. The study also proposed that Perceived self-efficacy was mediated by PEOU, thus having both a direct and indirect effect on Behavioural Intent.
- Xu and Quaddus (2004) established a research model to explain intention to use a knowledge management system. The study includes perceived
voluntariness and subjective norm as direct constructs influencing diffusion alongside PEOU and PU.

2.11.4a Intrinsic Motivation and the use of IT

The impact of intrinsic motivation as a determinant of real estate website use is of particular interest to this study, as intrinsic motivational factors have been found to be associated with IT use, such as flow (Csikzentimahalyi, 1975 cited in Moon and Kim, 2001) and cognitive absorption (Shang, Chen and Shen, 2005), and some have even incorporated these as constructs in behavioural models (Webster and Martocchio, 1992 cited in Teo et al., 1999; Igbaria, Liavari and Maragahh, 1995; Yang and Yoo, 2004).

Igbaria et al. (1995) posit that although perceived usefulness and perceived ease of use are primary motivators for computer use, fun could be a ‘fringe benefit’ (intrinsic motivator) of the extrinsic rewards from using computer technology. In contrast to Igbaria et al., Bruner and Kumar (2005) found that the fun of using an IT technology was in fact “a more powerful determinant of attitudes toward usage than the perceived usefulness of the device” (Bruner and Kumar, 2005 pg 5). Bruner and Kumar also posit that fun is a result of ease of use of a device, as if something is easier to use, it will be more fun to use than a more complex and frustrating device. However, ease of use may detract from the ‘optimal challenge’ aspect of intrinsic motivation, and cause less user satisfaction if the use is intrinsically motivating (Bruner and Kumar, 2005).

Perceived playfulness is perhaps the most discussed intrinsically motivating factor in IT use, and has been identified as an important motivator for the use of computers by Davis, Bagozzi and Warshaw (1989), Atkins and Kydd (1997) (cited in Moon and Kim, 2001), and Igbaria et al. (1995). Most research into playfulness with respect to IT use has involved studies of ‘flow’ – which is defined as “the holistic sensation that people feel when they act with total involvement” (Csikzentimahalyi, 1975 cited in Moon and Kim, 2001) – particularly in relation to use of computer games.

Moon and Kim (2001 pg 219) considered playfulness as “an intrinsic belief or motive, which is shaped from individual experience in the environment” and suggested that those who had a more positive playfulness belief with respect to the internet would view interactions on the internet more positively. They found that perceived playfulness influences user attitude
towards the WWW, and has a significant influence on behavioural intention (Moon and Kim, 2001). Their study also confirms Bruner and Kumar’s argument that the perception of ease of use is significantly related to perceived playfulness (Bruner and Kumar, 2005).

Shang, Chen and Shen (2005) introduced both intrinsic motivational and social norm constructs into the TAM model through the construct of cognitive absorption (the extent of attention conducive to flow experience during use – ‘losing oneself in the activity’) and fashion involvement (the extent to which one’s behaviour is affected by fashion trend). Both constructs were found to be direct influences, and cognitive absorption was also mediated through PEOU and PU.

Four studies were found to extend the TAM in a similar manner using a construct to account for ‘fun’, ‘playfulness’ or ‘enjoyment’. These are of particular interest to this study, as they relate directly to the intrinsic motivation for using an information technology tool:

![Diagram of the basic TAM model extended to account for perceived enjoyment construct](image)

**Fig 16: The basic TAM model extended to account for perceived enjoyment construct**

The above basic model (Figure 16) was used by Igbaria et al. (1995) who included a perceived fun construct to explain behavioural intention to use a computer technology; Teo, Lim and Lai (1999) also used the same research model to explain internet use through the introduction of the perceived enjoyment construct; and Moon and Kim (2001) explained internet use through introducing the similar construct of ‘perceived playfulness’, however, this construct was seen as also having direct influence on BI (i.e. not mediated through Attitude), so a link directly from perceived playfulness to BI was added to the model in this
study (see Figure 17 below). Moon and Kim (2001) defined playfulness in relation to the internet as having three components:

- **Concentration** – the extent to which an individual perceives that his or her attention is focussed on the interaction with the WWW
- **Curiosity** – the extent to which an individual is curious during the web interaction
- **Enjoyment** - the extent to which an individual finds the interaction intrinsically enjoyable or interesting

Fig 17: The extended TAM model for perceived playfulness, as used by Moon and Kim (2001 pg 220)

Bruner and Kumar (2005) extended the TAM for consumer IT applications (intention to use a handheld internet device was studied) and dubbed the research model the c-TAM (Figure 18). A strong difference with this model and that of the original TAM or that of Figure 16 was the indirect influence of PEOU on attitude / behavioural intention, being mediated through both perceived fun, and perceived usefulness, with no direct link given from EOU to attitude (Bruner and Kumar, 2005):

Fig 18: The c-TAM model
Source: Bruner and Kumar (2005 pg 554)
2.12 DISCUSSION

2.12.1 Summary

When a consumer recognises a product need, in order to make an informed choice of purchase, information search occurs. The level of search conducted depends largely on prior knowledge of the market and product category, and also on the level of risk involved in making a poor choice. In most commodity and fast moving consumer goods purchases, the risk is sufficiently low that an internal search is sufficient, however, in the case of consumer durables and high involvement purchases, external search is also undertaken.

The knowledge gained through information search influences a person’s attitude towards purchase behaviour. Triandis (1971) outlined three aspects that comprise a person’s attitudinal response – how a product makes them feeling; what they know or believe about it; and their previous experiences or predispositions towards it. Other aspects also influence the way people choose to behave when looking for a product, including social norms, personal habits, and the reward (either extrinsic or intrinsic) associated with the behaviour. These aspects can affect not only what to buy, but how to buy it, and when and where to buy it. They are also influential during the external search stage for higher involvement purchases, influencing which information channels to use. Duncan and Olshavsky (1982) state beliefs concerning which information search sources and information screening devices will aid consumers the most will affect the search activity employed.

Consumers use information search mainly to reduce risk, and also because the process of finding information, and becoming more knowledgeable about the market, can be intrinsically motivating, especially for higher involvement consumer decisions. The internet is a new mode of information conduit by which consumers can find information about products and services. It has the potential to alter purchasing patterns in terms of gaining and acting on information received. Real estate websites are relatively recent (they have been available in New Zealand since 1995) and therefore may potentially have altered the nature in which people are purchasing houses; they have definitely influenced the nature of client interaction with realtors, and how clients undertake information search for a house.

For new technologies to be diffused throughout society, three elements are critical - information exchange; the perceived characteristics of innovating; and a good experience
from early adopters, which is communicated to the rest of the market. For interactive technologies, there requires a critical mass of adopters to make the technology effective. Geroski (2000) indicates that later adopters will often not only adopt the technology, but will adopt the preferred brand of technology that is has been deemed most useful or user friendly by earlier adopter trials, resulting in an information cascade. With word-of-mouth information exchange comes a change in attitude, as people do not just give objective information to one another, but express their thoughts and opinions as they give it. In this way, later adopters are jumping on the bandwagon of popular choice, and removing risk by accepting the most popular option.

Rogers’ (1961), (cited in Rogers and Scott, 1997) perceived attributes theory indicated five elements increase the rate of adoption of a technology, stating that innovations that individuals perceive to have greater relative advantage, compatibility, trialability, observability, and less complexity will be more likely to be adopted.

Three of these attributes have been found to be most salient in influencing innovation adoption for IT devices: relative advantage (or convenience); compatibility; and complexity. Tornatsky and Klein, 1982; Gerrard and Cunningham, 2003).

Working from an earlier psychological model, (Fishbein and Ajzen’s 1975 Theory of Reasoned Action), and these three key elements, Davis (1989) posited the Technology Acceptance Model (TAM) to explain the behavioural intention to use IT devices. The TAM adopts two main constructs of perceived usefulness and perceived ease of use as determinants of attitude, and thus behavioural intent, but excludes social norms as these were found to not significantly influence attitudes to IT adoption.

The TAM has been shown to be effective across a wide variety if IT devices, including e-finance (Konana and Balasubramanian, 2005; Luarn and Lin, 2005), online shopping (Shang, Chen and Shen, 2005; Chen, Gillenson and Shernell, 2002 ), internet (Moon and Kim, 2001; Lin and Lu, 2000), and handheld and wireless devices (Bruner and Kumar, 2005).

As Davis’ original model was developed for computer adoption in the workplace, more recent studies have extended the TAM constructs to account for both non-work situations of IT use, as well as more modern interactive technologies such as internet and handheld devices. One construct that has been shown to be influential in a number of studies is that of intrinsic
motivation or ‘perceived enjoyment’, and studies have proven ‘enjoyment’ to be a successful indicator for internet applications (Igbaria et al. (1995); Teo, Lim and Lai (1999); Moon and Kim (2001); Bruner and Kumar (2005)).

2.12.2 Research implications

Although search behaviour has been well-researched, it appears that research investigating the nature of high-involvement purchase has usually been undertaken on appliances and automobiles, with house-purchase behaviour the domain of mainly geographers, and ongoing research in this area is the domain of only a handful of key researchers (e.g. Palm; Zumpano; Clark and Smith) and tends to focus on search times, extent of search, and risk reduction. Clark and Smith (1982) in a review of these previous studies concluded that family size; length of residence; number of houses viewed; number of locations considered (e.g. suburbs); and household income all influenced the search duration.

A few studies are beginning to emerge that have investigated the impact of the internet in home purchase behaviour, but these are focussed on the effect of the technology on search time and costs, and demographic modifying factors, rather than on explaining the underlying determinants for use. Similarly, over the past one and a half decades since its inception, the TAM has been shown on numerous occasions to be a good model to explain IT adoption, but has only recently been investigated as a good model to explain adoption of internet technologies.

Past research shows a link in the prior knowledge and market beliefs on housing search behaviour; the continued importance of the real estate agent in the purchase process, but diminishing importance of print media such as newspapers; and the increasing use of internet by out-of-town buyers due to reduced search costs and ability to quickly inform them of the market. The studies also note the significance of the internet in allowing purchasers to ‘do their homework’ prior to purchasing, indicating a more informed client that realtors are now dealing with.

The past studies do not agree however, on elements such as the extent of search undertaken for high-involvement products, and by higher educated individuals, and whether better search technology increases search efficiencies, such as the duration of search and the number of open homes visits, or introduces more options and induces buyers to search for longer. The
studies also highlight interesting areas that can be examined further in this study, such as the nature of individual decision-making versus joint-decision-making processes, especially the impact of household size on search time.

This research study will primarily examine the applicability of the TAM model in the context of explaining the behavioural intention of homebuyers to use a real estate website during the search process for a house, as the major research question. The study will also extend the basic TAM model to account for intrinsic motivation through the construct of perceived enjoyment, given the past success of extending the TAM in this way for interactive technologies, and the intrinsically motivating aspects of shopping in general that have been found.

The impact of moderating factors on the use of real estate websites will also be examined by introducing moderating factors such as demographics (age, household income); the past experience in the housing market; property type; and distance to the real estate market.

2.12.3 Hypotheses

Davis (1989) introduced the concept of the Technology Acceptance Model, showing that the two constructs of Perceived Ease of Use and Perceived Usefulness are significant in explaining a user’s adoption of an IS technology. Several researchers have subsequently found the model to be useful in explaining user acceptance and uptake across a range of internet-based technologies (Konana and Balasubramanian, 2005; Luarn and Lin, 2005; Chen, Gillenson and Sherrrell, 2002; Teo, Lim and Lai, 1999; Lin and Lu, 2000). Therefore, the first hypotheses posit that these constructs will explain consumer acceptance in the context of a real estate website:

\[ H1: \text{There is a positive relationship between perceived usefulness and attitude to using a real estate website} \]
\[ H2: \text{There is a positive relationship between perceived ease of use and attitude to using a real estate website} \]
\[ H3: \text{There is a positive relationship between perceived usefulness and behavioural intention to using a real estate website} \]
\[ H4: \text{There is a positive relationship between perceived usefulness and perceived ease of use of using a real estate website} \]
H5: There is a positive relationship between attitude and behavioural intention to using a real estate website

Several recent studies have extended the TAM to account for a perceived enjoyment/ fun/ playfulness construct (Igbaria, Iiavari, and Maragahh, 1995; Teo, Lim and Lai, 1999; Moon and Kim, 2001; Bruner and Kumar, 2005) and have found support for this construct in the context of non-workplace and internet-based information technologies. The 6th, 7th and 8th hypotheses introduce this aspect of enjoyment into the study, in a similar manner to the basic research model used in these studies:

H6: There is a positive relationship between perceived enjoyment and attitude to using a real estate website
H7: There is a positive relationship between perceived ease of use and perceived enjoyment of using a real estate website
H8: There is a positive relationship between perceived enjoyment and behavioural intention to using a real estate website

Several studies have indicated that age is a factor in internet usage for home purchase. Littlefield, Bao and Cook (2000) found that younger buyers had greater access to the internet, and therefore were more able to use it, and Palm and Danis (2002) also found that younger persons were more likely to use the internet when searching for property. Dickerson and Gentry (1983), however, found that those accessing computers were middle-aged, and others have indicated that more mature age groups than youth are using the internet (Teo, Lim and Lao, 1999; Sultan, 2002). This corresponds with the discussions with real estate agents who indicated that the age group most likely to use the internet for property search were 25-40, in other words, those who have “grown up with the technology and are au fait with it”\(^1\). The 9th hypothesis is therefore:

H9: People less than 45 years of age will have a more positive attitude/ intention to use a real estate website than older cohorts, and more younger cohorts will have used the technology than older cohorts in the search for a house

Indicative from the characteristics of innovators is the premise that those who are quick-minded, experienced in using a range of information technologies, have higher intellect and

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\(^1\) Personal comment from real estate Sales Manager
income are more likely to adopt a technology first. Dickerson and Gentry (1983) found that adopters of home computers have higher income, and were more educated and Sultan (2002) indicated that the relatively affluent were more likely to have adopted the internet early. The real estate managers that were interviewed also alluded to wealth and professionalism as factors in real estate website use, citing those who were professional, and living in a dual-income household. The 10th hypothesis is therefore:

\[ H10: \text{People who are professionals (households with higher income) will have a more positive attitude/ intention to use a real estate website than non-professionals, and more professionals will have used the technology than non-professionals in the search for a house.} \]

Use of a real estate website is presumed to be a timesaving device, and aid in the ability to discard unwanted properties quickly, leaving a limited selection to visit however, Palm and Danis (2002) found that internet users did not visit fewer houses, as the search process on the internet stimulated them to consider a larger choice set. The Real Estate managers interviewed had anecdotal evidence that fewer open homes were being visited if real estate websites were viewed, as the ability to pre-screen and take a virtual tour made the appropriate housing choices available diminish considerably. One real estate manager indicated that as a result, the average number of open homes someone would visit had shrunk from 12-18 properties to fewer than a handful. There appears to be conflicting evidence, as on the one hand, convenience of pre-screening allows for a more efficient search, but the enjoyment and ability to view more properties through the website can enlarge the list of possibilities. The factors of investment also enter the equation, as investors are often buying sight-unseen. Real estate managers are aware of the propensity of investors to buy quickly and be less affected by the emotional aspects of advertising. Investors were seen by the real estate managers as needing less time to make a purchase decision, not needing to physically view a property to make the decision, as the properties are very similar, and it is number of rooms, size and price that interests them. Investment properties in particular were the property types more likely to gain enquiries from potential purchasers via email or internet. The 11th, 12th and 13th hypotheses are therefore:

\[ H11: \text{People who are buying an investment property will have used a real estate website to a greater extent than those who are buying family homes.} \]
H12: People who have used real estate websites to search for property will have visited less open homes.

H13: People who have used real estate websites to search for property will have spent less time in the search process before a suitable property is found.

Palm and Danis (2002) found that lower familiarity with the local buying market led to more frequent internet usage, and that people moving interstate were more likely to use the internet to search for property information. There is a known influence of prior market beliefs and market knowledge on housing search behaviour. Anglin (1997) found experienced buyers in real estate took significantly less time to purchase property than less experienced buyers. The perception of risk, especially by first home buyers, may also impact on the search time and search channels used. First home buyers are less experienced in the market, and need to make themselves knowledgeable of the market before being able to risk a purchase decision (Findsen, 2005 pg 19; Zumpano et al., 2003). Real estate websites allow out-of-town buyers the opportunity to view properties and purchase without having physically seen or experienced the property. Out of town buyers who have limited time are known to search more intensely, also (Zumpano et al., 2003). The real estate managers who were interviewed all indicated the increase in enquiries from out-of-town buyers, especially overseas buyers in the rental markets, and the increase in sight-unseen purchases (i.e. not physically viewing a property before deciding to buy). The final hypotheses are:

H14: People who have had previous experience in purchasing real estate will use the internet to a lesser degree than those who are newer to the real estate scene.
H15: People who are buying property from outside the local area will have used a real estate website to aid their purchase decision to a greater degree than those who are buying locally.

2.12.4 Research model

The following model (Figure 19) outlines the relationships that will be used to formulate the structure of the research. Correlations between constructs and the impact of moderating factors on behavioural intention to use a real estate website will be analysed, but the research is limited in not empirically testing the model in terms of the factors on actual use. However, the impact between users and non-users in terms of actual search duration, and number of open homes visited, will be analysed.
Perceived usefulness (PU)
Perceived Ease of Use (PEOU)
Perceived Enjoyment (PEaj)

Moderating Factors:
H9: Age
H10: Professionalism
H11: Property type
H14: Experience
H15: Distance to market

Attitude (A) → Behavioural Intent (BI)

Actual use
H12: No. of open home visits
H13: Search Duration

Fig 19: Research Model
Chapter 3: Methodology

3.1 INTRODUCTION

3.1.1 Purpose Of The Study

The purpose of this study is to determine the motivational factors influencing uptake of real estate websites by a homebuyer, during the information search phase, when looking to purchase a new home, and how these factors impact on actual search behaviour, in terms of number of open homes visited, and duration of search. Eight motivational factors will be assessed — the three core constructs determining attitude to using a real estate website, and the additional five moderating factors of age; professionalism; property type being purchased; previous housing purchase experience; and distance from the market.

Previous studies have investigated the use of the internet in aiding consumers in searching for real estate property, and have indicated key demographic and behavioural influences of consumer use and uptake of the technology (Palm and Danis, 2002; Littlefield, Bao and Cook, 2000). This research extends the study into the extent to which purchasers use the internet, by not only examining demographic and behavioural influences in the context of the New Zealand real estate market, but also through examining the psychographic influence of the key constructs of the technology acceptance model – perceived ease of use and perceived usefulness – and testing the relevance of the perceived enjoyment/ fun construct in the context of this technology search tool.

3.1.2 Research Stages

The research has been conducted in three main stages. Firstly, a literature research was undertaken to determine the state of play of the internet and real estate market, investigate theoretical studies relating to information search and innovation adoption, as well as examining past studies relating to interactive technology adoption, and use of the internet in real estate purchase.

Secondly, in order to better understand the market environment, investigate the reality of the literature findings in the national context, and also identify anecdotal reasons for adoption of
real estate websites by local property purchasers, exploratory interviews were held with six Sales Managers at five local realtor firms.

Thirdly, in order to gather data by which to examine the research model, a mailout survey was conducted with recent home purchasers in the Bay of Plenty region. This allowed data to be collected regarding the respondents’ search behaviour while looking for a home, as well as their attitudes to using a real estate website during the search for a home.

The overall research has the following objectives:

- Determine the suitability of an extended TAM model (with the additional factor of perceived enjoyment) in explaining the main factors impacting on intention to use a real estate website during new home purchase
- Determine any demographic or psychographic factors that also impact on the acceptability of the real estate website as a search tool during home purchase
- Discuss the implications of the findings for real estate marketing (recognising the limitations of this small locational study)

The primary research phase examines the first two objectives through a targeted survey method.

3.2 PRELIMINARY RESEARCH

3.2.1 Literature Review

In order to identify a set of key research issues relating to the research topic, and to establish known trends and motivational factors from similar past studies, a literature review was initially undertaken (refer Chapter 2).

The review investigated published literature relating to the information search stage of consumer purchase behaviour (with particular emphasis on high-involvement purchases); the diffusion and adoption of new technologies; and models explaining attitudinal factors and intention to accept new technologies, with an emphasis on ICT technologies.

The literature review was used to narrow the scope of the topic, and identify key gaps in published literature that could be further explored.
From the literature study, a research approach involving exploratory interviews with real estate agents, and a quantitative survey was selected. The target sample was easily identified as real estate purchasers, however, as the principal researcher did not have a thorough understanding of the local market dynamics, or direct access to the target audience, an initial exploratory interview with those who did (real estate sales managers) was seen as beneficial for both scoping the research design, and identifying a suitable sample population.

3.2.2 Interviews with Real Estate Agents

Informal interviews were undertaken with Sales Managers at six local Rotorua real estate agencies representing most of the major national and regional firms, during July-October 2005. These interviews helped to better understand the real estate market; the nature of internet use in the marketing of properties; and to gain insights into the interviewees’ views on factors influencing real estate purchasers’ use of real estate websites as a tool to aid decision-making.

These interviews clarified the aims of the research and provided a basis for the survey questions to ask, and enabled access to the target audience via the firms’ database of clients. Follow-up meetings with three real estate agents allowed pre-testing of the survey form, and minor adjustments to the question structure and layout.

3.3 PRIMARY RESEARCH DESIGN

This section will discuss the key decisions made in terms of the primary research format and survey method. The following will be discussed:

- Qualitative versus Quantitative Research
- Survey Method
- Survey Format
- Questionnaire Design
- Data Collection Procedure
3.3.1 Qualitative versus Quantitative research

Qualitative research methodologies (those that are outside of a quantitative approach) are often contrasted with quantitative research methodologies. Qualitative research methods are useful in gaining valuable insight into how people behave, feel, or are likely to act in a given situation, including their motivational drivers. Quantitative research is useful in measuring the extent to which these behaviours occur by classifying data into sets, or numerical values. Hague and Jackson (1987) state qualitative researchers seek to ‘understand’ rather than ask ‘how many?’ (pg 74). Qualitative methods are usually used during focus groups and in-depth interviews, where sample sizes are small, and where the drivers behind behaviour need to be examined, or the responses further clarified.

Quantitative methods are useful when sample sizes are large, and where facts and figures are needed to substantiate anecdotal evidence relating to a behaviour (Hague and Jackson (1987, pg 73).

While both can be used to examine attitudes, and are complementary, Hague and Jackson outline how the two techniques are used with different emphasis:

“In qualitative research we usually don’t know…the attitude dimensions…. In quantitative research we know the relative attitude dimensions and set out to measure them”  Hague and Jackson (1987, pg 75)

The survey design primarily concentrated on quantitative research questions, for two reasons. Firstly, the previous exploratory interviews with real estate agencies identified a number of key reasons for use of the real estate websites, with anecdotal examples of trends that supported these reasons. Further qualitative research would possibly identify more reasons, and give some support to the real estate managers’ claims, but would not be able to establish the extent of the behaviour as quantitative data could.

Secondly, the literature study had already identified a number of key determinants known to affect uptake of ICT devices, through the TAM model, and previous research into the determinants of uptake using this model used quantitative Likert scale items.
3.3.2 Survey Method

Previous studies testing and extending the technology acceptance model were found to have used a set of constructs and items, from which factor analysis was used to analyse the data and determine the key influencing factors (Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al, 2002; Moore and Benbasat, 2001; Agarwal and Prasad, 1997; Luarn and Lin, 2005; Moon and Kim, 2001).

In the context of this research study, it was necessary to gain information from members of the public who were involved in the purchase of a house. Common survey research methods include: telephone interviewing; face-to-face personal interviews at home or place of business; mailout surveys; in-store surveys; and electronic surveys via internet or email.

Telephone and face-to-face personal interviewing were not appropriate due to the study’s required sample size, timeframe, and budget restrictions. Also, being a highly-involved product, there are often very personal or emotive reasons for purchasing a house, and people may not be willing to discuss the purchase aspects. It is also difficult to elicit attitudinal scalar information over the phone, and this is better obtained through self-completion methodologies.

In-store surveys were rejected due to the infrequency of purchase, not being a retail item, and lack of any ‘outlet’ in some cases, when bought sight unseen or where no open-home was held.

Electronic and email surveys would have been a simple, cheap and quick option, however, these would unduly bias the respondents to those who were already familiar with the technology in question.

After consulting with the real estate agencies, a targeted mail survey method was suggested as the most appropriate method of contacting the purchasers and eliciting the information required to complete the study, given the sample size, target audience, budget, and need for relative anonymity and quick response. Brennan (1992) states that mail surveys are a relatively inexpensive means to gather data without interviewer bias, as well as allowing respondents to complete them at a convenient time. Previous researchers have used mail surveys in research concerning ICT technology (Wu and Wang, 2005; Zumpano et al., 2002;
Dickerson and Gentry, 1983) and high involvement purchase (Ratchford, Lee and Talukdar, 2003; Palm and Danis, 2002).

3.3.3 Survey Format

3.3.3a Structure and Layout

The questionnaire was designed using the guidance of Hague and Jackson (1987) and the Total Design Method (Dillman, 1978). Both of these texts recommend strongly that the questionnaire is framed correctly in terms of layout and structure, and that the questions asked relate to the research objectives and are relevant to the sampling field or market, in order for simpler analysis and study relevance (refer Appendix B).

Dillman (1978) suggests that the initial survey questions be both obviously relating to the research topic, quantitative in nature (easily answered); and clearly neutral. Questions of a qualitative nature, those that probe, or are open-ended questions, should be kept to the middle or latter sections of the questionnaire, unless they are to clarify a question, and all classification questions (age, income, marital status etc) be kept till the end (pp 165 – 172). Hague and Jackson (1987) stress that the wording of the questions needs to be carefully thought through to avoid misinterpretation by the respondent, or a leading or biased response (pp 99-103).

The questionnaire was laid out in this manner and the questionnaire printed, single sided, on A4 paper in black ink, and stapled. The cover letter and a sheet giving information for the participant about the study, followed by an entry form for a prize incentive, were attached to the front of the questionnaire form by a paper clip. A post-paid return standard envelope was attached to the back of the questionnaire.

To aid in data entry for the return forms (in case the entry forms with addresses were not returned), the survey forms were colour-coded (printed on a different colour paper per agency) so that the agency used could be detected. The survey form was not folded in accordance with the total design method, due to procedural convenience, but sent as an A4 size package.
3.3.3b  Cover Letter

Dillman (1978) gives specific guidance in terms of the cover letter format to be used (pg 165-174), the timing of the mailout (pg 180) and follow-up letters (pp 180-190). Both Dillman (1978) and Hague and Jackson (1987) suggest a good cover letter should contain five key elements, and Dillman (1978 pp 165-172) suggests ordering these in the following manner:

1. What the study is about and its social usefulness
2. Why the respondent has been selected, that their view is of great importance to the success of the study, and a request for help in this matter
3. Assurance of confidentiality
4. Offering of an incentive
5. Stressing the need for prompt response, and thanking them in anticipation of a response.

The cover letter was written to accommodate Dillman’s advice to outline the study’s usefulness, importance of the recipient to the study, confidentiality, incentive to reply, and request for a prompt response.

3.3.3c  Prize Draw Incentive

An entry form was also included for entry into a draw for $500 worth of gardening products, as an incentive to return the form. Incentives have been shown to be useful in increasing response rates of mailout surveys, by offering a token of appreciation for the response, and also eliciting responses from persons who would not otherwise respond (Brennan, 1992; Dillman, 1978). Common incentives used for surveys include token cash values, book vouchers, and home appliances. The garden voucher was selected as the prize would be of use (and some appeal) to most homeowners, as most have properties on a section requiring gardening maintenance.

3.3.4  Questionnaire Design

3.3.4a  Types of Questions

Hague and Jackson (1987) outline five main question types used in a survey (pp 105-114):
Behavioural: Behavioural questions allow understanding of market dynamics – who is buying; what they are buying; patterns of purchase and ownership; and future purchase intentions. Usually these are sought through quantitative questioning.

Attitudinal: Attitudinal questions give information pertaining to people’s views and opinions, and the motivating factors behind the behaviour. Attitudinal questions assess latent demand; establish why people are or are not buying; and how they feel towards certain product options.

Classification: Classification questions are used to segment the sample population, for collation and comparison with each other. Usually classifications include aspects like users/ non users; age; and gender.

Additionally, there are two types of question structure for responses:

**Open-ended:** Open-ended responses allow freedom to the respondent to answer as they see fit. This allows flexibility, and can be used to gain a better understanding of why behaviour occurs, as well as allowing respondents to give information not specifically asked for elsewhere. Open-ended questions are useful in areas where no obvious checklist options are apparent; or where to list options would introduce bias in the response.

**Closed:** Closed questions are used where answers have been pre-coded to simplify analysis, and aid the respondent to select only the most appropriate response for their situation (i.e. they don’t have to think too hard to give a response). This significantly reduces both the time required to complete the survey, and the time taken with data entry.

Behavioural, Attitudinal and Classification questions were included in the questionnaire design (*refer Appendix B for Questionnaire form*). The behavioural questions were used to address the search process itself – in terms of quantifiable aspects of search time, property type desired, price range, and property ownership. The classification questions were used to segment the market by demographics such as age, income, location and property type (investment *versus* family homes). Attitudinal questions were used to examine user experience, and to test the constructs of the TAM using psychographic items in a 7-point Likert scale.
Previous studies investigating the TAM for computer, communications and interactive technologies were found to use similar scales and items (Teo et al. 1999; Bruner and Kumar, 2005; Yang and Yoo, 2004; Igbaria et al. 1995; Dishaw and Strong, 1999; Davis 1989; Moon and Kim 2001; Shang et al., 2005; Chen et al 2002; Luarn and Lin 2005; Teo and Pok, 2003). Items used successfully by a majority of studies were selected for use in the scale items for Perceived ease of use and Perceived usefulness, unless the item was not relevant to the study (e.g. related to hardware design issues of a device, such as ‘I believe …is cumbersome to use’; or was worded so as to presume prior use, such as ‘My interaction with …is clear and understandable’). A few items that had been used in only one or two prior published studies were also selected, however, as these related specifically to information search, and also related to some of the qualitative interview comments from Sales Managers (e.g. ‘Using…enables me to access the newest information’ and ‘Using …is convenient’).

For the scale items of Perceived Enjoyment, due to fewer studies being undertaken investigating this construct, items were selected that best reflected the intrinsic motivational aspects of interactive non-workplace technologies.

All questions were closed except the two questions relating to real estate website use and experience in using real estate websites (Q 5 and 6) which were left as open-ended questions.

3.3.4b Question Sequence

In accordance with Dillman’s recommendation of question sequence (refer section 3.3.3a), the following sequence was used (Dillman, 1978 pp 165-172):

Q 1&2: Define the nature of the property sought

The first question determined the type of property being sought, while the second asked the primary purpose it would be used for. These questions were: easy to answer; strongly relevant to the topic of house purchase in the Bay of Plenty; and not too probing or personal, thus satisfying Dillman’s advice relating to initial questions. These questions were used to segment the sample population into family home versus investment purchasers, and to establish the house types being sought for this purpose.
**Q 3 - 6: Indicate sources of information used, and experience with internet use**

Question 3 asked respondents to indicate the various sources of information consulted during the search for a new home. As many sources as possible were given as options, including the internet. Questions 4 – 6 elicited further information from users of the internet, including which websites were used, their primary motivation for using this information source, and the experience they had when using it. The two open ended questions (Q 5 and 6) were added at the request of real estate managers, and were useful in finding some of the areas where this technology could be improved for users, as well as verifying and expanding on the major determinants of use for this tool.

**Q 7 – 9: House price and location**

Question 7a asked for the property price range people were searching within, and questions 7b to 9 related to the location in which they were searching. This information was used to determine local versus out-of-town buyers, and cross-checked with the data relating to the types of homes sought, as investment buyers are usually buying in the lower price brackets.

**Q 10: Time to search**

Question 10 was used to determine the buyers’ search time for a new property. Both the literature (Palm and Danis, 2002) and the real estate sales managers indicated that time was a precious commodity for people, and that a device to speed up the search time would be desirable. In particular, those who used the internet were expected to find out about properties sooner, and act on the information, as they had access to technology that would give an instant refined decision set of potential properties.

**Q 11 and 12b: Home ownership and purchasing experience**

Question 11 investigated current ownership levels, and question 12b requested information relating to past purchasing behaviour, to establish each respondent’s level of experience in the property market.
Q 12: Open home attendance

Question 12 asked for an indication of the number of open homes visited during the search period, to determine trends in open home visits as a result of the availability of internet information, and the number of ‘sight unseen’ buyers. The perception from Sales Managers is that homebuyers may be physically going to just 5-6 open homes, but viewing 50-100 homes online.

Q 13&14: Attitudinal items

Questions 13 and 14 were used to test the TAM model constructs, extended for perceived enjoyment. Previous literature has outlined a number of common constructs and items used in TAM studies for IT devices (Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al., 2002; Moore and Benbasat, 2001; Agarwal and Prasad, 1997; Luarn and Lin, 2005; Moon and Kim, 2001; Davis, 1989; Bruner and Kumar, 2005; Dishaw and Strong, 1999; Teo and Pok, 2003; Shang et al., 2005). The items selected for the attitudinal questions (tabled in Appendix A) were taken from previous studies that had shown success in using these items and scales for the constructs of perceived usefulness, perceived ease of use and perceived enjoyment. The items mainly used seven-point Likert agreement scales. Where possible, the items were rephrased into the context of a real estate website. Some of the items were not used, as they related specifically to workplace situations, or the statement requested an attitude towards actual rather than intended use. Question 13 used a set of semantic differential scalar items to test for perceived enjoyment, and question 14 used a table of items in a 7-point Likert scale from Strongly Disagree [1] → Strongly Agree [7].

Q 15&16: Classification

Questions 15 and 16, being personal in nature, were kept to the end. Question 15 recorded age, and question 16, income levels. The scale for age was derived from an age scale used by Statistics New Zealand, adjusted to a lower age of 18 years, being the legal age for house purchase in New Zealand (Hinde and McMorland, 1997 pg 808). A scale could not be located that would adequately measure “professionalism”, as this was seen to be a mixture of employment, income and educational aspects (Rogers, 1995; Dickerson and Gentry, 1983; Lassar et al., 2005; Sultan, 2002; Gatignon and Robertson, 1991). In the end, a household income scale was used as a substitute measure for this as it was thought that entrepreneurial/
successful and cutting-edge lifestyles (i.e. professional attributes) would probably be reflected in household wealth, however employment status and education levels might not adequately reflect these professional attributes.

3.3.5 Data collection procedure

3.3.5a Survey region

Given the scale of studying such a sizeable market as the New Zealand national residential real estate market, and the limitations in research time and budget, a convenient geographical subsection of the total market was chosen in the region of the Bay of Plenty by which to conduct the research study.

3.3.5b Selecting respondents

Many literature papers investigating both search strategies and the TAM used university students from a business or management class as the sample population (Moon and Kim, 2001; Weenig and Maarleveld, 2002; Davis, 1989; Mathieson, 1991; Yang and Yoo, 2004; Bruner and Kumar, 2005; Shang, Chen and Shen, 2005). However, this is not an appropriate sampling method for this study, as it is not representative of the market, and though university students would be expected to have used the internet previously, only a very few would have purchased property before and it would be unlikely that these students were yet in the market for a house. Therefore, as it was necessary to survey persons that had actually sought to purchase real estate, the sample population was obtained by contacting Rotorua-based real estate agencies, who sold property throughout the Bay of Plenty region. A request was made to seven real estate agencies to provide contact details for 50 clients (purchasers of their agency listings) from the agency databases. Five agencies indicated they were willing to participate, however, as some agencies were not able to give details for fifty purchasers, a total of 237 addresses were obtained from the five agencies. Purchasers were sought who had purchased a house within the period November 2004 - November 2005. The targeted samples were people who both used and did not use a real estate website during the search process.
3.3.5c Pre-test and mailout

The questionnaire format, questions and phrasing were discussed with the real estate agency sales managers, and piloted with staff who had recently purchased property and worked at a local Crown Research Institute, Scion, in Rotorua. This pre-testing was made to test the logic, flow and readability of the questionnaire. As a result, the scale for properties currently owned was increased to be more relevant to investors, and two open-ended questions were added relating to main use and experience of using a real estate website, in order to expand on and verify the factor items listed. As advised by Dillman (1978 pg 180), the forms were sent out early in the week, and a follow-up mailout was sent after two weeks to non-respondents at the mid-point of the research phase (refer Appendix B).

3.3.5d Response rate

Of the 237 mailed survey forms, 125 forms were returned, 14 of which were unable to be delivered by New Zealand Post to the correct recipients (Gone No Address) (Table 4). A total of 99 returned forms had been completed, however, 13 respondents had not completed the attitudinal scale items:

<table>
<thead>
<tr>
<th>Agency</th>
<th>No. survey forms sent</th>
<th>No. returned</th>
<th>No. GNA</th>
<th>No. with contact details</th>
<th>No. useable</th>
<th>No. with items completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>58</td>
<td>40</td>
<td>0</td>
<td>32</td>
<td>40</td>
<td>32</td>
</tr>
<tr>
<td>2</td>
<td>47</td>
<td>15</td>
<td>3</td>
<td>12</td>
<td>15</td>
<td>14</td>
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<tr>
<td>3</td>
<td>31</td>
<td>10</td>
<td>1</td>
<td>10</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>51</td>
<td>10</td>
<td>9</td>
<td>9</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>43</td>
<td>19</td>
<td>1</td>
<td>13</td>
<td>18</td>
<td>16</td>
</tr>
<tr>
<td>Others*</td>
<td>7</td>
<td>7</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>237</td>
<td>101</td>
<td>14</td>
<td>76</td>
<td>99</td>
<td>86</td>
</tr>
</tbody>
</table>

* Returned on a photocopied sheet, or stated that they purchased a house through a different agency to that which supplied their details.

Table 4: Responses for Mail-out Questionnaire

Removing the survey forms which had not been delivered (Dillman, 1978 pg 50), a response rate of 45% was achieved from the sampling, and a useable response rate of 44%:

Return rate: \( \frac{101}{237-14} = 45.3\% \)

Useable response rate: \( \frac{99}{237-14} = 44.4\% \)
For the purposes of the behavioural and classification questions, all completed forms were used, and for the attitudinal scale items, only those forms which had completed the scale items were used. For behavioural questions, non-response was dealt with by not including the respondent in the analysis. For the attitudinal scale items, a non-response to a single scale item was addressed by inserting a neutral value of 4 for the missing scale item.

### 3.3.6 Survey participants

The ages of respondents ranged from 20 to 70 years (Figure 20). Respondents were generally younger in age, with a mode of 30-34 years ($\bar{X} = 42.5; SD = 12.5$).

![Fig 20: Frequency distribution of respondents’ age](image)

Respondent annual household income before tax ranged from less than $20,000 to over $200,000 (Figure 21). For $n = 92$ respondents, the most common income range was $90,000-$100,000.

![Fig 21: Frequency distribution of respondents’ annual household income before tax](image)
3.4 ANALYTICAL METHODS

The taped discourses from the interviews were transcribed and typed into MS Word 5.1 for Windows XP Professional (2003) and the resulting text was analysed to identify key issues and messages pertinent to the research topic.

Statistical analyses were undertaken using computer software packages MS Excel for Windows 98 (2003) and SPSS Version 13.0 for Windows XP Professional.

The research questions used in the survey allowed both descriptive and multivariate statistical analyses. Initial descriptive analyses using frequency and percentage distributions were undertaken on nominal variables to determine rate of response; and to segment market characteristics of the data by age; gender and income. To determine behavioural characteristics of the respondents, grouped descriptive data was analysed using a chi-square test. Differences in behavioural characteristics were analysed between internet users and non-users using Chi-square testing for:

- Type of property sought (family versus investment homes)
- Age
- Distance from market
- Annual household income level (a measure of professionalism)

Principal components analysis was used on the responses for the attitudinal scale items to obtain the number of determinant factors present. The data entry spreadsheet was uploaded into SPSS and the PCA data analysis package within SPSS was used to run the data. Principal components analysis (or factor analysis) was the chosen methodology as the data required a multivariate data analysis methodology, the data did not have a dependent variable, and the number of items (32) was too many to analyse each as an independent variable. Data reduction, or clustering, into a smaller set of variables (constructs or factors) for further analysis was desired. Malhotra et al. (1996 pg 532) states factor analysis, unlike other multivariate analyses such as ANOVA and discriminant analysis which term one variable as the determinant variable, is an interdependence technique in which all variables are termed independent, the correlations between each examined and combined, and is therefore similar to multiple regression analysis. Kline (1994, pg 3) claims the aim of factor analysis is to “simplify complex sets of data” into factors, which he terms are “a dimension or construct
which is a condensed statement of the relationships between a set of variables” (Kline 1994, pg 5).

Malhotra et al. (1996 pg 533) states the technique is used in three circumstances:

1. to identify dimensions that explain the correlations among a set of variables
2. to identify a new, smaller set of variables for further multivariate analysis
3. to narrow down the variables and select a few salient items to represent the variables

In this study, factor analysis was used to firstly identify the dimensions explaining the correlations amongst the items used, and then the new factor scores were used to examine key differences between mean scores in different segments of the market using hypothesis testing functions in SPSS for differences between means. Due to not using a full set of scale items from previous studies, scale reliability for the chosen factors using Cronbach’s alpha was also established.

3.5 ETHICAL CONSIDERATIONS

Ethics approval for the research was sought through the University of Otago Ethics Committee, under Category B (research involving human participants).

The research followed the University of Otago Marketing Department ethical guidelines for primary research. Respondents were encouraged to participate in the survey, however, the voluntary nature of the research, and an assurance of confidentiality and anonymity was made clear to the recipients. Additionally, an information sheet outlining the rationale for the research, and follow-up contact details were provided. The questionnaire stated that personal details were being used solely for classification purposes, and identifying information such as name and contact details were able to be separated from the survey forms.

The proposed real estate agency interview questions and survey forms were submitted with the application, and ethics approval was granted for the proposed Category B methodology.
Chapter 4: Results and Discussion

4.1 INTRODUCTION

This chapter gives an overview of the results from both the exploratory interviews and the mail survey. The descriptive results are given in terms of frequency and percentage distribution, and behavioural data analysed using statistical methods. Discussion of the behavioural and attitudinal results is given in terms of the research hypotheses.

The exploratory results are firstly outlined in section 4.2, and the overall response statistics are given in section 4.3.

The statistical results of the behavioural (4.4) and attitudinal questions (4.5) follow. Analysis and discussion concerning these results, in terms of differences between users and non-users of the internet during the search for a house, follows in section 4.6.

4.2 INTERVIEWS WITH REAL ESTATE AGENTS

Interviews with local real estate sales managers in Rotorua investigated five key aspects:

- Distinct aspects of property marketing in Rotorua compared to coastal Bay of Plenty
- The use of internet listing in the marketing plan for a property
- Impressions concerning the demographic profile of real estate website users
- Drivers for purchaser use of real estate websites
- The impact of the internet on real estate business practice

The key issues and points raised during the interview sessions are outlined in this section, in terms of these five aspects.

4.2.1 Property marketing in Rotorua compared to coastal Bay of Plenty

Although most of the buyers of family homes in Rotorua are local, there is a high rental property market as house prices for rental properties are still relatively low compared to
Tauranga (estimated by one agent at 80% of the Tauranga price), and rental incomes were estimated at only 35% lower than in Tauranga. Rotorua is beginning to be seen as a location with potentially good return due to a long term trend of stable, rising average property value, and represents a viable alternative to the higher-priced Auckland and Tauranga markets.

Rotorua is also a market of younger buyers, as the numbers of older retired persons seek the warmer coastal locations in the Bay, and do not come to Rotorua in the same numbers. As one Sales Manager pointed out

“the migration patterns in the Bay of Plenty show that a greater number of younger people are moving here and buying houses here than the national average age, so there are more internet-savvy people in the market.”

Rotorua, until recently, has not enjoyed the same capital gains in property as Tauranga, so there is less willingness by vendors to spend money on unique marketing plans as they will not get the higher percentage sales as a result. Additionally, houses are turning over quickly (20-30 days on average), with adequate margin, giving little incentive to heavily market the majority of properties. The exceptions are where a property is very well presented, giving an opportunity to attract more discerning customers. In Tauranga, marketing plans such as auctions, tenders, larger space print advertising, and additional internet photos are used to greater effect. Many of the higher priced family homes in Rotorua ($400,000+) are bought for holiday homes or as investment properties by out-of-town purchasers, and therefore require a different marketing approach from that used to draw local buyers.

4.2.2 The use of internet listing in the marketing plan for a property

Internet marketing was an integral part of all the Real Estate agencies interviewed, however, the local website was used primarily to build the brand and reputation of a firm, rather than to list individual properties for sale, with the exception of the Duncan Realty website www.duncanrealty.net. Most firms linked directly into larger national listings (with most using Realenz www.realenz.co.nz and/or ‘open2view’ www.open2view.com) or a larger nationwide franchise site such as LJ Hookers www.LJHooker.com, and the Professionals www.professionals.co.nz.
Listing local properties on their own website was seen as both uneconomic, and also limiting in terms of reaching the target market:

“Our own website is really to sell our own product or service and our individual business philosophy. Whereas customisation is more delivered through Realenz and Open 2 view.”

“We are under the [franchise] banner. And from that you can define it down to the local region. And from there you click into our local homepage. But we don’t advertise the local one, just [franchise].”

Most real estate companies offer similar deals to their vendors regarding internet marketing, and focus on brand, reputation and service as a point-of-difference rather than internet sales strategy. Greater exposure of the property, as well as the ability to give purchasers individual customized results (i.e. better able to get serious buyers viewing the property) were seen as the key reasons behind linking into a larger real estate website for listing their properties for sale. Realenz and ‘open2view’ also gave the Sales Managers regular sales reports, website statistics regarding site visits, and number of hits, for a nominal price, allowing Sales Managers to offer vendors free internet listing with a limited range of photos. Internet listing was seen as a standard marketing option for vendors – even a ‘given’, and that vendors were coming to expect to see their property listed on the internet in a timely fashion:

“the internet is very much integral to the whole package, and we perceive that the majority of vendors also see it as integral. As opposed to 3 or 4 years ago where some people didn’t even have computers in their own homes. I think the majority of vendors say ‘oh that’s great. It’ll be on the internet.’

One firm stated that a vendor was not able to list a property with their firm without being listed on the internet, as their individual property database also drove the internet site listings.

4.2.3 The demographic profile of real estate website users

Four out of five of the real estate Sales Managers interviewed stated that real estate website users were younger (age group categories cited by agents were 20’s-30’s; 25-40; 23-47) who have “grown up with the technology” (three managers used these words) and who use it as a
part of their everyday life. The Sales Managers indicated, however, that those aged over 40 years would still “persevere” with the technology due to the information benefits, but it required a conscious effort to acquire the necessary skills and knowledge in order to use the device.

“The younger people come in and say they want to speak to a certain person, they know about a specific property, they know details about the property and they want to view that property. The younger people are still repeat referrals, but they are coming to see the agent for specific property, whereas the older people, I’ve noticed, are coming to ask for advice. ...Because they obviously haven’t been on the internet to look at it, or they would know that.”

Certainly those primarily using the internet were thought to be younger, although people primarily using print media to source potential properties were also supposed to use the internet as a secondary information source.

A further assumption made by two of the agents was that those who were ‘professional’ would therefore use computers and the internet in their businesses; and those with higher incomes would have home computers (and were thought to most likely be “dual income families”) and would be more likely to be real estate website users.

Gender, marital and family situation, and socio-economic status in terms of residential locality were not seen to be indicative of internet website use.

One Sales Manager stated that the number of properties bought ‘sight unseen’ had risen dramatically over the past ten years, attributing this rise to the internet’s ability to give adequate information for market comparisons and fast decision-making.

4.2.4 Drivers for purchaser use of real estate websites

Three key drivers were deduced from the various information given by the real estate agents interviewed as the main reasons for using a real estate website over other information sources. These were expressed in a number of ways; however, they all come under these three broad aspects:
• Convenience – people can view a property from the comfort of their home/office, at a time which suits them. Purchasers no longer have to contact an agent or visit a local real estate office to find out about potential properties, unless they seriously want to purchase, and there is a large enough range in the search databases used to enable a suitable property to be found. This aspect relieves unwanted sales pressure from a pushy agent, and allows privacy in terms of what purchasers want to buy and why.

• Time-saving – the ability to refine options quickly, personalise and customise search results to suit the needs of the purchaser without trawling through pages and pages of newspaper advertising or attending many open homes. People do not want to physically visit lots of homes anymore, mainly due to time constraints, and the booming property market — buyers need to make quick, well informed decisions or they lose out.

“People don’t want to go round with an agent and look at homes. They want to look at it over the net, find out where the house is, go round and look at it themselves from the street. That’s why street appeal’s so important.”

“They may have considered a wider set earlier, while on the net, but they will only physically visit a handful.”

The internet is seen as a fast and efficient means of giving purchasers a list of potential properties. It is also self-perpetuating due to the ease of locating potential properties, whereby the time to sell a property has shortened to weeks, putting pressure on purchasers to locate and secure a property very quickly. The internet is seen by purchasers as the quickest way to make an informed decision in the short timeframe available to locate and secure property.

• Ability to inform – For investment and family home purchases alike, internet listings via a search function provide the opportunity to scope the market situation quickly, compare prices (what consumers can get for their money), and provide a number of visual images and ‘site tours’. Family home purchasers were seen to particularly like the ‘virtual tour’ ability to see what other homes for sale in the neighbourhood were like without a physical tour, whereas the rental investors were able to quickly select properties by categories such as number
of bedrooms, garaging and price range, and keep a regular (daily rather than weekly) handle on the market.

“Purchasers are using the information in hand and for the most part that is internet based to make their shortlist if you like, to research not just what’s for sale, but what’s been sold, what’s happening in the local economy, what effect that will have on values, what geographic areas are affected by demographics, and so forth. So many more purchasers are coming to us with clearer ideas on what they want, how much they will pay, and where they’ll buy— they’ve done their homework”

“When they’re thinking website and they’re thinking about property all they want is the details. All they want is the information. All they really want to do is just dismiss the property. It’s being used as a pre-sort. They’re looking for information.”

Other drivers noted included the view that younger persons may find the internet technology easier to use, as they are used to searching for other generic information using this technology; that the personalised search criteria may make it easier to ‘reject’ properties and refine the choice set – in other words people are looking for a reason to not buy a property rather than reasons to buy it when making their initial shortlist; that agents are dealing with a more informed and educated public consumer generally, and people like to do their own research on most purchasing choices (i.e. less trust in the salesperson to find them the best product); and that the internet is perceived to have the most up-to date and complete listing of properties for sale.

4.2.5 The impact of the internet on real estate business practice

Sales Managers who had been in the real estate sector for a long period (15 to 20 years or longer) noted the “significant changes” in the way they are conducting business compared to two decades ago. In particular, there is an emphasis away from ‘closing the deal’ or ‘selling’ a property towards marketing of the home. This was mentioned in comments such as:

“When I started in real estate it’s fair to say that open homes ... were something you did on Saturday if you were desperate to sell a property. I mean open homes were just literally unheard of.”
“Marketing really was just a word that was used that somebody pulled out of a dictionary y’know. Really there was nothing more to it. Marketing just didn’t happen….. Marketing just didn’t exist. Nowadays it’s all about marketing.”

“So the role has become more of a marketing exercise than a selling exercise really. You’ve got to market it well to get them in the door to sell it to them.”

The purchaser has also changed from an uninformed homebuyer with a wish list of desired property features, who needed to be firstly educated on the nature of the property market and the properties available before being convinced to purchase through this particular agency, to a purchaser who has a clear idea of the market dynamics and has already decided on a property they would like to purchase, and therefore have approached the relevant agency marketing it.

“I’ve been in the industry 20 years now and it’s just been a total shift in our business. In the old days we had all the information and people had to come to us to get it. Whereas today they can get anything they want, sitting at home.”

“So the role of research for the real estate agent, and director and knowledge holder of information for the buyer is not exactly what it was in the past. People are going in and researching the properties themselves now, and they’re not bothering to ask the agent the answers to these questions ‘cos they already know them.”

“They are coming to us having done their homework.”

“Before, a person would come in totally green and it took us time to build some market knowledge into them.”

The role of the real estate agent is therefore now about attracting buyers to consider a certain property, usually through a visual image, and therefore street appeal has become much more important.

The rate of change in the market is rapid, with examples cited by agents being the number of sight unseen properties purchased, which was “virtually unheard of” ten years ago; and the
number of purchasers with a cellphone or home computer that are providing agents with a cellphone number or an email address, which has risen dramatically in the past five years.

“In the last 10 years the number of purchasers who are purchasing sight unseen, using the internet to make those decisions has grown quite rapidly.”

The introduction of internet selling has aided real estate agencies to market and sell more properties, but also appears to have introduced competition in the marketplace, as vendors no longer need to use a real estate agent in the sales process resulting in the introduction of DIY marketing such as Homesell, and since June 2005, the ability to list a property on the Trademe website. Despite these threats, the agencies saw the internet as an integral and established aspect of real estate marketing, with most agencies stating it was “here to stay” and they therefore must adapt their business practices to get the most from it.

The largest changes in business practices resulting from the internet are the clientele; and the client interaction with the agent. The clientele are more informed, having already “done their homework” due to ready access to market information on the internet, and this is saving agents time in having to educate and match properties with people’s lifestyles. These statements agree with the finding of Findsen (2005 pg 19) who found younger homebuyers preferred “doing their homework” first. The internet also means that first contact with clients comes not always in person, but via cellphone (txt), email and internet enquiry. The Sales Managers here are reiterating what has also been noted and reported recently in newspapers (e.g. Hendry, 2006).

“People are going on the internet and weeding out the properties themselves, they’re getting all the details themselves, doing all the research themselves and contacting the agent themselves."

“Investors are quite analytical people too, they want the facts fast”

Ongoing contact with clients is also changing, with a move from print letters and magazine listings, towards personalized email listings of possible properties, email letters and market updates; and even immediate personal notifiers on PDAs when a new property has been listed that matches a client’s requirements. In short, supplying clients with customised advice, electronically, and instantly.
4.3 BEHAVIOURAL RESULTS

4.3.1 Property type sought

The majority of respondents were seeking to purchase a house. A significant number were also looking for a rental property (refer Appendix C: Table A1 and Figure 22).

The strong rental and investment result reflects the strong rental market in Rotorua, and the upward house price increases present in the market although 73% were purchasing a house, only 65% were purchasing the home as their primary residence, with 30% purchasing for an investment or commercial use (refer Appendix C: Table A2). Three percent purchased the property on behalf of another family member, and, surprisingly given the tourism and waterfront locations of the region, including the popularity of the Rotorua Lakes as a holiday destination, only 2% purchased a secondary home.

4.3.2 Information sources consulted during the search for property.

The most commonly used primary sources of information were newspapers (20%), the internet (21%), and personal conversations with an agent (27%) (Figure 23).
Most respondents, however, sought information from a wide variety of sources rather than consulting one source exclusively. The most commonly used information sources consulted by purchasers were the internet (71%); Daily newspapers (61%); Personal conversation with an agent (58%); Individual real estate magazine listings (54%); Property Press or multiple agency magazine of listings (47%); and Street signage (44%) (Refer Appendix C: Table A3). Although not the main source of information, magazine listings, both for individual agencies and multiple agencies, as well as street and window signage, had high numbers of respondents using these as information sources during the search process. The internet was well used as a secondary source by many respondents. In particular, 47% used both newspaper and internet; and 40% to 42% used both internet and magazine listings (refer Appendix C: Table A4).

4.3.3 Use of the internet

Seventy respondents indicated they had used the internet during the search for property (71%). Of these respondents, 69% had used a real estate website (Refer Appendix C: Table A5). Realenz was the most sourced website, with 48% of respondents indicating they had used this website. ‘Open2view’ was used by 38% of respondents, and none had consulted Relo, which is an international find-a home website linking to the Harcourts New Zealand website. As well as the multiple agency websites, individual real estate websites were also being well used, and were consulted by 41% respondents. The national internet-based auction site Trademe first allowed property to be bought and sold through the site in June 2005. Given the short timeframe for this site being a listing site for properties (just 6 months prior to the Nov ‘05-Nov ‘06 timeframe for this study), at 22%, there appear a significant number of respondents using this site for information to aid their purchase decision.
4.3.4 House location and purchaser distance from market

Despite most Rotorua realtors selling properties throughout the Bay of Plenty region, the majority of respondent purchasers were seeking houses in the Rotorua district (94%), with 85% looking for property within the city, and 6% in the Rotorua lakeside areas (Refer Appendix C: Table A6). Three per cent were searching both in the city, and at the lake areas for potential properties. The remaining 6% were seeking properties in Whakatane or rural Bay of Plenty. In terms of the distance of purchasers from the market, they were buying from both inside and outside the Bay of Plenty region, with 59% of purchasers living within Rotorua city during the time of searching for a property, 9% at the Rotorua lakes, 9% in rural Bay of Plenty, 4% in other Bay of Plenty cities and townships and 21% living outside the Bay of Plenty.

There were 52 respondents who were living in Rotorua city, and also seeking a property in Rotorua city (54%) (Refer Appendix C, Table A7). Of these respondents, 67% did not purchase a house in the same suburb to their current residence, indicating that intra-city movement for residential occupancy occurs between suburbs rather than within them, probably due to a ‘movement up’ to a higher socio-economic area, and greater investment potential for buyers. This also reflects that people are seeking rental and investment properties in suburbs other than those where they are residing.

4.3.5 Duration of search

The time taken to find a property ranged from just 24 hours up to a year (\(\bar{x} = 1.91\) months; SD = 1.89) (Figure 24).
The most common length of time taken by purchasers from initially looking for a property to purchasing a property was between one and three months (37% of respondents) with a median of two months.

4.3.6 Number of open homes visited during the search process

A number of respondents (28%) did not visit any open homes during the search process. Of those who visited open homes, most visited between 2 and 10 open homes (69%), with those visiting 2-5 open homes being most common (46%) (Figure 25).
A Pearson Chi-square test indicates there was a significant difference between investors and non-investors in the number of open homes visited, with non-investors visiting more open homes (Refer Appendix C: Table A8).

This is consistent with the views of the real estate agents interviewed, and supports their anecdotal evidence that many investors are buying sight unseen.

4.3.7 House purchase experience

Less than a quarter of respondents were purchasing their first home (22%), with the mean number purchasing their fifth home, and the mode response being that this purchase would be their 3rd to 5th house owned (Figure 26).

![Fig 26: Frequency distribution for number of houses respondents had ever purchased](image)

Most respondents were not investors, currently owning only a single house (59%). Of those owning just the one dwelling, 38% were first home buyers, while 62% had purchased a home previously and subsequently sold it. Of the other 40 purchasers owning more than one home, 65% stated that one of their purchases was an investment property (Figure 27).
4.4 ATTITUDINAL RESULTS

4.4.1 Principal Components Analysis

Thirty two scale items were used in the survey, consisting of scale items for Perceived ease of use (6); Perceived usefulness (7); Perceived enjoyment (10); Attitude (6); and Intention to use (3). The items for these constructs (Table 5) were derived from previous studies showing reliability in using these scale items (refer Appendix A).

<table>
<thead>
<tr>
<th>PERCEIVED EASE OF USE</th>
<th>Scale</th>
<th>References who used construct in their study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to use a real estate website would be easy for me</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al., 2002; Moore and Benbasat, 1991; Agarwal and Prasad, 1997; Luarn and Lin, 2005; Moon and Kim, 2001</td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Dishaw and Strong, 1999; Moore and Benbasat, 1991; Agarwal and Prasad, 1997; Davis, 1989; Moon and Kim, 2001</td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Teo et al., 1999; Igbaria et al., 1995; Chen et al., 2002; Luarn and Lin, 2005; Davis, 1989; Moon and Kim, 2001</td>
</tr>
<tr>
<td>I find real estate websites easy to use</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Teo et al., 1999; Bruner and Kumar, 2005; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al., 2002; Dishaw and Strong, 1999; Agarwal and Prasad, 1997; Luarn and Lin, 2005; Davis, 1989</td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Shang et al., 2005; Chen et al., 2002</td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Shang et al., 2005</td>
</tr>
</tbody>
</table>
### PERCEIVED USEFULNESS

<table>
<thead>
<tr>
<th>Modified Item</th>
<th>Scale</th>
<th>References who used construct in their study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website would enable me to improve the performance of my information seeking</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al., 2002; Dishaw and Strong, 1999; Luarn and Lin, 2005; Davis, 1989; Moon and Kim, 2001</td>
</tr>
<tr>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al., 2002; Dishaw and Strong, 1999; Moore and Benbasat, 1991; Davis, 1989</td>
</tr>
<tr>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Teo et al., 1999; Igbaria et al., 1995; Shang et al., 2005</td>
</tr>
<tr>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Chen et al., 2002; Shang et al., 2005; Dishaw and Strong, 1999; Moore and Benbasat, 1991; Moon and Kim, 2001</td>
</tr>
<tr>
<td>Using a real estate website enables me to access the newest information</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Moon and Kim, 2001</td>
</tr>
<tr>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Moon and Kim, 2001</td>
</tr>
<tr>
<td>Using a real estate website is convenient</td>
<td>1-7 Strongly agree-Strongly disagree</td>
<td>Chen et al., 2002; Shang et al., 2005</td>
</tr>
</tbody>
</table>

### PERCEIVED ENJOYMENT

<table>
<thead>
<tr>
<th>Modified Item</th>
<th>Scale</th>
<th>References who used construct in their study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website to find potential new homes is:</td>
<td>1-7 Semantic differential scale</td>
<td>Teo et al., 1999; Igbaria et al., 1995</td>
</tr>
<tr>
<td>• fun; frustrating</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• pleasant; unpleasant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• negative; positive</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• foolish; wise</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• pleasurable; painful</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• exciting; dull</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• enjoyable; unenjoyable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website stimulates my curiosity</td>
<td>7 point scale Strongly disagree-strongly agree</td>
<td>Moon and Kim, 2001</td>
</tr>
<tr>
<td>Using a real estate website would lead to exploration.</td>
<td>7 point scale Strongly disagree-strongly agree</td>
<td>Moon and Kim, 2001</td>
</tr>
<tr>
<td>Using a real estate website would arouse my imagination</td>
<td>7 point scale Strongly disagree-strongly agree</td>
<td>Moon and Kim, 2001</td>
</tr>
</tbody>
</table>

### ATTITUDE

<table>
<thead>
<tr>
<th>Modified Item</th>
<th>Scale</th>
<th>References who used construct in their study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website is a good idea</td>
<td>7 point scale Strongly disagree-strongly agree</td>
<td>Teo and Pok, 2003</td>
</tr>
<tr>
<td>Using a real estate website is a wise idea</td>
<td>7 point scale Strongly disagree-strongly agree</td>
<td>Teo and Pok, 2003</td>
</tr>
<tr>
<td>I like the idea of using real estate websites</td>
<td>7 point scale Strongly disagree-strongly agree</td>
<td>Teo and Pok, 2003</td>
</tr>
<tr>
<td>It is better to use a real estate website than other information sources when looking for a new home</td>
<td>7 point scale Strongly disagree-strongly agree</td>
<td>Dishaw and Strong, 1999</td>
</tr>
<tr>
<td>I think it would be good to use a real estate website rather than other information sources when looking for a new home</td>
<td>7 point scale Strongly disagree-strongly agree</td>
<td>Dishaw and Strong, 1999</td>
</tr>
<tr>
<td>In my opinion it would be desirable to use a real estate website rather than other information sources</td>
<td>7 point scale Strongly disagree-strongly agree</td>
<td>Dishaw and Strong, 1999</td>
</tr>
</tbody>
</table>
To identify the major determinants of attitude (expected from the model to be from three main factors relating to perceived usefulness (PU); perceived ease of use (PEOU) and perceived enjoyment (PEnj)) the scale items not relating to attitude and intention were analysed using SPSS V.13 for Factor Analysis with varimax rotation. The results from 86 respondents were used, and any missing data points were addressed by using a neutral score. The analysis used a principal components analysis to establish the minimum number of factors that would explain the maximum amount of variance in the results. Principal Components Analysis was used as the number of data was sufficiently large and complex in nature as to be unable to easily discern the important variables without some correlation analysis. In this way, the analysis is exploratory in nature, as the aim is to explore the data and discover the major constructs or factors present.

The scale items for five of the seven items in Question 13 (all except Foolish/ wise and Negative/ positive) were reverse coded to align with the same rating scale used in Question 14 (refer Appendix B for survey form).

4.4.1a  Communalities

The communalities given in Appendix C: Table A9 show the amount of variance an item shares with all the other items being considered. The proportion of variance that each item has in common with other items factors is called the item’s communality.
4.4.1b Initial eigenvalues

An eigenvalue represents the amount of variance explained by each factor. Therefore, components whose eigenvalues are greater than 1.0 are considered to be significant components of variance. The principal component analysis found four component factors that were greater than 1.0, and these four explained 71% of the variance (Refer Appendix C: Table A10). Factor one explained 48% of the variance, with factors 2, 3, and 4 explaining 11%, 7% and 5% respectively.

4.4.1c Component matrix

The component matrix (Refer Appendix C: Table A11) shows the variables which are loading onto each of the component factors. These represent the correlations between the factors and the items.

Factor loadings that are greater than 0.5 are seen to be significantly correlated. From the matrix, it appears that all the items are loading onto factor one, with only one correlation in factors 3 and 4 being significant. To better interpret the factor loadings, varimax rotation was used to maximise the high loading variables in each factor, and eliminate crossloading effects. Orthogonal rotation attempts to force the loading correlations towards either 1.0 or 0.0, by maintaining right-angled axes. By rotating the factors, less of the variance (26%) is explained by Factor 1 (as only those factor loadings that were very highly correlated were retained), but for the other factors, variance is now better explained, with higher factor loadings for the three other factors of 19%, 18% and 7% respectively. (Refer Appendix C: Table A12).

Although the factor loadings are now showing significant groupings of high-loading factors, there is still a high degree of cross loading occurring between factors (Refer Appendix C: Table A13). There also appear to be three clear factors from the highly correlated loadings that relate strongly to the expected item groupings for perceived usefulness; perceived ease of use; and perceived enjoyment, with two ‘outlier’ items from the enjoyment scale being loaded as an additional factor.
The emergent factors therefore appear to be:

**Factor 1:** Perceived usefulness (all 7 items), with three perceived enjoyment items (the non-semantic differential scale items); and 2 of the perceived ease of use items cross loading

**Factor 2:** Perceived enjoyment - not including the three non semantic differential items

**Factor 3:** Perceived ease of use (all 6 items) with 2 items cross loading with perceived usefulness

**Factor 4:** Two of the semantic differential items from the perceived enjoyment scale.

As there appear to be three core factors emerging from the principle component analysis, and to test to see if the 4\(^{th}\) factor is a ‘real’ factor, the data was run again, this time forcing the items to load onto a maximum of just three factors (Refer Appendix C: Tables A14 and A15). The results for this factor matrix show three factors emerging, with the ‘outlier’ fourth factor items now loading onto the perceived ease of use factor. The overall variance explained by the three factors is now 66%, with Factor 1 (Perceived usefulness) explaining 29% of the variance; Factor 2 (Perceived enjoyment) explaining 19% of the variance; and Factor 3 (Perceived ease of use) explaining 17% of the variance.

### 4.4.2 Scale reliability

The items with correlations of greater than 0.5 for each of these three factors were tested for scale reliability (Cronbach’s Alpha score). The scale reliabilities of the original scale used to measure attitudes in the survey were compared with the scales given from highly correlated factor loadings (Refer Appendix C: Tables A16-A21).

#### 4.4.2a Factor 1: Perceived Usefulness

A Cronbach Alpha of 0.896 was obtained for the original scale items used in the questionnaire, and 0.939 for the deduced items for this factor from principle components analysis. It appears that using the 13 new scale items gives a more reliable scale measure for perceived usefulness than the original scale items derived from the literature, and removing one item would increase the reliability further to a CA of 0.941. Interestingly, the inclusion of items relating to exploration, curiosity and imagination in this study aid the reliability of the
perceived usefulness scale. These items were given in previous literature as reliable items for the measure of ‘perceived enjoyment/ perceived fun’, however, in this study they load highly to the factor with scale items from literature relating to perceived usefulness.

4.4.2b  **Factor 2: Perceived Enjoyment**

A Cronbach Alpha of 0.905 was obtained for the original scale items used in the questionnaire, and 0.938 for the deduced items for this factor from principle components analysis. It appears that using the five new scale items gives a more reliable scale measure for perceived enjoyment than the original scale items derived from the literature.

4.4.2c  **Factor 3: Perceived Ease of Use**

A Cronbach Alpha of 0.893 was obtained for the original scale items used in the questionnaire, and 0.859 for the deduced items for this factor from principle components analysis. It appears that using the original 6 scale items derived from the literature gives a more reliable scale measure for perceived ease of use than the new scale items.

Malhotra et al. (1996) states factor analysis can be reliably undertaken with a sample size to scale item ratio of 5:1, and preferably a sample size of N >100 should be used. Using responses from the 86 survey respondents who completed the Attitudinal scale item questions (Q13 and 14) for these 23 items gives a ratio of 3.73. Although this represents a lower ratio than that recommended by Malhotra et al. (1996), MacCallum et al. (1999) state that if the communalities between variables are all greater than 0.6, the sample size of respondents (even if well below n= 100) is sufficient for the number of variables (because usually high sample sizes give high communalities). In this study, only two items had communalities below 0.6, and these were both greater than 0.5. MacCallum et al. (1999) also determined that the mean level of communalities should be greater than 0.7, and in this study, they were 0.708. Fabrigar et al. (1999) also states that enough variables should be included so that each factor will be represented by at least three or four variables, regardless of sample size. Acceptable cut-offs for reliability coefficients are given as being greater than 0.7 (Nunnaly, 1978). In all three cases, the scale reliabilities are all greater than 0.7, and therefore have acceptable reliability.
4.4.2d  Scales for Attitude and Behavioural Intention constructs

To obtain factor scores for Attitude and Behavioural intention, the scales derived from literature and used in question 14 of the questionnaire where used to obtain average mean scores. To test for scale reliability, a measure for Cronbach’s alpha was obtained.

For Attitude (A) the individual scores for the items were summed and divided by six. A Cronbach alpha of 0.896 was obtained for this scale (Refer Appendix C Table A22), demonstrating an acceptable level of reliability present. Due to the low increase in reliability from removing any variables, the original scale was retained.

For Behavioural Intention (BI) the individual scores for the items were summed and divided by 3 (refer Appendix C: Table A23). A Cronbach alpha of 0.756 was obtained from the original scale.

The Cronbach alpha coefficients for the Attitudinal and Behavioural Intention scales using the items derived from literature and used in the questionnaire show that these scales are acceptable to use for these constructs.

The following table (Table 6) summarises the results from the attitudinal analysis using exploratory principal components analysis:

<table>
<thead>
<tr>
<th>Cronbach’s alpha for perceived usefulness (PU)</th>
<th>No. of items</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.941</td>
<td>12</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Items used to calculate factor scores</th>
<th>Mean of individual scores</th>
<th>Std dev</th>
<th>Eigenvalue</th>
<th>% Variance explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website would arouse my imagination</td>
<td>4.51</td>
<td>1.33</td>
<td>6.755</td>
<td>29.369</td>
</tr>
<tr>
<td>Using a real estate website would stimulate my curiosity</td>
<td>5.07</td>
<td>1.25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would lead to exploration</td>
<td>5.24</td>
<td>1.28</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website is convenient</td>
<td>5.59</td>
<td>1.34</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td>4.73</td>
<td>1.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td>4.16</td>
<td>1.44</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would enable me to improve the performance of my information seeking</td>
<td>4.87</td>
<td>1.42</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>4.78</td>
<td>1.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td>4.87</td>
<td>1.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>4.94</td>
<td>1.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>4.80</td>
<td>1.45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>4.99</td>
<td>1.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website enables me to access the newest information⁸</td>
<td>4.85</td>
<td>1.32</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Cronbach’s alpha for Perceived Ease of Use (PEOU)

<table>
<thead>
<tr>
<th>Items used to calculate factor scores</th>
<th>Mean of individual scores</th>
<th>Std dev</th>
<th>Eigenvalue</th>
<th>% Variance explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to use a real estate website would be easy for me</td>
<td>5.91</td>
<td>1.28</td>
<td>3.886</td>
<td>16.897</td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>4.78</td>
<td>1.19</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find real estate websites easy to use</td>
<td>5.12</td>
<td>1.38</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td>5.60</td>
<td>1.31</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td>4.87</td>
<td>1.21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>4.94</td>
<td>1.47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative; Positive *</td>
<td>1.98</td>
<td>1.16</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foolish; Wise *</td>
<td>1.95</td>
<td>1.27</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Cronbach’s alpha for Perceived Enjoyment (PEnj)

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean of individual scores</th>
<th>Std dev</th>
<th>Eigenvalue</th>
<th>% Variance explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fun / Frustrating *</td>
<td>3.49</td>
<td>1.37</td>
<td>4.474</td>
<td>19.453</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasant / Unpleasant *</td>
<td>3.26</td>
<td>1.29</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasurable / Painful *</td>
<td>3.50</td>
<td>1.20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exciting / Dull *</td>
<td>3.56</td>
<td>1.24</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyable/ Unenjoyable *</td>
<td>3.36</td>
<td>1.19</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Cronbach’s alpha for Attitude (A)

<table>
<thead>
<tr>
<th>Items used to calculate factor scores</th>
<th>Mean of individual scores</th>
<th>Std dev</th>
<th>Eigenvalue</th>
<th>% Variance explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>In my opinion it would be desirable to use a real estate website rather than other information sources when looking for a new home</td>
<td>4.42</td>
<td>1.54</td>
<td>------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>It is better to use a real estate website than other information sources when looking for a new home</td>
<td>3.92</td>
<td>1.48</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I think it would be good to use a real estate website rather than other information sources when looking for a new home</td>
<td>3.91</td>
<td>1.43</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website is a good idea</td>
<td>5.54</td>
<td>1.12</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I like the idea of using a real estate website</td>
<td>5.28</td>
<td>1.37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website is a wise idea</td>
<td>5.22</td>
<td>1.22</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(Table 6 cont’d)

<p>| Cronbach’s alpha for Behavioural intent (BI) | 0.756 |</p>
<table>
<thead>
<tr>
<th>Items used to calculate factor scores</th>
<th>Mean of individual scores</th>
<th>Std dev</th>
<th>Eigenvalue</th>
<th>% Variance explained</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assuming I have access to a real estate website in future, I intend to use it</td>
<td>5.74</td>
<td>1.27</td>
<td>─ ─</td>
<td>─ ─</td>
</tr>
<tr>
<td>When buying a house, I would rather use a real estate search rather than other sources of information</td>
<td>4.15</td>
<td>1.44</td>
<td>─ ─</td>
<td>─ ─</td>
</tr>
<tr>
<td>I strongly recommend others to use real estate websites</td>
<td>5.11</td>
<td>1.39</td>
<td>─ ─</td>
<td>─ ─</td>
</tr>
</tbody>
</table>

*a* Item subsequently removed from scale to improve CA reliability coefficient

*b* Item subsequently added to scale to improve CA reliability coefficient

*Reverse coded

Table 6: Summary table

4.4.3 Correlations between constructs

Correlation coefficient scores ‘r’ (Figure 28 overleaf) show positive correlation relationships between all the paired constructs, as all are greater than 0.30 (Hinkle et al., 1988), however, the degree of correlation between the constructs shows:

- a low degree of correlation between PEnj and attitude (r = 0.351; p = 0.0005)
- a moderate degree of correlation between PEnj and PEOU (r = 0.475; p = 0.0001); PEnj and BI (r = 0.479; p = 0.0001); PEOU and A (r = 0.575; p = 0.0001); and PU and PEnj (r = 0.562; p = 0.0001)
- a marked degree of correlation between PU and A (r = 0.654; p = 0.0001); and PEOU and BI (r = 0.776; p = 0.0001)
- high correlations between PU and BI (r = 0.825; p = 0.0001); PU and PEOU (r = 0.819; p = 0.0001); and A and BI ( r = 0.817; p = 0.0001) (Franzblau, 1958).
4.5 ANALYSIS AND DISCUSSION

The following discourse investigates the attitudinal and behavioural results in terms of their ability to explain the behavioural intention to use a real estate website during the search for a house. The research model under study is derived from the Technology Acceptance Model (Davis, 1989), with constructs of Perceived usefulness and Perceived Ease of use, and includes the Perceived enjoyment construct also, after Moon and Kim (2001). Support for the research model, in terms of these three major constructs, is firstly discussed.

Secondly, moderating factors thought to impact on the behavioural intention to use a real estate website (age; professionalism; whether the purchase is an investment property or a family home; and distance to market) are investigated in terms of their impact on respondents’ use of the internet.

Thirdly, the impact of using the internet on open home visits, duration of the search effort, and also whether previous purchase experience impacted internet use is debated.
Throughout the discussion, reference is made to the following research hypotheses, and the chapter ends with a conclusion relating to the relevant argument of the research model, in light of the findings in terms of hypotheses:

**H1:** There is a positive relationship between perceived usefulness and attitude to using a real estate website

**H2:** There is a positive relationship between perceived ease of use and attitude to using a real estate website

**H3:** There is a positive relationship between perceived usefulness and behavioural intention to using a real estate website

**H4:** There is a positive relationship between perceived usefulness and perceived ease of use

**H5:** There is a positive relationship between attitude and behavioural intention to using a real estate website

**H6:** There is a positive relationship between perceived enjoyment and attitude to using a real estate website

**H7:** There is a positive relationship between perceived ease of use and perceived enjoyment of using a real estate website

**H8:** There is a positive relationship between perceived enjoyment and behavioural intention to using a real estate website

**H9:** People less than 45 years of age will have a more positive attitude/intention to use a real estate website than older cohorts, and more younger cohorts will have used the technology than older cohorts in the search for a house

**H10:** People who are professionals (households with higher income) will have a more positive attitude/intention to use a real estate website than non-professionals, and more professionals will have used the technology than non-professionals in the search for a house.

**H11:** People who are buying an investment property will have used a real estate website to a greater extent than those who are buying family homes.

**H12:** People who have used real estate websites to search for property will have visited less open homes.

**H13:** People who have used real estate websites to search for property will have spent less time in the search process before a suitable property is found.

**H14:** People who have had previous experience in purchasing real estate will use the internet to a lesser degree than those who are newer to the real estate scene.

**H15:** People who are buying property from outside the local area will have used a real estate website to aid their purchase decision to a greater degree than those who are buying locally.

### 4.5.1 Constructs of the research model

A person’s attitude to undertaking a behaviour indicates the degree of intention to act on the behaviour in future (Fishbein and Ajzen, 1975). However, attitude alone appears to have only a weak link to actual behaviour, and the direct influence of other factors which are not mediated by attitude seems most likely. Triandis (1971) indicated that behaviour is not only a function of attitude, but also of social norms; personal habits; and an individual’s perception of personal satisfaction from carrying out the behaviour. Similarly, Crosby and Muehling (1983) found external variables directly improved prediction of behaviour (cited in East, 1990).
Individuals’ beliefs regarding which information search sources and information screening devices will aid them the most in reaching a purchase decision affect the search activity employed (Duncan and Olshavsky, 1982). A potential adopter will uptake a technology when the uncertainty regarding benefit of adoption (perceived risk) is reduced below some threshold value. Rogers (1995) outlined five aspects of an innovation that together can influence its acceptance: Relative advantage; Compatibility; Complexity; Trialibility; and Observability, but three have been seen as most influential in the case of acceptance of IT devices: high relative advantage; high compatibility; and low complexity. These three aspects are present in the constructs of the Technology Acceptance Model as Perceived ease of use (PEOU) and Perceived Usefulness (PU), and are taken to be components of the attitude to using a technology.

This study showed a high degree of correlation ($r = 0.817; p = 0.0001$) between Attitude (A) and Behavioural intention (BI), giving significant (and expected) support for $H_5$, and indicating that attitude to using a real estate website translates well to the user’s future intention to use it.

**Perceived usefulness**

When consumers become aware of an innovation, Ropke (2003) states they assess it for its usefulness to their lifestyle, and if perceived as useful, it may be investigated further. Real estate websites have been described as useful, in that they are considered to offer elements of convenience and efficiency to the search process (Littlefield, Bao and Cook, 2000). Interactive technologies are often not perceived by the majority as useful until a critical mass of users has already adopted the technology (Mahler and Rogers, 1999). Only then is the perceived risk in using the technology considered to be at a point where it is a useful device compared to other options (Geroski, 2000).

In this study, respondents indicated that convenience was a factor, the level of information available was helpful, and also timesaving aspects such as being able to search anywhere, anytime. Real estate agents interviewed also indicated that the ability to give adequate information was a significant driver of use, and that the three main reasons they believed purchasers used the web were for timesaving; convenience and the ability to inform – all of which are aspects that evoke a sense of usefulness.
Factor scores for the perceived usefulness construct showed a marked degree of correlation ($r = 0.654; p = 0.0001$) with the factor scores for the attitude construct, indicating that perceived usefulness was influential in structuring a person’s attitude to using a real estate website. This shows support for $H_1$.

There is also a positive correlation between the factor scores of PU and BI ($r = 0.825; p = 0.0001$), indicating support for $H_3$ in the new context of a determinant for using a real estate website, and agreement with earlier studies such as Davis’ TAM (Davis, 1989) and Igbaria et al. (1995) who found PU to be the primary motivator for computer use in Finland.

**Perceived Ease of Use**

Just because a real estate website is seen to be useful, and is available, does not necessarily mean it will be used by an individual. Another important aspect is user perception of their ability to gain the required information if they use the technology. If it is not seen as being easy to use, other information retrieval options may be considered more beneficial in aiding in the search for a house, such as newspapers or real estate agents.

Curran and Meuter (2005) found ease of use to be an important indicator in the adoption of self-service technologies, however, Bruner and Kumar (2005) found it did not directly influence a person’s attitude to using a handheld internet device, but was mediated through perceived usefulness.

Real estate agents indicated that purchasers used real estate websites because the technology could efficiently inform them about what was available in their price range, and also due to the ability of a website to screen properties. A major factor was the ability to view properties at a time that suited the purchasers.

Factor scores for Perceived ease of use (PEOU) and Attitude constructs showed a moderate degree ($r = 0.575; p = 0.0001$) of positive correlation, and a marked degree of correlation between factor scores for PEOU and BI ($r = 0.817; p = 0.0001$) of use which supports $H_2$, and indicates that perceived ease of use is directly influential in forming an individual’s attitude towards, and intention to use, a real estate website in the search for a house rather than being mediated through Perceived Usefulness (PU), as Bruner and Kumar (2005) found. There was
also a high degree of correlation between factor scores for PEOU and PU constructs \((r = 0.819; p = 0.0001)\), giving support for \(H4\).

**Perceived enjoyment**

Schmidt and Spreng (1996) indicate that motivation to search mediates the antecedents of search behaviour, while Cox et al. (2005) found that viewing an item was a highly motivating enjoyment factor whilst shopping. Previous studies seeking to extend the technology acceptance model to account for intrinsic motivation have shown perceived enjoyment to have a significant influence on both attitude (Moon and Kim, 2001; Bruner and Kumar, 2005) and behavioural intent (Igbaria et al., 1995; Teo, Lim and Lai, 1999; Moon and Kim, 2001).

This study found aspects of intrinsic motivation for users of a real estate website also. Some respondents stated that they found the website photos enjoyable to browse through, fun to compare one home against another, and overall very helpful.

The ease with which a person can use a real estate website (their inherent abilities with it) will impact on how intrinsically motivating using it is for them to use (Deci and Ryan, 1975), and therefore how enjoyable the experience is for them (Bruner and Kumar, 2005). An important dependent variable in IS use is user satisfaction (Yang and Yoo, 2004). If the website is too easy to use, however, it may detract from being intrinsically motivating, as it does not offer sufficient challenges to cause interest and user satisfaction (Bruner and Kumar, 2005).

The correlation between Perceived Enjoyment (PEnj) and PEOU has been shown to be significant in a number of previous studies to explain IT behaviour (Curran and Meuter 2005; Webster and Martocchio, 1999 cited in East 1990; Shang, Chen and Shen, 2005; Bruner and Kumar, 2005). Perceived enjoyment was found to have a significant influence on behavioural intention to use an IT device (Moon and Kim, 2001; Curran and Meuter, 2005). This study agrees with this idea also, and supports both \(H7\) and \(H8\), as a moderate degree of correlation was found between the factor scores for PEOU and PEnj \((r = 0.475; p = 0.0001)\); as well as between the factor scores for PEnj and BI \((r = 0.479; p = 0.0001)\).

This study found only low correlation between the factor scores for PEnj and A \((r = 0.351; p = 0.0005)\), yet it was significant at the 1% level. Sultan (2002) found that even when Perceived ease of use was not high (early adopters who had only ‘average expertise’ in IT)
there was still strong motivation to use the internet as it was considered ‘fun’. This low correlation gives only mild support for H6, and may indicate that Perceived ease of use is a mediating factor between PEnj and A, which means that even if there is strong intention to use a real estate website, as it is considered ‘fun’, the degree to which it is considered to be fun will depend greatly on how easy to use it is perceived to be.

A test of the differences between mean factor scores for the five constructs was used to determine if there were any significant differences in attitude to internet usage constructs between various groups of respondents (Refer Appendix C : Table 24). Of the 86 respondents who completed the attitudinal scale items relating to use of the internet as a search tool to aid in looking for a property:

- 65 had used the internet during the search process (76%)
- 21 had not used the internet during the search process (24%)

As would be expected, there are significant differences in mean factor scores for all constructs at the 1% level between users and non-users of the internet.

The main reasons given by respondents for using a real estate website over another information source were: Ease of use (n=16); Easy to access from out of town (n=12); Having photos or a virtual tour (n=11); saving time (n=10); available 24/7 (n=9); and the ability to screen properties by individual requirements (n=8). (Refer Appendix C :Table A25).

Although the perceived ease of use was the major reason given in this study, the other main reasons all relate to aspects of the usefulness of the device. Other reasons given that related to perceived usefulness include: convenience; up to date and detailed information; the ability to view a large range of properties at once, and view them again at leisure; and the ability to access information from home – not having to talk with an agent or physically view the property (Refer Appendix C :Table A25).

The experience of using the real estate website (for those who had used one) was seen as both positive and negative. While many commented on the helpfulness of having multiple photos, with websites being easy to navigate and the experience being “good”, some also noted their frustration in that the search tool was “slow”, “confusing”, and did not have the information they required (Refer Appendix C :Table A26). Common complaints regarding the website experience were the lack of cellphone details for the respective sales agents; information not
being updated often enough, or incomplete information; and the search criteria returning unwanted properties, many for which the price was not listed.

The perceived enjoyment for these frustrated users may diminish due to these frustrations (and five respondents stated they found using the website “frustrating”), however, some comments also related to the enjoyment other users had with the search tool, with comments such as “it was very informative”, “I liked using it”, and 1 individual even stated using the real estate website was “somewhat addictive”. Comments relating to the uncertainty that the search criteria worked correctly; the need to register on some sites in order to search; and poor quality of photos may explain the low correlation between perceived enjoyment and attitude, due to the mediating effects of perceived ease of use on attitude. If some of these frustrating elements of using a real estate website are improved, perceived enjoyment in using the website may improve, and increase the perceived usefulness of the tool, which should improve overall attitude to using the website, and behavioural intention to use it, also.

The study shows that this extended TAM model explains the behavioural intention to use a real estate website, as the results support the above research model, with all correlations positive, and either very significant (p <= 0.0001) or highly significant (p <= 0.001). Perceived enjoyment appears to be mediated by Perceived ease of use, rather than directly influencing Attitude, despite still being significantly correlated.

4.5.2 Analysis of moderating factors on internet use

Of the 99 respondents:

- 39 were aged 45+; 60 were younger than 45
- 38 lived in a household earning over $90,000 per annum (professional); 56 lived in a household earning less than $90,000 per annum (non-professional); 5 respondents did not answer this question
- 30 were purchasing an investment property; 69 were not purchasing an investment property
- 78 lived within the Bay of Plenty area; 20 lived outside of the Bay of Plenty area; one respondent did not answer this question

To determine if there was any significant differences in internet usage behaviour between each of these groups of respondents, a Pearson Chi-square test was performed to analyse the
degree of bivariate independence, and test the null hypotheses for the moderating factors in our study. The following sections firstly outline the literature findings relating to the moderating factor, and then discuss these in light of the results of this study.

**Age**

The impact of a person’s age on likely IT uptake and use has been investigated by a number of former studies (Wood, 2002; Teo, Lim and Lai, 1999). Most indicate that age is a significant factor of uptake, with a tendency for younger persons to have both a more positive attitude towards IT, as well as a greater propensity to use IT innovations.

Research from the 1980’s (Labay and Kinnear, 1981; Dickerson and Gentry, 1983; Rogers and Shoemaker, 1971) however, indicated that early adopters of technological innovations were middle-aged, citing the financial risk associated with new technologies as the reason that younger users did not adopt earlier, because youth were known to be quick to adopt bankcards and ATM machines (cited in Dickerson and Gentry, 1983).

Given today’s ready availability of internet access to all age groups (although access may be less readily available), and no longer having the need for physical set-up costs due to internet cafes and the relatively high diffusion of personal home computers (Asch and Wolfe, 2001; Internet NZ, 2005), financial risk regarding internet connection should not prove a major barrier to website adoption, particularly by the younger age cohort, with the exception of broadband facilities.

Key reasons why younger people may now be more likely to accept and adopt real estate websites when searching for a home include the accessibility of the technology, as youth are more socially integrated; their inherent skills and abilities with IT hardware due to computer training in school and higher education; that younger people may be purchasing a home for the first time and have no preconceived ideas of the ‘best’ way to search for one; and their desire for finding new ways to do things.

Littlefield, Bao and Cook (2000) found that younger homebuyers had a greater access to internet facilities, and were more aware of the available internet real estate information than older home buyers. Geroski (2000) showed that awareness is not the only factor in the process of diffusion, and reiterated Bass’ (1969) indication of interpersonal communication as the key to adoption. The greatest social influence of adoption is known to be word of mouth (Geroski,
2000), so people who are exposed to more change agents and mass media influences will therefore be those who are more socially connected, and integrated into the social system’s characteristics (its values and norms, how these evolve, and how homogenous the system is) (Rogers, 1995). Also, those who are familiar with the technology and interested in its use usually adopt earlier also (Gatignan and Robertson, 1991, Dickerson and Gentry, 1983).

As young persons are more frequent users of the internet in general (Teo, Lim and Lai, 1999), it follows that they will be more likely to adopt the internet when searching for a home, also. Younger persons are also well integrated socially with their peers, and more likely to exchange views on the latest technology and new ways of doing things (Wood, 2002). Wood (2002) indicates that younger members of society are ‘behaviourally flexible’ and Carr (2004) indicates that innovative technology is a tool to enable the youth desire for social change.

A new interactive search technology requires consumers to learn a new search technique, by which they direct and manage their search process through the use of this new technique (Hodkinson, Kiel, and McColl-Kennedy, 2000). Innovative consumers require less planning, deliberation and observation than less innovating consumers; are less dogmatic and adapt well to change; and therefore would be able to manage their search process to better effect (Gatignon and Robertson, 1991; Rogers, 1995). The ability to search using the internet, and adapt the process to search for real estate information on a website, are skills that must be learnt before the website can be a useful and easily navigatable tool. Studies have shown that younger members of society are able to adapt their behaviour more quickly to take advantage of new technology, and can therefore gain skills quickly and use these skills to good effect (Ryder, 1965 cited in Wood, 2002). Older members of society require a greater degree of motivation to change their previous behaviour (the new/ novel aspects of technology are not sufficient merits to learn to adapt) and are also less concerned with fitting into the social system.

However, when use of a real estate website is deemed beneficial, or is the only way of buying or selling a house, later adopters are forced to adapt behaviour to fit in with the new way of doing things (Triandis, 1971). Two examples in the real estate sector where internet use may become an essential and beneficial skill for older members of society are firstly, in listing property to sell (Harcourts links all properties they sell onto the internet automatically at the time of listing) and this enables younger family members to view the property older members have just purchased, online; and secondly, those who are purchasing an investment property
(especially if buying from overseas or as a retirement income) may find that they need to consider using real estate websites to stay knowledgeable about the market, gain access to the latest listings, and view links from email lists sent to them by their agent.

The ability to trial internet technology, and learn to navigate and search using a real estate website directly are important aspects in the ability to learn and adopt the technology, and this links back to both the accessibility to the technology, and degree of social integration – i.e. whether a buyer knows someone using the technology who can aid in teaching them how to use internet search engines, and where to find real estate property information on the web.

A chi-square test for internet use between respondents aged under 45 years, compared to those aged 45 years and over showed a significant difference at the 5% level (p=0.015) in perceived ease of use and perceived enjoyment of using a real estate website between older and younger respondents, with younger respondents having greater agreement with the perceived enjoyment and perceived ease of use items than older respondents (Refer Appendix C, Table A27).

A t-test comparing the difference in mean scores for the items relating to each construct established a significant difference between Age and Internet use at the 5% level (p=0.006). This result indicates that younger purchasers are greater users of the internet during the search process than their older counterparts (Refer Appendix C, Table A28).

These results agree with H9 and earlier studies by Littlefield, Bao and Cook (2000) and Palm and Danis (2002) that younger persons use the internet more, and also agree with real estate agent comments that younger persons would find it easier to use and more enjoyable due to having grown up with the technology and use IT for entertainment pursuits.

**Professionalism**

Information exchange and trial is known to precede early adoption (Karlsson, 1998; Geroski, 2000). Similar to younger societal members, professionals are more socially integrated (in terms of business networks), and in a better position to access internet facilities in the workplace (can trial), and to learn from colleagues about new sources of information (information exchange). Professionals who are familiar with using internet for business activities, are also likely to translate these skills for personal use in the search for a house.
A number of studies have shown that aspects of professionalism (higher income and higher education levels) are influential in early adoption of technology (Rogers, 1995; Dickerson and Gentry, 1983; Gatignon and Robertson, 1991), and also in information seeking behaviour (Newman and Staelin, 1972). However, Anglin (1997) states income should have no effect on property buyers’ time to purchase.

The literature also shows disagreement in terms of the amount of search intensity (the number of houses searched and depth of information sought) undertaken by those with higher incomes looking for a house. On the one hand, Yavas (1992) indicates that search intensity increases for higher priced homes, whereas Elder (1999, cited in Baryla and Zumpano, 2000) found that higher income earners searched for a home with less intensity. This may be explained by Chao and Gupta’s (1995) finding that a greater search for information by educated people is due to the educated person’s propensity to engage in more meaningful searches for information, while less educated consumers have been found to be less efficient shoppers, and have less ability to process information during the search, despite being just as motivated to search. Another explanation may link to perceived enjoyment, in that the ability to process information and search in a more meaningful way makes the search process itself intrinsically motivating, and therefore the search process intensifies.

Contrary to H10 that professionals would be more likely to use the internet during the search for a house, a chi-square test of the results found there was no significant difference between the level of professionalism (measured on household income) and use of the internet during the search for property at the 5% level of significance (p=0.532). Although ‘professionalism’ is used in literature to denote employment, income and educational aspects (Rogers, 1995; Dickerson and Gentry, 1983; Lassar et al., 2005; Sultan, 2002; Gatignon and Robertson, 1991) “professionalism”, as used in this study, was measured using a household income scale. The results show household income is not a good indicator of potential internet use during the search for a house (Refer Appendix Cc: Table 29). The highest difference between professionals and non-professionals in agreement with the individual constructs was for perceived enjoyment (p=0.289), which may indicate that the professionals’ ability to search in a more meaningful way makes the process more enjoyable for them, however this is not significant at the 5% level (Refer Appendix C: Table A30).

Due to the number of previous studies indicating a link between professionalism (income and education level) and IT use (Rogers, 1995; Dickerson and Gentry, 1983; Lassar et al., 2005;
Sultan, 2002), the result is unexpected, and may mean that the determinant of professionalism used (income) is not a good indicator of professionalism for this market segment, and either education level, or a combined weighting of income and education level might be a better measure of professionalism.

**Type of property purchased**

Moorthy, Ratchford and Talukdar (1997) argue that a consumer’s perceptions of the market prior to enacting search have a major impact on the search process. Those who are heavy users of real estate information (such as property investors who may be buying and selling many houses over the period of a year) will be well informed of the market conditions, and will therefore have limited perceived risk from lack of market knowledge. Their search process is therefore concerned with locating good value property options for their portfolio, ensuring market conditions are favourable for purchasing, and comparing present houses on offer with past search results. Family-home purchasers are instead concerned with the characteristics of the local neighbourhood and individual features of the house, such as the style and ambience (Palm and Danis, 2001). In using a real estate website, these purchasers are still interested in locating a house that meets their criteria and will give a good capital gain, but Anglin (2004) states that ‘sealing the deal’ quickly is offset against considerations such as disruptions from the physical move (as most family homes are primarily owner residences), and the need to consult other family-members on the decision (i.e. it is a joint decision-making process, maybe involving up to 5 family members, all whose individual needs must be weighed up and considered during the purchase choice). Midgley (1983) picks up on this multiple-decision maker/influencer theme in stating that items involving a household or a joint decision do not follow the traditional single decision-maker theories of consumer search.

Moorthy, Ratchford and Talukdar (1997) highlight the importance of relative brand uncertainty to the search process, in that if there is little difference between options, less information is required to make a decision. Stigler (1961) (cited in Baryla and Zumpano, 1995) similarly indicated that if all choices are similarly priced, then the search time will be short. In the case of investment properties, often the rental value that can be obtained will be similar for houses of similar size, number of bedrooms and bathrooms, and garaging facilities, so the buyer is then looking for the cheapest house with similar features due to the low relative brand uncertainty in rental housing markets. In the case of a family home, there are other considerations besides mortgage payments (such as lifestyle requirements and closeness
to appropriate amenities), which means it is unlikely that a buyer will find many houses that are very similar in size, style, and lifestyle requirements in the same location and price range, meaning a higher degree of relative brand uncertainty between those being considered for purchase, and a longer and more intense search process should ensue.

The use of the internet as a primary source of information for investors (as indicated by the real estate agents that were interviewed) may be due to their inherent knowledge of the market and their observability of others’ success with this form of information retrieval. Rogers (1995) indicated that the easier it is for individuals to see the results of an innovation, the more likely they are to adopt it, and also outlined that the late majority adopters will adopt when they see the apparent need to, in order to remain part of the market. In order for investment buyers to keep ahead of other potential buyers in the market, and purchasing the best value homes, they will need to gain up-to-date information about potential houses quickly, and be able to screen these options efficiently — both regarded as features of a real estate website.

Additionally, even where investors are using ‘personal sales agents’ to select properties for them to consider, the trend is towards agents transferring this information electronically to clients, often by email or text messaging, with the URL link to a real estate website anyway. This trend will force investors to adopt internet technology, in order to remain informed by agents.

A chi-square test on the results show no significant difference (p=0.085) between the property’s future intended use (investment of personal residence) and use of the internet during the search for property at the 5% level of significance (Refer Appendix C: Table A31), which means rejecting $H_11$ in favour of the null hypothesis. It appears those looking for a family home use the internet to search for a property a similar amount as those who are intending to purchase an investment property. This may be due to the internet’s ability to offer enjoyment and ease of use as well as the purely utilitarian usefulness attributes it offers to the business-oriented investor.

A comparison of the difference of means between the various constructs for these 2 groups (investors and non-investors) indicates a significant difference (p=0.047) in behavioural intent to use a website at the 5% level of significance, with those looking for a family home having stronger agreement with the items relating to behavioural intent than investors. There appears
to be some difference ($p=0.075$) in attitude between purchasers of these two property types with regard to the perceived usefulness of real estate websites, but this is not significant at the 5% level (Refer Appendix C: Table A32).

**Distance to the market**

People purchasing from out of town are likely to have very little knowledge of the local housing market, especially on a daily or weekly basis (as they do not reside there, and cannot access other sources of information like the newspaper, mailbox flyers and for sale signs), and also are not able to physically view the properties. These two factors were considered by the real estate agents interviewed as influential drivers of the use of the internet by non-local home purchasers. Palm and Danis (2002) similarly posited that less familiarity with the future residential neighbourhood would lead to more frequent internet use, and found that people moving inter-state were indeed more likely to use the internet. Similar to the real estate agents comments that sometimes overseas buyers would arrive for a few days solid to view properties, make their choices on what to purchase, and leave, Elder (1999) found out - of - town purchasers searched intensely and over a shorter period than those purchasing locally, due to higher search costs of visiting homes (cited in Baryla and Zumpano, 1995).

Contrary to the findings of Palm and Danis (2002) there is no significant difference ($p=0.953$) between the residential location of the purchaser and the location of the properties for sale at the 5% level of significance (Refer Appendix C: Table A33). Those residing within the Bay of Plenty region were just as likely to use the internet to search as those located further afield, which does not agree with H15. There is also no significant difference in the level of agreement with the various constructs between respondents depending on their distance to the marketplace when searching (refer Appendix C: Table A34).

It may be that the ubiquitous nature of the internet, and the increase in New Zealanders using this tool to search in general over the past four to five years since Palm and Danis’ study, means real estate websites are now just as useful a tool for local purchasers as they are for more distant buyers, that is, the real estate website is now considered to be as useful as other previous real estate search options available to local purchasers.
4.5.3 Impact of internet use on real estate search behaviour

Hypotheses 12, and 13 and 14 concern whether there is any significant difference between the average: number of open homes visited; length of time to search for a property; and number of previous properties purchased, between two group means – those which used the internet in the search process, and those who did not. To analyse these differences in means, a two-tailed t-test was used for each set of data.

Open home visits

The traditional opportunity to view a potential house purchase has been through attending open homes, which give the purchaser an opportunity to view the interior of the house, the back of the property, as well as assess layout, space, conditions of the furnishings, etc. Real estate agents, along with the study respondents, emphasised the ‘efficient’ nature of the real estate website listings, allowing purchasers to view properties online. With the introduction of real estate website ‘virtual tours’, certain aspects of a house assessment can be replicated online, such as the number of rooms, the interior décor, and layout.

However, other aspects such as cupboard space and ambience are not as easy to assess from a photo, which raises the question of whether the information obtained from using the internet as an information source can fully replace that gained through the traditional purchasing process. Palm and Danis (2002) posited that due to the ability to view houses online, internet users would therefore visit fewer houses, but instead found internet users did not visit fewer homes, they visited more homes than those using more conventional channels.

Former studies have indicated that the process of physical house shopping is an enjoyable and sometimes social occasion (Cox et al., 2005; Rich and Portis, 1963 cited in Cox et al, 2005; Molesworth and Suortti, 2001), often involving a family outing, and purchasers may not want to substitute for this enjoyable open home experience. The internet website virtual tours may instead be being used as a means to screen initially interesting properties, to cull some from the ‘potential open home list’ prior to visiting, rather than being used instead of the physical visit. Due to the exposure to a greater number of homes as a greater number of purchase opportunities are sighted online, the ‘potential open home list’ may be growing in length for those using the internet, and despite the cull, there are still more to visit overall than those using more traditional information sources. Certainly for non-investors, this appears to be true, with non-investors still visiting more open homes than investors (Refer Appendix C:
Table A8). Non-investors will be more interested in ambience and lifestyle aspects than investors, who will often be happy to make a decision based on the internet information alone.

The average number of open homes visited by those who used the internet during the search process was 6.33, with a standard deviation of 5.87. For those not using the internet, the average number of homes visited was much less, at 2.48, with a standard deviation of 2.06. To assess the equivalence of the variances, an F-test was performed, which showed we could not assume equal population variances for the two sets of data (Refer Appendix C: Table A35). To test whether these two mean scores were significantly different, a two-tailed t-test was performed (Refer Appendix C: Table A36). The t-test showed a significant difference at the 1% level (p= 0.0002) between the average number of open homes visited by those using the internet during the search process, and those who did not use the internet while searching for a property. Contrary to H12 that internet users would visit fewer open homes, it seems they are instead visiting a greater number than those not exposed to this search tool.

This finding agrees with Palm and Danis’ (2002) study, but goes against anecdotal evidence from the local real estate agents that today’s buyers are only viewing a handful of open homes, and their belief that this was due to internet listings and virtual tours. One reason given already for this may be that real estate websites are being used more as a ‘screen’ than a substitute for open home visits. Another aspect may relate to a point raised by a real estate agent that often buyers (especially non-investors) do not really know what they want until they see it, citing the example of a lady who began looking for an apartment and ended up buying a lakeside mansion. The real estate agent put this down to his quizzing of her lifestyle requirements rather than building features, whereby she specified she was really after ‘something a bit different’ and ‘privacy’. Because real estate website search engines categorise by feature rather than on keywords or lifestyle needs, conversations with real estate agents and visiting open homes can be very useful to help a non-investor purchaser determine a home’s ‘fit’ with their lifestyle.

**Time to search**

Search effort is driven by the perception of relative uncertainty, the level of product involvement, and risk (Moorthy, Ratchford and Talukdar, 1997; Duncan and Olshavsky, 1982; Srinavasan and Ratchford, 1991). External search has the obvious benefit of finding alternative purchase options that are more beneficial than those a consumer is currently aware of, therefore reducing the risk of an inferior purchase choice being made (Klein and Ford,
Therefore, one would expect that the decision process to overcome risk would involve greater information search, and more in depth evaluation of alternatives, to combat the risk involved, especially for a high involvement purchase such as a family home. But for a house purchase where there is less emotional involvement, and less relative brand uncertainty (such as an investment property) less search time would be necessary to overcome perceived risk.

By informing oneself about the market, what is available, and through viewing and comparing properties, a purchaser becomes knowledgeable about the various product offerings, and feels more confident to make a decision. Higher self-confidence from this initial search process reduces the perceived impact of a bad purchase choice, and the necessity to search until the ultimate purchase choice is found. (Kiel and Layton, 1981; Duncan and Olshavsky, 1982).

Littlefield, Bao and Cook (2000) outline a number of websites dedicated to real estate, which are theoretically offering consumers convenience and efficiency in house purchase. Similarly, respondents in this study indicated they felt that using a real estate website saved time, allowed 24/7 access to the market, and gave them a general appreciation of the market. Haubl and Trifts (2000) and Peterson and Merino (2003) point out the ability of real estate websites to screen and compare homes, therefore allowing better decision-making with less search effort. The ability to screen and individualise the search criteria was stated by respondents in this study as a significant reason for using real estate websites, and Anglin (2004) found that improvements in search technology allow inspection of a property in a shorter timeframe. Ratchford, Talukdar and Soo-Lee (2001) also established that those who did not use the internet searched more overall, and proposed that the increased knowledge made the internet users feel more powerful and confident in the purchase process, and therefore they were able to choose a home more quickly. However, in contrast to this, Ford, Rutherford and Yavas (2005) investigated the effect of internet listings on time to sell property and found that houses listed on the internet actually take slightly longer to sell, but sell for a higher price. The authors suggest this is because internet buyers are considering a greater number of purchase options, due to the larger information base of the internet, and therefore the time required to find their dream property takes longer, and this impacts on the sellers’ time to find a buyer.

The average number of months spent in the search process by those that used the internet during the search process was 2.25 months, with a standard deviation of 4.25. For those not using the internet, the average number of months spent searching for a home was slightly less,
at 1.05, with a standard deviation of 0.934. To assess the equivalence of the variances, an F-test was performed (Refer Appendix C: Table A37), which showed we could not assume equal population variances for the two sets of data. To test whether these two mean scores were significantly different, a two-tailed t-test was performed indicating a significant difference (p=0.0002) at the 1% level between the average number of months spent in the search for a new house for those using the internet during the search process, and those who did not use the internet while searching for a property (Refer Appendix C: Table A38).

Contrary to H13 that the internet would allow users to save time and obtain a property more quickly, it seems they are instead taking a longer time to find a suitable property than those not exposed to this search tool. This links with the findings regarding open home visits; if internet viewers are still visiting open homes, and are visiting a larger number of open homes, they need a greater length of time to consider all the options and come to a decision. This certainly makes sense for family home purchasers, as the additional family ‘fit’ considerations will not make them want to rush into a sale before they have assessed the options, however, for investment properties, faster turnover of properties would be expected to drive buyers to speed up their search time. Certainly, the time on the market for properties has reduced, but perhaps because there is also a greater turnover of properties for sale, the demand aspect of rental properties is not as apparent and not causing this shortened search time, as buyers know there will always be more to choose from tomorrow.

**Previous house-purchase experience**

Previous experience in a product category is known to influence the consumer decision-making process (Howard and Sheth, 1969; Maute and Forrester, 1991) because as consumers become more knowledgeable about a product category, the perception of risk decreases. In this study, previous experience with both the internet, and also the housing market, would therefore be expected to affect a person’s search strategy. Anglin (1997) indicates ‘familiarity’ with the market (in terms of having an indication of the worth of houses prior to inspection) as well as experienced buyers’ ability to understand the implications of an information set better than an inexperienced buyer, are elements often overlooked in classic search models. Consumers are considered to firstly consult their own internal memory via internal search, as this is the immediately available and most convenient source of information on hand. Those with a high degree of internal knowledge due to past experiences have already reduced the ‘risk of the unknown’, and therefore use information to expand on this knowledge through external search, in order to update and verify their internal memory.
They can easily source and interpret the information received, and manage this new information to make informed purchase decisions.

**H14** particularly concerns the past experiences in a housing market, rather than experience with the internet. House-buyers with past house-purchase experience are expected to have a higher level of confidence in their ability to make a wise purchase decision, not need to search as much in order to make the decision (they will already have a fairly good idea of the market and the route to finding and securing a residence), and the process may not be as novel and exciting for them as it is for a first home buyer (the act of shopping may be less intrinsically motivating than it was for their first home).

The level of enjoyment a person has had previously in using a technology will affect their attitude towards using it (Fishbein and Ajzen, 1975), and also how intrinsically motivating the activity is perceived to be (Deci and Ryan, 1985). If the past experience of using a real estate website was not enjoyable, and not motivating enough to repeat, then a homebuyer may revert to their usual information sources. If previous search methods (non-website) resulted in a satisfying purchase, then they may also question their need to adopt a new search technology to achieve a satisfactory purchase result.

Users of the internet during the search for a new home had previously purchased on average 4.22 houses, with a standard deviation of 4.24. Those who did not use the internet during the search process had on average previously purchased 6.68 houses with a standard deviation of 5.28. To assess the equivalence of the variances, an F-test was performed, which showed we could assume equal population variances for the two sets of data (Refer Appendix C: Table A39). To test whether these two mean scores were significantly different, a two-tailed t-test was performed (Refer Appendix C: Table A40), which showed a significant difference at the 2% level between the average number of previous purchases for those using the internet during the search process (p=0.021), and those who did not use the internet while searching for a property. This supports **H14** that those purchasers with greater in-market experience would be less likely to use the internet. It stands to reason also, that older members of society would be more likely to have purchased more houses, and there is indeed a very strong confounding of any past purchase experience (ie. not first-homebuyers) with age (p = 0.000). However, when analysing the effect of age and those who had ever purchased more than three homes, confounding significance reduced to the 5% level.
4.5.4 Summary

An analysis of the primary research results indicates that the TAM model extended for perceived enjoyment construct sufficiently explains the key determinants for using a real estate website (Figure 29). Perceived usefulness was found to be the strongest determinant of both attitude and behavioural intent, however, usefulness is strongly influenced by perceived ease of use. Perceived enjoyment is a significant influence on behavioural intent, but is also mediated through ease of use.

The results support all hypotheses H1-H8, although for H6, only a weak relationship was established. All hypotheses had correlation coefficient levels significant at the 1% level.

In terms of moderating factors, only age and past house purchase experience were found to be significant, which supports hypotheses H9 and H14, but does not support hypotheses H10, H11 and H15. The results also show real estate website use during information search to have significant influence on subsequent search duration and number of open homes viewed, however, the finding was opposite to that proposed in hypotheses H12 and H13, in that the results suggest real estate website users search longer, and visit more open homes, than non-users.

![Fig 29: Revised research model](image_url)
Chapter 5: Conclusion and Implications

5.1 INTRODUCTION

This thesis explored the adoption of real estate websites by recent house purchasers in the Bay of Plenty, with particular focus on the determinants explaining attitudes to use and moderating factors affecting their decision to use the real estate website as an information medium.

The purpose was to explain the behavioral intention to use a real estate website, and extend the ability of the TAM to explain the behavioural intention to use interactive technologies by considering its ability in the context of the real estate website.

5.2 CONCLUSION

Results from the primary research indicated strong support for the extended TAM model proposed, but only showed support for two modifying factors, age and past experience. An overview of results for the research hypotheses (Table 7) indicate:

<table>
<thead>
<tr>
<th>HYPOTHESIS</th>
<th>Hypothesis supported?</th>
<th>Strength and Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>H1</strong> There is a positive relationship between perceived usefulness and</td>
<td>Yes</td>
<td>r =0.654</td>
</tr>
<tr>
<td>attitude to using a real estate website</td>
<td></td>
<td>p = 0.0001</td>
</tr>
<tr>
<td><strong>H2</strong> There is a positive relationship between perceived ease of use and</td>
<td>Yes</td>
<td>r =0.575</td>
</tr>
<tr>
<td>attitude to using a real estate website</td>
<td></td>
<td>p = 0.0001</td>
</tr>
<tr>
<td><strong>H3</strong> There is a positive relationship between perceived usefulness and</td>
<td>Yes</td>
<td>r =0.825</td>
</tr>
<tr>
<td>behavioural intention to using a real estate website</td>
<td></td>
<td>p = 0.0001</td>
</tr>
<tr>
<td><strong>H4</strong> There is a positive relationship between perceived usefulness and</td>
<td>Yes</td>
<td>r =0.819</td>
</tr>
<tr>
<td>perceived ease of use</td>
<td></td>
<td>p = 0.0001</td>
</tr>
<tr>
<td><strong>H5</strong> There is a positive relationship between attitude and behavioural</td>
<td>Yes</td>
<td>r =0.575</td>
</tr>
<tr>
<td>intention to using a real estate website</td>
<td></td>
<td>p = 0.0001</td>
</tr>
<tr>
<td><strong>H6</strong> There is a positive relationship between perceived enjoyment and</td>
<td>Yes</td>
<td>r =0.351</td>
</tr>
<tr>
<td>attitude to using a real estate website</td>
<td></td>
<td>p = 0.0005</td>
</tr>
<tr>
<td><strong>H7</strong> There is a positive relationship between perceived ease of use and</td>
<td>Yes</td>
<td>r =0.475</td>
</tr>
<tr>
<td>perceived enjoyment of using a real estate website</td>
<td></td>
<td>p = 0.0001</td>
</tr>
<tr>
<td><strong>H8</strong> There is a positive relationship between perceived enjoyment and</td>
<td>Yes</td>
<td>r =0.479</td>
</tr>
<tr>
<td>behavioural intention to using a real estate website</td>
<td></td>
<td>p = 0.0001</td>
</tr>
<tr>
<td><strong>H9</strong> People less than 45 years of age will have a more positive attitude/</td>
<td>Yes</td>
<td>χ² = 5.948</td>
</tr>
<tr>
<td>intention to use a real estate website than older cohorts, and more</td>
<td></td>
<td>p =0.015</td>
</tr>
<tr>
<td>younger cohorts will have used the technology than older cohorts in the</td>
<td></td>
<td></td>
</tr>
<tr>
<td>search for a house</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
H10. People who are professionals (households with higher income) will have a more positive attitude/intention to use a real estate website than non-professionals, and more professionals will have used the technology than non-professionals in the search for a house.

Hypothesis supported?
Strength and Significance

No
$\chi^2 = 0.391$
p = 0.532

H11. People who are buying an investment property will have used a real estate website to a greater extent than those who are buying family homes.

No
$\chi^2 = 2.971$
p = 0.085

H12. People who have used real estate websites to search for property will have visited less open homes.

No – they visited more open homes
Users $\bar{x} = 6.33$
Nonusers $\bar{x} = 2.48$
p = 0.0002

H13. People who have used real estate websites to search for property will have spent less time in the search process before a suitable property is found.

No – they spent longer time
Users $\bar{x} = 2.25$
Nonusers $\bar{x} = 1.05$
p = 0.0002

H14. People who have had previous experience in purchasing real estate will use the internet to a lesser degree than those who are newer to the real estate scene.

Yes
Users $\bar{x} = 6.68$
Nonusers $\bar{x} = 4.22$
p = 0.02

H15. People who are buying property from outside the local area will have used a real estate website to aid their purchase decision to a greater degree than those who are buying locally.

No
$\chi^2 = 0.003$
p = 0.953

Table 7: Overview of Hypothesis Findings

The TAM extended to include the perceived enjoyment construct adequately explains the behavioural intention to adopt a real estate website. In addition, moderating factors of age and past experience influence behavioural intention to adopt the innovation. Those who are younger in age, and have had limited past experiences in buying a house are more likely to adopt a real estate website tool during the information search stage of buying a house.

In addition, using a real estate website during the search process exposes buyers to a wider range of properties, and the study found that this leads to a longer overall search duration, and visits to a larger number of open homes than those who did not adopt the tool.

5.3 MANAGERIAL IMPLICATIONS

Intrinsic motivation (measured through the construct of Perceived Enjoyment) appears to have a significant influence on behavioural intent. However, the study shows that Perceived Ease of Use significantly mediates this effect. There is a need to ensure real estate websites are explicitly simple to use, as this will enhance user enjoyment and further drive behavioural intention.
intent (and subsequent use). One way to make websites easier to use identified through this study may be to include a keyword search function, or a list of selected ‘common phrases’ that are present in real estate listing blurbs. This feature of the website would enhance the usability of the site, as the user can then search by lifestyle benefits and for certain types of houses, rather than by physical property features such as number of bedrooms and living areas.

The research indicates that younger people find real estate websites easier to use and more enjoyable due to the accessibility they have to the internet, and their more advanced knowledge of how to search online. A further factor is the social connectedness of youth, and their influence in social information exchange, as well as higher cogniscence of peer perceptions and influence. Real estate agencies can use the social exchange networks of youth to gain awareness for the usefulness and new features of property websites as these develop and mature. Although older members showed a significant difference in their rating of Perceived Ease Of Use and Perceived Enjoyment of real estate websites than younger cohorts, there was no significant difference in Perceived Usefulness. This is particularly significant, indicating that older cohorts still see the benefits of using the real estate website, but do not use it due to lower Perceived Ease Of Use or Perceived Enjoyment. Due to not growing up with and being trained in online technologies, older people therefore need to learn to use a real estate website tool, and gaining greater use of the website by older people may be achievable during investment seminars, or as a real estate service. The benefits of this would enable less emphasis to be placed on lesser used traditional marketing channels such as window listings or news sheets, or these media being targeted specifically at certain market segments. However, due to the continuing high usage of traditional sources such as daily newspapers and personal conversations with agents, it is unlikely that the website listings will ever completely replace all the traditional marketing media. The trend of certain real estate agencies to do away with newspaper advertising is therefore not advisable, as it cannot be assumed that all buyers will use the internet, and agencies then run the risk of alienating certain market segments if they switch away from these traditional information sources.

The message is therefore to focus real estate website marketing strategies to target younger buyers, and those who are first home buyers, while not alienating other buyers from using the tool.
The intrinsic enjoyment gained *versus* tangible benefits from using a real estate website to find information shows that the use of a real estate website is not necessarily an efficient search means (as the tool’s intrinsic nature means it may be less effective and efficient than physically searching and viewing properties, but more enjoyable and convenient). The real estate website appears to be a vehicle by which buyers are investigating a greater number of homes, and may allow them to consider a wider set of housing types than initially they had in mind, particularly in the case of non-investment purchasers. Real estate agents could use this aspect to their advantage in exposing buyers to properties that are similar to the open homes they are viewing, thus gaining a larger pool of potential buyers for each property. As the search functions of real estate websites are used mainly to screen and cull properties, real estate agents should also carefully consider the information provided for each listing. The objective is to ensure the property is not easy to cull from a potential buyer’s list, and is noticed or selected quickly by the most likely potential purchasers. Different teaser information may be required to attract internet buyers to continue to consider the property, than that being used in newspaper or magazine listings. In particular, the intrinsic aspect of website searching, such as unlocking searcher curiosity and visual effects, needs to be more carefully considered.

5.4 ACADEMIC IMPLICATIONS

This research extends the study into the extent to which purchasers use the internet, by not only examining demographic and behavioural influences in the context of the New Zealand real estate market, but also through examining the psychographic influence of the key constructs of the technology acceptance model – perceived ease of use and perceived usefulness – and testing the relevance of the perceived enjoyment/ fun construct in the context of this technology search tool.

The study adds to the limited body of knowledge investigating the use of the TAM for interactive technologies, and adds support for recent studies indicating the importance of perceived enjoyment on technology acceptance of the internet (Moon and Kim, 2001; Bruner and Kumar, 2005). In particular, the study shows PEOU mediates PEnj, therefore implying that making an interactive technology easier to use is likely to increase perceptions of user enjoyment. This has implications for website entry and layout, in terms of the amount of information posted on a website, and the website’s ability to allow easy navigation.
The large and highly significant correlation between PU and BI reinforces Davis’ (1989) TAM model where Perceived usefulness is regarded as the most significant factor in adoption.

There is currently little information available concerning consumer decision-making for high-involvement property purchase, especially from a marketing perspective. This research contributes to and complements studies relating to other high-involvement purchase decisions being impacted by online search capabilities, such as automobiles and banking. This study found age and previous home purchase experience were mediating factors in using a real estate website to aid decision-making.

Aspects of the information search process when looking for a new house have previously focused on search duration (Baryla and Zumpano, 1995), search intensity (Palm and Danis, 2001; Clark and Smith, 1982; Baryla, Zumpano and Elder, 2000), and moderating factors such as family size (Clark, 1981 cited in Clark and Smith, 1982) and length of residence (Clark, 1982). Despite being touted as efficient, use of the real estate website was found to have the effect of expanding both search duration and number of open homes visited. This raises questions concerning the efficiency of the device, and indicates that the impact of the internet on buyer search duration and search intensity is not yet conclusive.

Differences in types of media used to source information have been previously investigated for their usefulness (Palm and Danis, 2001; Findsen, 2005). By investigating the usefulness to property buyers of a recent innovative and interactive search media, the study provides a benchmark for further studies in information search using other interactive media as these are developed, customised for use in real estate information search, and introduced to property buyers.

5.5 LIMITATIONS AND FUTURE RESEARCH

The research was limited to studying only one geographical segment of New Zealand, and may not be representative of national real estate website use. The research could therefore be extended to other parts of the country, or entail a national study. The study focused on determinants of real estate website use during the information search stage of decision-
making, rather than overall strategies to improve real estate sales, and online purchasing or post-purchase satisfaction by real estate website buyers.

The research model derived is also exploratory in nature, and is yet to be empirically tested and evaluated.

Research investigating house purchase decision-making in general appears limited, with the majority of studies focusing on consumer durables such as automobiles or appliances. The nature of real estate practice in New Zealand, together with the investigative profiles of property buyers in this nation, allows scope for further study in this area. In particular, the rate of adoption by various demographic and ethnic groupings, and the impact of adoption on property search behaviour by different demographics would be worthy of further study.

The findings from this study are similar in many aspects to previous studies from North America, however, the research could be extended outside of New Zealand to compare cultural and market differences in real estate website adoption between international markets.

Although a few recent New Zealand housing research studies have investigated the changing buying habits and home ownership aspirations of younger buyers (Findsen, 2005; DTZ, 2005), the intrinsic aspects of buying a home over renting, as opposed to tangible benefits such as capital gains, are worthy of further exploration also. The intrinsically motivating aspects of using new technologies to aid information search could be applied to other search technologies with further real estate search tools as they develop, such as regular email listings and PDA notification.

As the internet is ‘here to stay’, innovators are turning their attention to media of the future. The next communications technology that might be used in the future of real estate marketing, and is tipped to usurp text messaging (Hendery, 2006), is an advanced 3G system combining property information databases with geographical information from Terralink. The system was being trialled by New Zealand real estate agents during March 2006, and allows homebuyers the ability to access local neighbourhood property details, and sales information from their phone while house hunting in a particular area.

The use of household income may not be an adequate indicator of professionalism, and subsequent research in this field should also consider the role of education as an indicative
measure of a person’s professionalism. Although gender was not included in this study, it may be a significant modifying factor in other real estate search technologies, also, and should therefore be considered.

The rise in the use of non-agent realty websites such as Trademe Property, combined with the interest of overseas buyers in the market, who often purchase sight unseen, may see the role of real estate websites changing in future from primarily an information search tool, to also being a useful tool for online purchasing of realty or other real estate related services, and this is an area for further study and consideration.

The role of additional modifying factors, and further proposed constructs of the TAM model as they arise may also be useful in explaining further the behavioural intention to use real estate search technologies during information search.
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## APPENDIX A: CONSTRUCTS AND ITEMS

### Perceived Ease of Use

<table>
<thead>
<tr>
<th>Item</th>
<th>Modified Item for thesis study</th>
<th>Justification</th>
<th>Scale</th>
<th>References who used construct in their study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to use xyz is (would be) easy for me</td>
<td>Learning to use a real estate website would be easy for me</td>
<td>Same as previous</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al., 2002; Moore and Benbasat, 1991; Agarwal and Prasad, 1997; Luarn and Lin, 2005; Moon and Kim, 2001</td>
</tr>
<tr>
<td>I (would) find it easy to use xyz to do what I want to do</td>
<td>I would find it easy to use a real estate website to do what I want to do</td>
<td>Should use same wording – all others have used this wording despite what the device/technology is.</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Dishaw and Strong, 1999; Moore and Benbasat, 1991; Agarwal and Prasad, 1997; Davis, 1989; Moon and Kim, 2001</td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using xyz</td>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td>Same wording</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo et al., 1999; Igbaria et al., 1995; Chen et al., 2002; Luarn and Lin, 2005; Davis, 1989; Moon and Kim, 2001</td>
</tr>
<tr>
<td>I (would) find xyz easy to use</td>
<td>I find real estate websites easy to use</td>
<td>Same as previous</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo et al., 1999; Bruner and Kumar, 2005; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al., 2002; Dishaw and Strong, 1999; Agarwal and Prasad, 1997; Luarn and Lin, 2005; Davis, 1989</td>
</tr>
<tr>
<td>I believe that xyz is cumbersome to use</td>
<td>X</td>
<td>Rejected as real estate website technology is not a physical device: Teo and Pok were investigating a WAP enabled mobile phone; and Moore and Benbasat, a personal work station.</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo and Pok, 2003; Moore and Benbasat, 1991</td>
</tr>
<tr>
<td>I learned to use xyz quickly</td>
<td>X</td>
<td>Rejected: The statement as written implies that a person has already used a real estate website, in my study, I am surveying both users and non-users of the technology.</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Bruner and Kumar, 2005</td>
</tr>
<tr>
<td>I can easily find what I want when using xyz</td>
<td>I can easily find what I want when using a real estate website</td>
<td>Both previous studies modified for their own studies: Shang uses “I find it easy to use [name of virtual store] to find what I want” Chen uses “I can easily find the product I want when shopping on the web”</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Shang et al., 2005; Chen et al., 2002</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>---------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>It is easy to search for product information when searching on the web</td>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>Although only used in only a singular study, the study is very similar to this study – looking for product information on the WWW</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Shang et al., 2005;</td>
</tr>
<tr>
<td>My interaction with xyz is clear and understandable</td>
<td>X</td>
<td>Rejected, as the wording implies previous interaction. Could be rewritten and included if worded to a different tense</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Chen et al., 2002; Dishaw and Strong, 1999; Agarwal and Prasad, 1997; Davis, 1989; Moon and Kim, 2001</td>
</tr>
<tr>
<td>I find xyz to be flexible to interact with</td>
<td>X</td>
<td>Rejected, as the wording implies previous interaction. Could be rewritten and included if worded to different tense</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Chen et al., 2002; Dishaw and Strong, 1999; Davis, 1989</td>
</tr>
<tr>
<td>My using xyz requires a lot of mental effort</td>
<td>X</td>
<td>Rejected, as the wording implies previous interaction. Could be rewritten and included if worded to different tense</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Moore and Benbasat, 1991; Moon and Kim, 2001</td>
</tr>
</tbody>
</table>
## Perceived Usefulness

<table>
<thead>
<tr>
<th>Item</th>
<th>Modified Item</th>
<th>Justification</th>
<th>Scale</th>
<th>References who used construct in their study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using xyz improves the performance of my tasks</td>
<td>Using a real estate website would enable me to improve the performance of my information seeking.</td>
<td>Most of the studies use either the word task or job and all use the word performance. 2 studies that are not work-related do not use the words task/job. Luarn and Lin don’t use task or job, but spell out what that task/job is “conducting banking transactions”; nor do Chen et al, who replace job/task with “shopping or information seeking” Some of the studies modify the item, eg. Dishaw and Strong, who modify by using the words “will enable me to improve…” and Luarn and Lin who state “would improve.”</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al., 2002; Dishaw and Strong, 1999; Luarn and Lin, 2005; Davis, 1989; Moon and Kim, 2001</td>
</tr>
<tr>
<td>Using xyz increases my task productivity</td>
<td>X</td>
<td>Workplace related</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo et al., 1999; Bruner and Kumar, 2005; Yang and Yoo, 2004; Igbaria et al., 1995; Dishaw and Strong, 1999; Davis, 1989; Moon and Kim, 2001</td>
</tr>
<tr>
<td>I find xyz useful for my work</td>
<td>X</td>
<td>Rejected as Workplace related</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Davis, 1989</td>
</tr>
<tr>
<td>Using xyz enhances my effectiveness on this project</td>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>Three studies, which were workplace related IT investigations, used the exact wording of “enhances my effectiveness on this project/ in my work” Two other non-work related studies modified this item: Brunar and Kumar = “it helped me to be more effective” and Chen et al.” Using xyz would enhance my effectiveness in shopping or information seeking</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo et al., 1999; Yang and Yoo, 2004; Igbaria et al., 1995; Chen et al., 2002; Dishaw and Strong, 1999; Moore and Benbasat, 1991; Davis, 1989</td>
</tr>
<tr>
<td>Using xyz provides me with information that would lead to better decisions</td>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td>Same wording</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Teo et al., 1999; Igbaria et al., 1995; Shang et al., 2005</td>
</tr>
<tr>
<td>xyz provides more information than provided via the traditional channels</td>
<td>X</td>
<td>Rejected as a single study item</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Shang et al., 2005</td>
</tr>
<tr>
<td>When shopping on the internet, it is easy to compare the differences among various products</td>
<td>X</td>
<td>Rejected as a single study item</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td>Shang et al., 2005</td>
</tr>
<tr>
<td>Statement</td>
<td>Rejected</td>
<td>Scale</td>
<td>Reference</td>
<td></td>
</tr>
<tr>
<td>--------------------------------------------------------------------------</td>
<td>-----------------------------------</td>
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<td></td>
</tr>
<tr>
<td>When shopping on the internet, I can find some products that are not easy to find in physical stores</td>
<td>X</td>
<td>Rejected as a single study item</td>
<td>Shang et al., 2005;</td>
<td></td>
</tr>
<tr>
<td>Using xyz will enable me to accomplish my tasks more quickly</td>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>Use same wording, as all other studies did, regardless of technology type.</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td></td>
</tr>
<tr>
<td>Using xyz gives me greater control over my work</td>
<td>X</td>
<td>Rejected as workplace oriented</td>
<td>Chen et al., 2002; Shang et al., 2005; Dishaw and Strong, 1999; Moore and Benbasat, 1991; Moon and Kim, 2001</td>
<td></td>
</tr>
<tr>
<td>Using xyz enables me to have more accurate information</td>
<td>X</td>
<td>Rejected in favour of next two items, as these were closer in nature to the real estate sentiments.</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td></td>
</tr>
<tr>
<td>Using xyz enables me to access the newest information</td>
<td>Using a real estate website enables me to access the newest information</td>
<td>The quality and up to date nature of the information provided was a key reason given by the real estate agent interviews, therefore included.</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td></td>
</tr>
<tr>
<td>Using xyz enables me to acquire the highest quality information</td>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td>The quality and up to date nature of the information provided was a key reason given by the real estate agent interviews, therefore included.</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td></td>
</tr>
<tr>
<td>Using xyz is convenient</td>
<td>Using a real estate website is convenient</td>
<td>Convenience was a key word to emerge during the real estate agent interviews</td>
<td>1-7 Strongly agree- Strongly disagree</td>
<td></td>
</tr>
<tr>
<td>Item</td>
<td>Modified Item</td>
<td>Justification</td>
<td>Scale</td>
<td>References who used construct in their study</td>
</tr>
<tr>
<td>------</td>
<td>---------------</td>
<td>---------------</td>
<td>-------</td>
<td>---------------------------------------------</td>
</tr>
<tr>
<td>Using xyz is: • fun; frustrating • pleasant; unpleasant • negative; positive • foolish; wise • pleasurable; painful • exciting; dull • enjoyable; unenjoyable</td>
<td>Using a real estate website to find potential new homes is: • fun; frustrating • pleasant; unpleasant • negative; positive • foolish; wise • pleasurable; painful • exciting; dull • enjoyable; unenjoyable</td>
<td>Both Teo et al. and Igbaria et al. use the exact same scale for studying perceived enjoyment. Both of these studies used only this one item as a measure for perceived enjoyment...do I therefore need others???, 1-7 Semantic differential scale</td>
<td>Teo et al., 1999; Igbaria et al., 1995; 1-7 Semantic differential scale</td>
<td>Teo et al., 1999; Igbaria et al., 1995;</td>
</tr>
<tr>
<td>I had fun using xyz</td>
<td>X</td>
<td>Implies one used the device already; also, fun is used in first construct</td>
<td>Brunar and Kumar, 2005; Shang et al., 2005; Moon and Kim, 2001</td>
<td></td>
</tr>
<tr>
<td>I found using xyz to be enjoyable</td>
<td>X</td>
<td>Implies one used the device already; therefore modified item; enjoyable is used in first construct</td>
<td>Brunar and Kumar, 2005; Shang et al., 2005; Moon and Kim, 2001</td>
<td></td>
</tr>
<tr>
<td>When interacting, I do not realise the time elapsed</td>
<td>X</td>
<td>Implies one used the device already; Workplace oriented</td>
<td>Shang et al., 2005; Moon and Kim, 2001</td>
<td></td>
</tr>
<tr>
<td>When interacting with WWW, I am not aware of any noise</td>
<td>X</td>
<td>Implies use already</td>
<td>Moon and Kim 2001; Shang et al, 2005</td>
<td></td>
</tr>
<tr>
<td>When interacting, I often forget the work I must do</td>
<td>X</td>
<td>Workplace oriented</td>
<td>Moon and Kim, 2001</td>
<td></td>
</tr>
<tr>
<td>Using xyz stimulates my curiosity</td>
<td>Using a real estate website stimulates my curiosity</td>
<td>Implies one used the device already; Workplace oriented</td>
<td>Moon and Kim, 2001;</td>
<td></td>
</tr>
<tr>
<td>Using xyz leads to my exploration</td>
<td>Using a real estate website would lead to exploration.</td>
<td>Implies one used the device already; can modify item, however</td>
<td>Moon and Kim, 2001;</td>
<td></td>
</tr>
<tr>
<td>Using xyz arouses my imagination</td>
<td>Using a real estate website would arouse my imagination</td>
<td>Implies one used the device already; can modify item, however, with ‘would’</td>
<td>Moon and Kim, 2001;</td>
<td></td>
</tr>
<tr>
<td>Using xyz keeps me happy for my task</td>
<td>Using a real estate website keeps me happy for my task</td>
<td>Implies one used the device already; can modify item, however</td>
<td>Moon and Kim, 2001;</td>
<td></td>
</tr>
<tr>
<td>Using xyz gives fun to me for my task</td>
<td>X</td>
<td>Implies one used the device already, fun used again</td>
<td>Moon and Kim, 2001;</td>
<td></td>
</tr>
</tbody>
</table>

1-7 Semantic differential scale

7 point scale Strongly disagree- strongly agree

Brunar and Kumar, 2005; Shang et al., 2005; Moon and Kim, 2001

Shang et al., 2005; Moon and Kim, 2001

Moon and Kim 2001; Shang et al, 2005

Moon and Kim, 2001

Moon and Kim, 2001; Moon and Kim, 2001

Moon and Kim, 2001;

Moon and Kim, 2001

Moon and Kim, 2001;

Moon and Kim, 2001

Moon and Kim, 2001;
### Attitude

<table>
<thead>
<tr>
<th>Item</th>
<th>Modified Item</th>
<th>Justification</th>
<th>Scale</th>
<th>References who used construct in their study</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using xyz is a good idea</td>
<td>Using a real estate website is a good idea</td>
<td>Most studies use only 1 or 2 items for this construct in their studies; usually cognitive ones, and either an affective or behavioural one if a second is used. The fourth item set seems better, as it gives a positive and negative semantic differential scale, therefore not biased towards the positive, however, these are the same as the enjoyment scale. Therefore, these three have been selected instead.</td>
<td>7 point scale Strongly disagree- strongly agree</td>
<td>Teo and Pok, 2003</td>
</tr>
<tr>
<td>Using xyz is a wise idea</td>
<td>Using a real estate website is a wise idea</td>
<td>See above.</td>
<td>7 point scale Strongly disagree- strongly agree</td>
<td>Teo and Pok, 2003</td>
</tr>
<tr>
<td>I like the idea of using xyz</td>
<td>I like the idea of using real estate websites</td>
<td>See above</td>
<td>7 point scale Strongly disagree- strongly agree</td>
<td>Teo and Pok, 2003</td>
</tr>
<tr>
<td>Using xyz would be pleasant</td>
<td>X</td>
<td>See above</td>
<td>7 point scale Strongly disagree- strongly agree</td>
<td>Teo and Pok, 2003</td>
</tr>
<tr>
<td>All things considered, using www in my task is a good/bad Wise/follish Pleasant/unpleasant Positive negative idea</td>
<td>X</td>
<td>Too similar to the enjoyment scales.</td>
<td>Seven point semantic differential</td>
<td>Moon and Kim, 2001</td>
</tr>
<tr>
<td>It would be better for me to use xxx rather than manual tools</td>
<td>It is better to use a real estate website than other information sources when looking for a new home</td>
<td>Behavioural aspect. I have modified this, as ‘manual tools’ doesn’t include conversing with real estate agent or driving around to find open homes, etc... which are other info sources used.</td>
<td>7 point scale Strongly disagree- strongly agree</td>
<td>Dishaw and Strong, 1999</td>
</tr>
<tr>
<td>I think it would be good to use xxx rather than manual tools</td>
<td>I think it would be good to use a real estate website rather than other information sources when looking for a new home</td>
<td>Behavioural aspect. I have modified this, as ‘manual tools’ doesn’t include conversing with real estate agent or driving around to find open homes, etc... which are other info sources used.</td>
<td>7 point scale Strongly disagree- strongly agree</td>
<td>Dishaw and Strong, 1999</td>
</tr>
</tbody>
</table>
In my opinion it would be desirable to use \textit{xyz} rather than manual tools & In my opinion it would be desirable to use a real estate website rather than other information sources & Behavioural aspect. I have modified this, as ‘manual tools’ doesn’t include conversing with real estate agent or driving around to find open homes, etc… which are other info sources used. & 7 point scale Strongly disagree- strongly agree & Dishaw and Strong, 1999

Using \textit{xyz} makes me feel: & \textbf{X} & Affective aspect. Implies use already to have an affective attitude to use. & Seven point semantic differential & Yang and Yoo, 2004

\textit{A xyz is a _____ instrument in performing my tasks:} & \textbf{X} & Semantic differential scales, which have different words than the enjoyment scales, but the ‘performing my tasks’ doesn’t seem to make sense (too workplace/task oriented) & Seven point semantic differential & Yang and Yoo, 2004

\begin{table}[h]
\centering
\begin{tabular}{|l|l|l|l|l|}
\hline
\textbf{Item} & \textbf{Modified Item} & \textbf{Justification} & \textbf{Scale} & \textbf{References who used construct in their study} \\
\hline
Assuming I have access to \textit{xyz} in the future, I intend to use it & Assuming I have access to a real estate website in future, I intend to use it & Same wording & Semantic differential scale: Unlikely – likely; and improbable- probable. & Bruner and Kumar, 2005; Luarn and Lin, 2005 \\
\hline
In completing this project, I would rather use \textit{xxx} than manual tools alone. & When buying a house, I would rather use a real estate search rather than other sources of information & Modified, same reasoning for modifying as in Attitude construct. & 7 point scale Strongly disagree- strongly agree & Dishaw and Strong, 1999 \\
\hline
my intention is to use \textit{xxx} rather than manual tools in completing this project & & Implies access to website already & 7 point scale Strongly disagree- strongly agree & Dishaw and Strong, 1999 \\
\hline
I intend to increase my use of \textit{xyz} in the future. & & Implies using website already & 7 point scale Strongly disagree- strongly agree & Luarn and Lin, 2005; Moon and Kim, 2001 \\
\hline
I strongly recommend others to use \textit{xyz} & I strongly recommend others to use real estate websites & Same wording & 7 point scale Strongly disagree- strongly agree & Moon and Kim, 2001 \\
\hline
\end{tabular}
\caption{Table 8: Constructs and items}
\end{table}
APPENDIX B: SURVEY FORMS

Tuesday, 11 October 2005

[ Click here and type full postal address ]

Dear []

When purchasing new houses, people use a variety of sources to find out about available properties, and to obtain reliable information during the purchase process.

As a Master of Commerce student studying through the University of Otago, I am undertaking a research study for my thesis in conjunction with [insert agency] Rotorua to better understand the use of the internet in real estate purchase decision-making.

As somebody who recently purchased a house through [insert agency], your experience and views while seeking a new property are very important to me, whether or not you used the internet to search for available properties and real estate information.

I therefore invite the person from your household who was the most involved in finding information about potential properties you might purchase, to participate in this research study, as the results will enable increased value for future customers when dealing with [insert agency].

As the study is interested in the overall responses from a selected number of real estate purchasers, you can be assured your individual responses will remain confidential.

As a token of our appreciation for completing the questionnaire, all respondents will go into the draw to receive a $500 gardening voucher from Palmers Gardenworld, and an entry form for the draw is enclosed.

Please respond with your completed survey form and entry form in the ‘reply paid’ envelope enclosed, no later than 11th November 2005

Thank you for your assistance.

Karen Bayne
MCom Student
University of Otago
Information sheet for respondents:

This survey forms part of the study for a Master of Commerce degree in Marketing Management through the University of Otago, on the use of the Internet in home purchase. The survey should take about 10-15 minutes to complete, and the information you provide will be used to better understand the Bay of Plenty real estate environment, and the impact of real estate websites and the Internet on real estate marketing in Rotorua.

We are seeking information from households who purchased a house through a Rotorua real estate agency during the past 12 months, and particularly want to gain information from the person who was most involved in finding the information on available properties. Although the survey focuses on Internet use during the search for a new property, it is still important that I gather data from people who didn’t use the internet when searching for a property, also.

Any information that you give in the survey will remain confidential, and while the information will be used within the thesis, the data will be collated together and analysed as a whole. No information you give will able to be linked back to, or ascribed to yourself as an individual when reported in the thesis. Only the researcher and supervisors will have access to the raw data.

Please answer the questions as honestly as you are able, however, you may choose not to answer any question.

Thank you for agreeing to participate in the study, and taking time to complete the survey.

If you have any further comments to make, or questions regarding this study, please contact:

**Researcher:**
Karen Bayne  
MCom Student  
ph 07 343 5372

**Supervisors:**
Dr. Tony Garrett  
Senior Lecturer  
Dept of Marketing  
University of Otago  
ph 03 479 8195

Dr. Sarah Todd  
Associate Professor  
Dept of Marketing  
University of Otago  
ph 03 479 8157

bayka849@student.otago.nz  
tgarrett@business.otago.ac.nz  
or  
stodd@business.otago.ac.nz
Entry Form

The entry form will be detached from the survey form and remain confidential and private. We will use your address only to confirm the winner, and your phone number to contact you.

Win $500 of Palmers gardening vouchers just for completing this survey!

We must receive your completed questionnaire and entry form no later than Friday 11th November, 2005 to be entered into the draw.

1.1.1.a.1.1 Qualifying Period
The survey runs from 11th October to 11th November 2005.

1.1.1.a.1.2 Prize
One survey respondent completing a valid entry form will be drawn at the conclusion of the survey, and receive gardening vouchers to the value of $500. Prize is not transferable, exchangeable or redeemable for cash. No cash or prize substitution, transfer or assignment by winner is allowed.

1.1.1.a.1.3 Eligibility for the Contest
Everyone who sends a completed survey back to us with an entry form filled out before 11th November 2005 is eligible for the prize draw.
In addition, they must agree to noted terms and conditions.

Name
__________________________________________

Address

Phone number ________________
SURVEY FORM

1. What type of property did you want to buy?
   (Tick one)
   □ House
   □ Apartment
   □ Semi-detached Townhouse/ Unit
   □ Lifestyle
   □ Waterfront (Lake/ Ocean view)
   □ Holiday/ Bach
   □ Rural
   □ Business/ Office
   □ Rental
   □ Other __________________________________________

2. What was the primary purpose the house would be used for?
   (Tick one)
   □ The main house that myself and my family would live in
   □ A secondary house that I would go to for holidays or weekends
   □ An investment property that I would rent out
   □ A light commercial use (medical centre, small office, etc.)
   □ Other __________________________________________

3. Which of the following did you consult when looking for your new house?
   (Tick all that apply)
   □ Daily Newspaper
   □ Individual real estate agency
     mailbox flyer
   □ Individual real estate agency
     magazine of listings
   □ Individual real estate agency
     news sheet
   □ Property Press or multiple
     agency magazine listings
   □ Asking friends and neighbours
   □ Real estate agency window listings
   □ Internet
   □ Street signage (for sale signs and open home
     flags)
   □ Personal conversation with local agent
   □ Other ______________________

Which of the above was your main source of information during your search for a new house?

Please specify ________________________________

4. If you used the Internet, did you use a real estate website to search for information about houses for sale?
   □ Yes  □ No (please go to Qu 7)

   If Yes, which of the following did you use:
   (Tick all that apply)
   □ Realenz
   □ Open 2 view
   □ Relo
   □ Trademe
   □ Specific Real Estate Company website
   Please specify ________________________________

   □ Other
   Please specify ________________________________

5. What was your main reason for using the website over another information source?
6. How did you find the experience of using the website? *(Please write a few words that describe your experiences)*

7. Could you please give us some details about the type of house you were searching for when looking for your new house:

   **Price range**: *(circle one in each column to indicate lower and upper price limits)*

<table>
<thead>
<tr>
<th>FROM:</th>
<th>TO:</th>
</tr>
</thead>
<tbody>
<tr>
<td>$65,000 or less</td>
<td>$80,000</td>
</tr>
<tr>
<td>$80,000</td>
<td>$100,000</td>
</tr>
<tr>
<td>$100,000</td>
<td>$120,000</td>
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<tr>
<td>$120,000</td>
<td>$140,000</td>
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<td>$140,000</td>
<td>$150,000</td>
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<td>$150,000</td>
<td>$175,000</td>
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<tr>
<td>$175,000</td>
<td>$200,000</td>
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<tr>
<td>$200,000</td>
<td>$225,000</td>
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<td>$225,000</td>
<td>$250,000</td>
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<td>$250,000</td>
<td>$275,000</td>
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<td>$275,000</td>
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<td>$600,000</td>
<td>$750,000</td>
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<tr>
<td>$750,000</td>
<td>$1,000,000</td>
</tr>
<tr>
<td>$1,000,000</td>
<td>$2,000,000 or more</td>
</tr>
</tbody>
</table>

   **Area the house was located in:** *(Tick nearest)*
   - Tauranga
   - Mount Maunganui / Papamoa
   - Rotorua City
   - Rotorua Lakes
   - Te Puke
   - Whakatane
   - Taupo
   - Rural Bay of Plenty
   - Outside BOP region

8. Where were you living at the time you were looking for your new property? *(Tick one)*

   **Area the house was located in:** *(Tick nearest)*
   - Tauranga
   - Mount Maunganui / Papamoa
   - Rotorua City
   - Rotorua Lakes
   - Te Puke
   - Whakatane
   - Taupo
   - Rural Bay of Plenty
   - Outside BOP region
9. If you previously lived in a city, and bought your new house in the same city, did you buy in the same suburb?

- Yes, same suburb
- No, different suburb
- Not applicable

10. How quickly did it take from initially looking for potential new houses, to selecting the house you would purchase?

- Less than 1 week
- Less than 2 weeks
- Less than a month
- Between one to three months
- Between three to six months
- Between six to nine months
- Between nine months and one year
- More than a year

11. How many houses do you currently own?

(Tick one)

- 1
- 2
- 3-5
- 6-10
- more than 10

12. Please estimate the number of open homes you attended while looking for your new house

(Circle one)

- 0 (Did not visit any open homes)
- 1 (Only visited the house you bought)
- 2-5
- 6-10
- 11-15
- 16-20
- more than 20

In all, how many houses have you ever purchased?

(Tick one)

- 1
- 2
- 3-5
- 6-10
- 11-20
- more than 20

13. Please rate the scales below according to how you feel about using real estate websites:

Using a real estate website to find potential new houses is:

- Fun
- Pleasant
- Negative
- Foolish
- Pleasurable
- Exciting
- Enjoyable

<table>
<thead>
<tr>
<th>Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fun</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Frustrating</td>
</tr>
<tr>
<td>Pleasant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unpleasant</td>
</tr>
<tr>
<td>Negative</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Positive</td>
</tr>
<tr>
<td>Foolish</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Wise</td>
</tr>
<tr>
<td>Pleasurable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Painful</td>
</tr>
<tr>
<td>Exciting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Dull</td>
</tr>
<tr>
<td>Enjoyable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Unenjoyable</td>
</tr>
</tbody>
</table>
14. Please indicate how strongly you agree or disagree with the following statements concerning using a real estate website to help you in finding a new house:

(Please circle one number per row)

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly disagree</th>
<th>Disagree</th>
<th>Somewhat Disagree</th>
<th>Neutral</th>
<th>Somewhat Agree</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to use a real estate website would be easy for me</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Assuming I have access to a real estate website in future, I intend to use it</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>In my opinion it would be desirable to use a real estate website rather than other information sources when looking for a new home</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>When buying a house, I would rather use a real estate search rather than other sources of information</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website is a good idea</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website would arouse my imagination</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I find real estate websites easy to use</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>It is better to use a real estate website than other information sources when looking for a new home</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website would enable me to improve the performance of my information seeking</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I think it would be good to use a real estate website rather than other information sources when looking for a new home</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website is convenient</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website would stimulate my curiosity</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I like the idea of using real estate websites</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website would lead to exploration</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website enables me to access the newest information</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>Using a real estate website is a wise idea</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>I strongly recommend others to use real estate websites</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

The following questions are used for classification purposes only.
15. Please indicate the age range closest to your current age:

- □ 18-19 Years
- □ 20-24 Years
- □ 25-29 Years
- □ 30-34 Years
- □ 35-39 Years
- □ 40-44 Years
- □ 45-49 Years
- □ 50-54 Years
- □ 55-59 Years
- □ 60-64 Years
- □ 65-70 Years
- □ 75-80 Years
- □ 80-85 Years
- □ 85 Years and Over

16. Please indicate your approximate annual total household income before tax

- □ Under $20,000
- □ $20,000 – $40,000
- □ $40,001 – $50,000
- □ $50,001 – $60,000
- □ $60,001 – $70,000
- □ $70,001 – $80,000
- □ $80,001 – $90,000
- □ $90,001 – $100,000
- □ $100,001 – $110,000
- □ $110,001 – $120,000
- □ $120,001 – $130,000
- □ $130,001 – $140,000
- □ $140,001 – $150,000
- □ $150,001 – $160,000
- □ $160,001 – $175,000
- □ $175,001 – $200,000
- □ Over $200,000

😊 Thank you for taking the time to complete this questionnaire. Your participation is appreciated. 😊

Please return the questionnaire in the reply-paid envelope provided to reach us by 11th November 2005.
Wednesday, 2 November 2005

Address..

Dear <<firstname>>

A couple of weeks ago, a questionnaire was mailed to you regarding the use of the internet in finding information during a house purchase.

If you have already completed and returned the questionnaire to us, please accept our sincere thanks. If not, please do so today and return the forms to us.

Because the questionnaire has only been sent to a select but representative sample of households, it is very important that your views and experiences are included in the study.

Please ensure the form gets back to us on time (by 11 November 2005), and you will still be eligible for the prize draw.

If by some chance you did not receive the questionnaire, or it has been misplaced, you can call me on 07 343 5372, and I will be sure to get another one in the mail to you.

Kind Regards,

Karen Bayne
MCom Student
University of Otago
APPENDIX C: RESULTS

<table>
<thead>
<tr>
<th>Question 1</th>
<th>Type of property</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
</tr>
<tr>
<td>Holiday/Bach</td>
<td>1</td>
</tr>
<tr>
<td>House</td>
<td>72</td>
</tr>
<tr>
<td>Apartment</td>
<td></td>
</tr>
<tr>
<td>Semi-detached</td>
<td>6</td>
</tr>
<tr>
<td>Lifestyle</td>
<td>2</td>
</tr>
<tr>
<td>Waterfront/ lake</td>
<td>1</td>
</tr>
<tr>
<td>Rural</td>
<td></td>
</tr>
<tr>
<td>Business/office</td>
<td></td>
</tr>
<tr>
<td>Rental</td>
<td>16</td>
</tr>
<tr>
<td>Other</td>
<td></td>
</tr>
<tr>
<td>Home/income</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>99</td>
</tr>
</tbody>
</table>

Table A1: Type of property that respondents were looking to purchase

<table>
<thead>
<tr>
<th>Question 2</th>
<th>Primary Purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>#</td>
</tr>
<tr>
<td>Primary residence</td>
<td>64</td>
</tr>
<tr>
<td>Secondary house/ holiday home</td>
<td>2</td>
</tr>
<tr>
<td>Investment property</td>
<td>26</td>
</tr>
<tr>
<td>Light commercial</td>
<td>2</td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
</tr>
<tr>
<td>Homestay</td>
<td>1</td>
</tr>
<tr>
<td>Bought for family</td>
<td>3</td>
</tr>
<tr>
<td>Home and income</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>99</td>
</tr>
</tbody>
</table>

Table A2: Primary use that the purchased property would be put to

<table>
<thead>
<tr>
<th>Question 3</th>
<th>Sources consulted</th>
<th>Main source</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># of respondents who consulted</td>
<td>% or respondents who consulted</td>
</tr>
<tr>
<td>Daily newspaper</td>
<td>60</td>
<td>61%</td>
</tr>
<tr>
<td>Individual real estate flyer</td>
<td>30</td>
<td>30%</td>
</tr>
<tr>
<td>Individual real estate agency magazine of listings</td>
<td>53</td>
<td>54%</td>
</tr>
<tr>
<td>Individual real estate newsheet</td>
<td>25</td>
<td>25%</td>
</tr>
<tr>
<td>Property press/ multi-agency listings</td>
<td>47</td>
<td>47%</td>
</tr>
</tbody>
</table>
(Question 3 Cont’d)

<table>
<thead>
<tr>
<th>Sources</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asking friends</td>
<td>16</td>
<td></td>
<td>16%</td>
<td></td>
<td>1</td>
<td></td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Window listings</td>
<td>40</td>
<td></td>
<td>40%</td>
<td></td>
<td>3</td>
<td></td>
<td>3%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internet</td>
<td>70</td>
<td></td>
<td>71%</td>
<td></td>
<td>21</td>
<td></td>
<td>21%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Street signage</td>
<td>44</td>
<td></td>
<td>44%</td>
<td></td>
<td>9</td>
<td></td>
<td>9%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Personal conversation with an agent</td>
<td>57</td>
<td></td>
<td>58%</td>
<td></td>
<td>28</td>
<td></td>
<td>27%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td>5</td>
<td></td>
<td>5%</td>
<td></td>
<td>5</td>
<td></td>
<td>5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>email from agent</td>
<td>2</td>
<td></td>
<td>2%</td>
<td></td>
<td>1</td>
<td></td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>local knowledge</td>
<td>1</td>
<td></td>
<td>1%</td>
<td></td>
<td>1</td>
<td></td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rental manager</td>
<td>1</td>
<td></td>
<td>1%</td>
<td></td>
<td>2</td>
<td></td>
<td>2%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>any which way we could!</td>
<td>1</td>
<td></td>
<td>1%</td>
<td></td>
<td>1</td>
<td></td>
<td>1%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>101</td>
<td></td>
<td>100%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table A3: Sources of information consulted by respondents during their search for a house

Table A4: Percentage of respondents using both internet and another source of information during their search for a house

A Newspaper
B Individual real estate flyer
C Individual agency magazine of listings
D Individual agency newsheet
E Multiple agency listings/property press
F Asking friends
G Window listings at agency
H Internet
I Street signage
J Personal conversation with agent
K Other

XXIX
Question 4
real estate websites considered
# that used internet 70 71%
# that used RE website 68 69%
# using:
<table>
<thead>
<tr>
<th>Website</th>
<th>Used by</th>
<th>RE used by</th>
</tr>
</thead>
<tbody>
<tr>
<td>RealenZ</td>
<td>48 48%</td>
<td>48%</td>
</tr>
<tr>
<td>Open 2 View</td>
<td>38 38%</td>
<td>38%</td>
</tr>
<tr>
<td>Relo</td>
<td>0 0%</td>
<td>0%</td>
</tr>
<tr>
<td>TradeMe</td>
<td>22 22%</td>
<td>22%</td>
</tr>
<tr>
<td>Individual RE company sites</td>
<td>41 41%</td>
<td>41%</td>
</tr>
</tbody>
</table>

Table A5: Real estate website use by internet users during their search for a house

<table>
<thead>
<tr>
<th>Question 7</th>
<th>Looking to buy in</th>
<th>Question 8</th>
<th>Currently living</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rotorua City</td>
<td>82 85%</td>
<td>Rotorua City</td>
<td>57 59%</td>
</tr>
<tr>
<td>Rotorua Lakes</td>
<td>6 6%</td>
<td>Rotorua Lakes</td>
<td>6 6%</td>
</tr>
<tr>
<td>Tauranga</td>
<td></td>
<td>Tauranga</td>
<td>1 1%</td>
</tr>
<tr>
<td>Mt Maunganui/ Papamoa</td>
<td></td>
<td>Mt Maunganui/ Papamoa</td>
<td>1 1%</td>
</tr>
<tr>
<td>Te Puke</td>
<td></td>
<td>Te Puke</td>
<td>0%</td>
</tr>
<tr>
<td>Whakatane</td>
<td>2 2%</td>
<td>Whakatane</td>
<td>2 2%</td>
</tr>
<tr>
<td>Taupo</td>
<td></td>
<td>Taupo</td>
<td>0%</td>
</tr>
<tr>
<td>Rural BOP</td>
<td>4 4%</td>
<td>Rural BOP</td>
<td>9 9%</td>
</tr>
<tr>
<td>Outside BOP</td>
<td></td>
<td>Outside BOP</td>
<td>21 22%</td>
</tr>
<tr>
<td>Rotorua City and Lakes</td>
<td>3 3%</td>
<td>Rotorua City and Lakes</td>
<td>97 100%</td>
</tr>
<tr>
<td>97 100%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table A6: Location that respondents were seeking property in; and their current residence during the search process

<table>
<thead>
<tr>
<th>Question 9</th>
<th>Suburb</th>
</tr>
</thead>
<tbody>
<tr>
<td>52 (54%) were living in Rotorua City and looking for property in Rotorua City</td>
<td></td>
</tr>
<tr>
<td>Of these:</td>
<td></td>
</tr>
<tr>
<td>Not in same suburb</td>
<td>35 67%</td>
</tr>
<tr>
<td>Same suburb</td>
<td>14 27%</td>
</tr>
<tr>
<td>Not applicable</td>
<td>3 6%</td>
</tr>
</tbody>
</table>

Table A7: Rotorua city property purchasers

<table>
<thead>
<tr>
<th>Actual frequencies</th>
<th>visited</th>
<th>didn't visit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investor</td>
<td>14</td>
<td>15</td>
</tr>
<tr>
<td>non investor</td>
<td>57</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>71</td>
<td>27</td>
</tr>
<tr>
<td>expected frequencies</td>
<td>visited</td>
<td>didn't visit</td>
</tr>
<tr>
<td>Investor</td>
<td>21</td>
<td>8</td>
</tr>
<tr>
<td>non investor</td>
<td>50</td>
<td>19</td>
</tr>
<tr>
<td></td>
<td>71</td>
<td>27</td>
</tr>
<tr>
<td>Chi square test</td>
<td>0.016926</td>
<td></td>
</tr>
</tbody>
</table>

Table A8: Chi-square test comparing number of open homes visited by investors compared with non-investors
### Table A9: Communalities for items used in principal components analysis

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean score</th>
<th>Std dev</th>
<th>Extraction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fun / Frustrating *</td>
<td>0.770</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasant / Unpleasant *</td>
<td>0.797</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasurable / Painful *</td>
<td>0.805</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exciting / Dull *</td>
<td>0.796</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyable/ Unenjoyable *</td>
<td>0.866</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative / Positive</td>
<td>0.845</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would arouse my imagination</td>
<td></td>
<td></td>
<td>0.753</td>
</tr>
<tr>
<td>Using a real estate website would stimulate my curiosity</td>
<td></td>
<td></td>
<td>0.685</td>
</tr>
<tr>
<td>Using a real estate website would lead to exploration</td>
<td></td>
<td></td>
<td>0.598</td>
</tr>
<tr>
<td>Using a real estate website is convenient</td>
<td></td>
<td></td>
<td>0.640</td>
</tr>
<tr>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td></td>
<td></td>
<td>0.611</td>
</tr>
<tr>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td></td>
<td></td>
<td>0.719</td>
</tr>
<tr>
<td>Using a real estate website would enable me to improve the performance of my information seeking</td>
<td></td>
<td></td>
<td>0.711</td>
</tr>
<tr>
<td>Learning to use a real estate website would be easy for me</td>
<td>0.679</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>0.615</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find real estate websites easy to use</td>
<td>0.752</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td>0.795</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td>0.611</td>
<td></td>
<td></td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>0.675</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>0.655</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>0.740</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website enables me to access the newest information</td>
<td>0.540</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* reverse coded

<table>
<thead>
<tr>
<th>Component</th>
<th>Total</th>
<th>% of Variance</th>
<th>Cumulative %</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>11.112</td>
<td>48.311</td>
<td>48.311</td>
</tr>
<tr>
<td>2</td>
<td>2.420</td>
<td>10.521</td>
<td>58.832</td>
</tr>
<tr>
<td>3</td>
<td>1.584</td>
<td>6.886</td>
<td>65.718</td>
</tr>
<tr>
<td>4</td>
<td>1.168</td>
<td>5.078</td>
<td>70.796</td>
</tr>
</tbody>
</table>

**Table A10: Initial eigenvalues**
<table>
<thead>
<tr>
<th>Item</th>
<th>Factor Matrix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
</tr>
<tr>
<td>Fun / Frustrating *</td>
<td>.670  .565</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
</tr>
<tr>
<td>Pleasant / Unpleasant *</td>
<td>.714  .536</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
</tr>
<tr>
<td>Pleasurable / Painful *</td>
<td>.605  .656</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
</tr>
<tr>
<td>Exciting / Dull *</td>
<td>.647  .573</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
</tr>
<tr>
<td>Enjoyable/ Unenjoyable *</td>
<td>.719  .561</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
</tr>
<tr>
<td>Negative / Positive</td>
<td>.675  .372  .487</td>
</tr>
<tr>
<td>Using a real estate website would arouse my imagination</td>
<td>.761</td>
</tr>
<tr>
<td>Using a real estate website would stimulate my curiosity</td>
<td>.691</td>
</tr>
<tr>
<td>Using a real estate website would lead to exploration</td>
<td>.719</td>
</tr>
<tr>
<td>Using a real estate website is convenient</td>
<td>.768</td>
</tr>
<tr>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td>.752</td>
</tr>
<tr>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td>.709</td>
</tr>
<tr>
<td>Using a real estate website would enable me to improve the performance of my information seeking</td>
<td>.696</td>
</tr>
<tr>
<td>Learning to use a real estate website would be easy for me</td>
<td>.631  .416</td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>.731</td>
</tr>
<tr>
<td>I find real estate websites easy to use</td>
<td>.695  .484</td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td>.657  .507</td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want to do</td>
<td>.686</td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>.788</td>
</tr>
<tr>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>.789</td>
</tr>
<tr>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>.808</td>
</tr>
<tr>
<td>Using a real estate website enables me to access the newest information</td>
<td>.519  .433</td>
</tr>
</tbody>
</table>

*reverse coded

Table A11: Component matrix showing factor loadings greater than 0.30

<table>
<thead>
<tr>
<th>Rotated Sum of Squares loadings</th>
<th>Rotated eigenvalues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
<td>Total</td>
</tr>
<tr>
<td>1</td>
<td>3.943</td>
</tr>
<tr>
<td>2</td>
<td>4.527</td>
</tr>
<tr>
<td>3</td>
<td>4.103</td>
</tr>
<tr>
<td>4</td>
<td>1.710</td>
</tr>
</tbody>
</table>

Table A12: Amount of variance explained by each factor when varimax rotation used
### Varimax Rotation Factor Matrix

<table>
<thead>
<tr>
<th>Item</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fun / Frustrating *</td>
<td>.811</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasant / Unpleasant *</td>
<td>.863</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasurable / Painful *</td>
<td>.864</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exciting / Dull *</td>
<td>.854</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Enjoyable / Unenjoyable *</td>
<td>.871</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Negative / Positive</td>
<td>.338</td>
<td>.315</td>
<td>.743</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foolish / Wise</td>
<td></td>
<td></td>
<td>.790</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would arouse my imagination</td>
<td>.682</td>
<td>.329</td>
<td>.317</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would stimulate my curiosity</td>
<td>.694</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would lead to exploration</td>
<td>.732</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website is convenient</td>
<td>.543</td>
<td>.477</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td>.684</td>
<td>.398</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td>.810</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would enable me to improve the performance of my information seeking</td>
<td>.533</td>
<td>.351</td>
<td>.407</td>
<td></td>
</tr>
<tr>
<td>Learning to use a real estate website would be easy for me</td>
<td></td>
<td></td>
<td>.771</td>
<td></td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>.560</td>
<td>.521</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I find real estate websites easy to use</td>
<td></td>
<td></td>
<td>.773</td>
<td></td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td></td>
<td></td>
<td>.848</td>
<td></td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td></td>
<td></td>
<td>.655</td>
<td></td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>.600</td>
<td>.512</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>.651</td>
<td>.365</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>.756</td>
<td>.312</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website enables me to access the newest information</td>
<td>.667</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*reverse coded

| Table A13: Factor loading from rotated vectors |

<table>
<thead>
<tr>
<th>Ratated Sum of Squares</th>
<th>Initial eigenvalues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>6.755</td>
</tr>
<tr>
<td>2</td>
<td>4.474</td>
</tr>
<tr>
<td>3</td>
<td>3.886</td>
</tr>
</tbody>
</table>

Table A14: Amount of variance explained by each factor when varimax rotation used, and forcing to load to three factors
<table>
<thead>
<tr>
<th>Item</th>
<th>Factor 1</th>
<th>Factor 2</th>
<th>Factor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fun / Frustrating *</td>
<td>.820</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasant / Unpleasant *</td>
<td>.813</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pleasurable / Painful *</td>
<td>.872</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exciting / Dull *</td>
<td>.821</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td>.321</td>
<td>.849</td>
<td></td>
</tr>
<tr>
<td>Enjoyable / Unenjoyable *</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td>.395</td>
<td>.590</td>
<td></td>
</tr>
<tr>
<td>Negative / Positive</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is:</td>
<td>.404</td>
<td>.563</td>
<td></td>
</tr>
<tr>
<td>Foolish / Wise</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would arouse my imagination</td>
<td>.754</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would stimulate my curiosity</td>
<td>.666</td>
<td>.307</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would lead to exploration</td>
<td>.727</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website is convenient</td>
<td>.603</td>
<td>.428</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td>.782</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td>.796</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would enable me to improve the performance of my information seeking</td>
<td>.656</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Learning to use a real estate website would be easy for me</td>
<td>.364</td>
<td>.708</td>
<td></td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>.622</td>
<td>.464</td>
<td></td>
</tr>
<tr>
<td>I find real estate websites easy to use</td>
<td>.317</td>
<td>.776</td>
<td></td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td></td>
<td></td>
<td>.783</td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td>.505</td>
<td>.563</td>
<td></td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>.664</td>
<td>.447</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>.682</td>
<td>.353</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>.772</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Using a real estate website enables me to access the newest information</td>
<td>.575</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*reverse coded

Table A15: Factor loading from rotated vectors, forcing to load to only three factors
Factor 1: Perceived Usefulness

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website is convenient</td>
<td>.603</td>
<td>43.607</td>
<td>.688</td>
<td>.882</td>
</tr>
<tr>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td>.782</td>
<td>42.975</td>
<td>.746</td>
<td>.876</td>
</tr>
<tr>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td>.796</td>
<td>41.910</td>
<td>.730</td>
<td>.877</td>
</tr>
<tr>
<td>Using a real estate website would enable me to improve the performance of my information seeking</td>
<td>.656</td>
<td>42.960</td>
<td>.680</td>
<td>.883</td>
</tr>
<tr>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>.682</td>
<td>41.518</td>
<td>.750</td>
<td>.874</td>
</tr>
<tr>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>.772</td>
<td>42.235</td>
<td>.818</td>
<td>.868</td>
</tr>
<tr>
<td>Using a real estate website enables me to access the newest information</td>
<td>.575</td>
<td>46.992</td>
<td>.487</td>
<td>.904#</td>
</tr>
</tbody>
</table>

#Removal of this item from the scale would improve the scale reliability to a CA of 0.904

Table A16: Cronbach alpha test for scale using original items selected for questionnaire

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website would arouse my imagination</td>
<td>.754</td>
<td>148.555</td>
<td>.753</td>
<td>.933</td>
</tr>
<tr>
<td>Using a real estate website would stimulate my curiosity</td>
<td>.666</td>
<td>153.727</td>
<td>.663</td>
<td>.936</td>
</tr>
<tr>
<td>Using a real estate website would lead to exploration</td>
<td>.727</td>
<td>151.213</td>
<td>.731</td>
<td>.934</td>
</tr>
<tr>
<td>Using a real estate website is convenient</td>
<td>.603</td>
<td>150.183</td>
<td>.728</td>
<td>.934</td>
</tr>
<tr>
<td>Using a real estate website provides me with information that would lead to better decisions</td>
<td>.782</td>
<td>147.421</td>
<td>.774</td>
<td>.933</td>
</tr>
<tr>
<td>Using a real estate website enables me to acquire the highest quality information</td>
<td>.796</td>
<td>147.710</td>
<td>.748</td>
<td>.933</td>
</tr>
<tr>
<td>Using a real estate website would enable me to improve the performance of my information seeking</td>
<td>.656</td>
<td>150.531</td>
<td>.673</td>
<td>.936</td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>.622</td>
<td>153.588</td>
<td>.707</td>
<td>.935</td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td>.505</td>
<td>155.381</td>
<td>.634</td>
<td>.937</td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>.664</td>
<td>146.625</td>
<td>.764</td>
<td>.933</td>
</tr>
<tr>
<td>Using a real estate website will enable me to accomplish my task more quickly</td>
<td>.682</td>
<td>147.040</td>
<td>.764</td>
<td>.933</td>
</tr>
<tr>
<td>Using a real estate website would enhance my effectiveness in finding information</td>
<td>.772</td>
<td>148.395</td>
<td>.824</td>
<td>.931</td>
</tr>
<tr>
<td>Using a real estate website enables me to access the newest information</td>
<td>.575</td>
<td>157.024</td>
<td>.516</td>
<td>.941#</td>
</tr>
</tbody>
</table>

#Removal of this item from the scale would improve the scale reliability to a CA of 0.941

Table A17: Cronbach alpha test for scale using items with higher than 0.5 factor loadings from PCA
Factor 2: Perceived Enjoyment

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website to find potential new houses is: Fun / Frustrating *</td>
<td>.820</td>
<td>66.598</td>
<td>.766</td>
<td>.889</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Pleasant / Unpleasant *</td>
<td>.813</td>
<td>67.447</td>
<td>.740</td>
<td>.876</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Pleasurable / Painful *</td>
<td>.872</td>
<td>69.381</td>
<td>.743</td>
<td>.891</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Exciting / Dull *</td>
<td>.821</td>
<td>69.267</td>
<td>.716</td>
<td>.892</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Enjoyable/ Unenjoyable *</td>
<td>.849</td>
<td>68.250</td>
<td>.813</td>
<td>.887</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Negative / Positive</td>
<td>.395</td>
<td>71.879</td>
<td>.631</td>
<td>.898</td>
</tr>
<tr>
<td>Using a real estate website would arouse my imagination -----------</td>
<td>.404</td>
<td>74.147</td>
<td>.449</td>
<td>.909#</td>
</tr>
<tr>
<td>Using a real estate website would stimulate my curiosity .307</td>
<td>71.167</td>
<td>.609</td>
<td>.899</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website would lead to exploration --------------</td>
<td>72.253</td>
<td>.537</td>
<td>.903</td>
<td></td>
</tr>
</tbody>
</table>

*reverse coded

#Removal of this item from the scale would improve the scale reliability to a CA of 0.909

Table A18: Cronbach alpha test for scale using original items selected for questionnaire

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Using a real estate website to find potential new houses is: Fun / Frustrating *</td>
<td>.820</td>
<td>19.775</td>
<td>.826</td>
<td>.926</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Pleasant / Unpleasant *</td>
<td>.813</td>
<td>20.297</td>
<td>.843</td>
<td>.922</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Pleasurable / Painful *</td>
<td>.872</td>
<td>21.167</td>
<td>.829</td>
<td>.925</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Exciting / Dull *</td>
<td>.821</td>
<td>21.065</td>
<td>.798</td>
<td>.930</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Enjoyable/ Unenjoyable *</td>
<td>.849</td>
<td>20.749</td>
<td>.883</td>
<td>.916</td>
</tr>
</tbody>
</table>

*reverse coded

Table A19: Cronbach alpha test for scale using items with higher than 0.5 factor loadings from PCA
### Factor 3: Perceived Ease of Use

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to use a real estate website would be easy for me</td>
<td>.708</td>
<td>28.707</td>
<td>.726</td>
<td>.873</td>
</tr>
<tr>
<td>I can easily find what I want when using a real estate website</td>
<td>.464</td>
<td>30.011</td>
<td>.679</td>
<td>.880</td>
</tr>
<tr>
<td>I find real estate websites easy to use</td>
<td>.776</td>
<td>27.299</td>
<td>.766</td>
<td>.866</td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td>.783</td>
<td>28.026</td>
<td>.759</td>
<td>.867</td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td>.563</td>
<td>29.924</td>
<td>.676</td>
<td>.880</td>
</tr>
<tr>
<td>It is easy to search for property information when searching on a real estate website</td>
<td>.447</td>
<td>27.527</td>
<td>.690</td>
<td>.880</td>
</tr>
</tbody>
</table>

**Table A20: Cronbach alpha test for scale using original items selected for questionnaire**

<table>
<thead>
<tr>
<th>Item</th>
<th>Factor loading</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Learning to use a real estate website would be easy for me</td>
<td>.708</td>
<td>24.072</td>
<td>.668</td>
<td>.832</td>
</tr>
<tr>
<td>I find real estate websites easy to use</td>
<td>.776</td>
<td>22.459</td>
<td>.742</td>
<td>.817</td>
</tr>
<tr>
<td>It would be easy for me to become skilful at using a real estate website</td>
<td>.783</td>
<td>22.966</td>
<td>.748</td>
<td>.816</td>
</tr>
<tr>
<td>I would find it easy to use a real estate website to do what I want it to do</td>
<td>.563</td>
<td>25.131</td>
<td>.622</td>
<td>.840</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Negative / Positive</td>
<td>.590</td>
<td>25.131</td>
<td>.658</td>
<td>.834</td>
</tr>
<tr>
<td>Using a real estate website to find potential new houses is: Foolish / Wise</td>
<td>.563</td>
<td>26.356</td>
<td>.469</td>
<td>.867#</td>
</tr>
</tbody>
</table>

Removal of this item from the scale would improve the scale reliability to a CA of 0.867

**Table A21: Cronbach alpha test for scale using items with higher than 0.5 factor loadings from PCA**

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean score</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>In my opinion it would be desirable to use a real estate website rather than other information sources when looking for a new home</td>
<td>28.919</td>
<td>.774</td>
<td>.869</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website is a good idea</td>
<td>33.351</td>
<td>.738</td>
<td>.878</td>
<td></td>
</tr>
<tr>
<td>It is better to use a real estate website than other information sources when looking for a new home</td>
<td>29.354</td>
<td>.781</td>
<td>.868</td>
<td></td>
</tr>
<tr>
<td>I think it would be good to use a real estate website rather than other information sources when looking for a new home</td>
<td>30.064</td>
<td>.765</td>
<td>.870</td>
<td></td>
</tr>
<tr>
<td>I like the idea of using real estate websites</td>
<td>31.450</td>
<td>.702</td>
<td>.880</td>
<td></td>
</tr>
<tr>
<td>Using a real estate website is a wise idea</td>
<td>34.331</td>
<td>.583</td>
<td>.897#</td>
<td></td>
</tr>
</tbody>
</table>

Removal of this item from the scale would improve the scale reliability to a CA of 0.897
Table A22: Cronbach alpha test for Attitude using original scale

<table>
<thead>
<tr>
<th>Item</th>
<th>Mean score</th>
<th>Scale variance if item deleted</th>
<th>Corrected item-total correlation</th>
<th>Cronbach’s alpha if item deleted</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assuming I have access to a real estate website in future, I intend to use it</td>
<td>6.051</td>
<td>.586</td>
<td>.677</td>
<td></td>
</tr>
<tr>
<td>When buying a house, I would rather use a real estate website rather than other information sources</td>
<td>5.452</td>
<td>.560</td>
<td>.707</td>
<td></td>
</tr>
<tr>
<td>I strongly recommend others to use real estate websites</td>
<td>5.412</td>
<td>.617</td>
<td>.638</td>
<td></td>
</tr>
</tbody>
</table>

Table A23: Cronbach alpha test for Behavioural Intention using original scale

Internet users and non-users
Those using the internet to search for a house \( n=65 \) (Y)
Those not using the internet to search for a house \( n=21 \) (N)

<table>
<thead>
<tr>
<th>Construct</th>
<th>( F )</th>
<th>( F)-sig</th>
<th>( t )</th>
<th>( df )</th>
<th>2-tailed sig</th>
<th>( X )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.022</td>
<td>0.883</td>
<td>4.735</td>
<td>84</td>
<td>0.000</td>
<td>Y=4.4462 N=3.0238</td>
</tr>
<tr>
<td>Intention</td>
<td>0.081</td>
<td>.777</td>
<td>8.338</td>
<td>84</td>
<td>0.000</td>
<td>Y=5.4282 N=3.6825</td>
</tr>
<tr>
<td>PE(nj)</td>
<td>4.054</td>
<td>.047*</td>
<td>3.975</td>
<td>43</td>
<td>0.000</td>
<td>Y=0.2018 N=0.6248</td>
</tr>
<tr>
<td>PEOU</td>
<td>2.646</td>
<td>.108</td>
<td>5.997</td>
<td>84</td>
<td>0.000</td>
<td>Y=0.3094 N=0.9580</td>
</tr>
<tr>
<td>PU</td>
<td>4.364</td>
<td>.040*</td>
<td>5.364</td>
<td>27</td>
<td>0.000</td>
<td>Y=0.3197 N=0.9896</td>
</tr>
</tbody>
</table>

Table A24: t-tests for difference in mean factor scores between internet users and non-users for each construct

<table>
<thead>
<tr>
<th>Question 5</th>
<th>Main reason for using a website</th>
<th># stating this</th>
</tr>
</thead>
<tbody>
<tr>
<td>easy to use</td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>easy to access from out of town</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>photo tour/photos</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>faster/timesaving</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>available 24/7</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>can search by my criteria/screen for my needs</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>convenience</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>more up to date</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>more detailed info</td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>don't have to use agent/privacy</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>a larger range of properties to view, and multi agency</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>general appreciation of the market</td>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

XXXVIII
Table A25: Main reasons for using a real estate website over other sources of information

<table>
<thead>
<tr>
<th>positive aspects</th>
<th>negative aspects</th>
</tr>
</thead>
<tbody>
<tr>
<td>multiple photos inside helpful</td>
<td>slow</td>
</tr>
<tr>
<td>easy to navigate</td>
<td>frustrating</td>
</tr>
<tr>
<td>good</td>
<td>Some websites were better than others</td>
</tr>
<tr>
<td>helpful</td>
<td>price range not given</td>
</tr>
<tr>
<td>fast</td>
<td>info not updated enough</td>
</tr>
<tr>
<td>useful for narrowing down on properties</td>
<td>sometimes search gave you properties you didn't ask for</td>
</tr>
<tr>
<td>easy access</td>
<td>sometimes sold properties still online</td>
</tr>
<tr>
<td>Great!</td>
<td>confusing</td>
</tr>
<tr>
<td>efficient</td>
<td>difficult search criteria</td>
</tr>
<tr>
<td>ok</td>
<td>not enough info</td>
</tr>
<tr>
<td>gives a good general overview</td>
<td>not enough photos</td>
</tr>
<tr>
<td>easy</td>
<td>no contact details for agent (cell Phone)</td>
</tr>
<tr>
<td>convenient</td>
<td>no response to my email query</td>
</tr>
<tr>
<td>informative</td>
<td>didn't like having to register on some sites</td>
</tr>
<tr>
<td>info available on demand</td>
<td>not sure search worked correctly</td>
</tr>
<tr>
<td>wide range of comparisons</td>
<td>sometimes properties we were told of weren't on the website yet</td>
</tr>
<tr>
<td>easy to file through</td>
<td>some sent you in circles</td>
</tr>
<tr>
<td>somewhat addictive</td>
<td>photos poor quality</td>
</tr>
<tr>
<td>cheap</td>
<td>individual sites were difficult to navigate</td>
</tr>
<tr>
<td>able to easily scope market - what your $$ would buy</td>
<td>info was not always correct</td>
</tr>
<tr>
<td>very good</td>
<td></td>
</tr>
<tr>
<td>well organised tool</td>
<td></td>
</tr>
<tr>
<td>saved time</td>
<td></td>
</tr>
</tbody>
</table>

Table A26: User experiences of using a real estate website
**H9: Age and internet use:**

**Age of respondent**

Those aged 45yrs and over  n=34 (o)

Those aged under 45yrs  n=52 (y)

<table>
<thead>
<tr>
<th>Construct</th>
<th>F</th>
<th>F-sig</th>
<th>t</th>
<th>df</th>
<th>2-tailed sig</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.163</td>
<td>0.687</td>
<td>-1.090</td>
<td>84</td>
<td>0.279</td>
<td>O=3.9044, Y=4.2260</td>
</tr>
<tr>
<td>Intention</td>
<td>1.925</td>
<td>0.169</td>
<td>-1.331</td>
<td>84</td>
<td>0.187</td>
<td>O=4.8039, Y=5.1314</td>
</tr>
<tr>
<td>PEnj</td>
<td>2.746</td>
<td>0.101</td>
<td>-2.011</td>
<td>84</td>
<td>0.048</td>
<td>O=0.7626, Y=1.1017</td>
</tr>
<tr>
<td>PEOU</td>
<td>4.665</td>
<td>0.034*</td>
<td>-2.880</td>
<td>55</td>
<td>0.006</td>
<td>O=1.137, Y=0.8179</td>
</tr>
<tr>
<td>PU</td>
<td>1.510</td>
<td>0.223</td>
<td>-1.655</td>
<td>84</td>
<td>0.102</td>
<td>O=0.2185, Y=0.1429</td>
</tr>
</tbody>
</table>

Table A27: Hypothesis tests on difference in mean factor scores between different age cohorts

<table>
<thead>
<tr>
<th></th>
<th>INTERNET USE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>AGE</td>
<td>Under 45 yrs</td>
<td>10</td>
</tr>
<tr>
<td></td>
<td>Over 45 yrs</td>
<td>15</td>
</tr>
<tr>
<td>TOTAL</td>
<td>25</td>
<td>74</td>
</tr>
</tbody>
</table>

*Pearson Chi Square Value: 5.948  
p-value Asymp. Sig. (2-sided): 0.015*

Table A28: Chi Square test for age and internet use
H10: Professional householders and internet use:

Professional level of respondent

Those with annual household income greater than $90,000 n=34 (P)
Those with annual household income less than $90,000 n=48 (NP)

<table>
<thead>
<tr>
<th>PROFESSIONAL LEVEL</th>
<th>INTERNET USE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Professional</td>
<td>11</td>
<td>43</td>
</tr>
<tr>
<td>Non-professional</td>
<td>13</td>
<td>27</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24</td>
<td>70</td>
</tr>
</tbody>
</table>

Pearson Chi Square Value: 0.391
p-value Asymp. Sig. (2-sided): 0.532

Table A29: Chi Square test for professionalism and internet use

<table>
<thead>
<tr>
<th>Construct</th>
<th>F</th>
<th>F-sig</th>
<th>t</th>
<th>df</th>
<th>2-tailed sig</th>
<th>( \chi^2 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>0.055</td>
<td>0.815</td>
<td>-0.393</td>
<td>80</td>
<td>0.695</td>
<td>NP= 4.0625 P= 4.1838</td>
</tr>
<tr>
<td>Intention</td>
<td>1.295</td>
<td>0.258</td>
<td>-0.624</td>
<td>80</td>
<td>0.534</td>
<td>NP= 4.970 P= 5.130</td>
</tr>
<tr>
<td>PENj</td>
<td>0.483</td>
<td>0.489</td>
<td>-1.068</td>
<td>80</td>
<td>0.289</td>
<td>NP=-0.990 P= 0.136</td>
</tr>
<tr>
<td>PEOU</td>
<td>2.080</td>
<td>0.153</td>
<td>-0.740</td>
<td>80</td>
<td>0.461</td>
<td>NP=-0.0570 P= 0.1119</td>
</tr>
<tr>
<td>PU</td>
<td>0.346</td>
<td>0.558</td>
<td>0.281</td>
<td>80</td>
<td>0.780</td>
<td>NP= 0.0360 P= 0.0290</td>
</tr>
</tbody>
</table>

Table A30: Hypothesis tests on difference in mean factor scores between professionals and non-professionals
**H11: Investment and internet use:**

Property type being bought

Those purchasing a family home  n=67 (F)
Those purchasing investment property  n=19 (I)

<table>
<thead>
<tr>
<th>PROPERTY TYPE</th>
<th>INTERNET USE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Investment property</td>
<td>11</td>
<td>19</td>
</tr>
<tr>
<td>Family home</td>
<td>14</td>
<td>55</td>
</tr>
<tr>
<td>TOTAL</td>
<td>25</td>
<td>74</td>
</tr>
</tbody>
</table>

*Pearson Chi Square Value: 2.971
p-value Asymp. Sig. (2-sided): 0.085*

<table>
<thead>
<tr>
<th>Construct</th>
<th>F</th>
<th>F-sig</th>
<th>t</th>
<th>df</th>
<th>2-tailed sig</th>
<th>$\chi^2$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attitude</td>
<td>1.460</td>
<td>0.230</td>
<td>1.441</td>
<td>84</td>
<td>0.153</td>
<td>F=4.21</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I=3.71</td>
</tr>
<tr>
<td>Intention</td>
<td>0.012</td>
<td>0.911</td>
<td>2.015</td>
<td>4</td>
<td>0.047</td>
<td>F=5.13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I=4.55</td>
</tr>
<tr>
<td>PENj</td>
<td>1.091</td>
<td>0.299</td>
<td>0.655</td>
<td>84</td>
<td>0.514</td>
<td>F=0.038</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I=0.133</td>
</tr>
<tr>
<td>PEOU</td>
<td>-0.00</td>
<td>0.989</td>
<td>1.487</td>
<td>84</td>
<td>0.141</td>
<td>F=0.085</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I=0.2995</td>
</tr>
<tr>
<td>PU</td>
<td>0.231</td>
<td>0.632</td>
<td>1.801</td>
<td>84</td>
<td>0.075</td>
<td>F=0.102</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I=0.360</td>
</tr>
</tbody>
</table>

*Table A31: Chi Square test for investor-types and internet use*

*Table A32: Hypothesis tests on difference in mean factor scores between investors and non-investors*
**H15: Proximity to house purchase location and internet use:**

Distance from market

Those living within the bay of Plenty while searching  \( n=52 \) (W)

Those living outside of the bay of Plenty while searching  \( n=33 \) (O)

<table>
<thead>
<tr>
<th>DISTANCE FROM MARKET</th>
<th>INTERNET USE</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>no</td>
<td>yes</td>
</tr>
<tr>
<td>Searching from within the Bay of Plenty region</td>
<td>20</td>
<td>58</td>
</tr>
<tr>
<td>Searching from outside of the Bay of Plenty region</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>TOTAL</td>
<td>25</td>
<td>73</td>
</tr>
</tbody>
</table>

**Chi Square Value: 0.003**

**p-value Asymp. Sig. (2-sided): 0.953**

Table A33: Chi Square test for distance from market and internet use

<table>
<thead>
<tr>
<th>Construct</th>
<th>F</th>
<th>F-sig</th>
<th>t</th>
<th>df</th>
<th>2-tailed sig</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>F-sig</td>
<td>t</td>
<td>df</td>
<td>2-tailed sig</td>
</tr>
<tr>
<td>Attitude</td>
<td>0.000</td>
<td>0.990</td>
<td>-0.915</td>
<td>83</td>
<td>0.365</td>
</tr>
<tr>
<td>Intention</td>
<td>0.020</td>
<td>0.889</td>
<td>-1.428</td>
<td>83</td>
<td>0.157</td>
</tr>
<tr>
<td>PEnj</td>
<td>1.427</td>
<td>0.236</td>
<td>-0.443</td>
<td>83</td>
<td>0.659</td>
</tr>
<tr>
<td>PEOU</td>
<td>1.823</td>
<td>0.181</td>
<td>-0.884</td>
<td>83</td>
<td>0.379</td>
</tr>
<tr>
<td>PU</td>
<td>0.863</td>
<td>0.356</td>
<td>-0.907</td>
<td>83</td>
<td>0.367</td>
</tr>
</tbody>
</table>

Table A34: Hypothesis tests on difference in mean factor scores between those living within, and outside of, the Bay of Plenty region whilst searching for a house
H12: Average number of open homes visited:

F-Test Two-Sample for Variances

<table>
<thead>
<tr>
<th></th>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>6.328571429</td>
<td>2.482143</td>
</tr>
<tr>
<td>Variance</td>
<td>34.42670807</td>
<td>12.73115</td>
</tr>
<tr>
<td>Observations</td>
<td>70</td>
<td>28</td>
</tr>
<tr>
<td>df</td>
<td>69</td>
<td>27</td>
</tr>
<tr>
<td>F</td>
<td>2.704131671</td>
<td></td>
</tr>
<tr>
<td>P(F&lt;=f) one-tail</td>
<td>0.00264546</td>
<td></td>
</tr>
<tr>
<td>F Critical one-tail</td>
<td>1.771303337</td>
<td></td>
</tr>
</tbody>
</table>

Table A35: F-test for difference in means for open home visits between those using the internet and those that did not use the internet

<table>
<thead>
<tr>
<th></th>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>6.328571429</td>
<td>2.482143</td>
</tr>
<tr>
<td>Variance</td>
<td>34.42670807</td>
<td>12.73115</td>
</tr>
<tr>
<td>Observations</td>
<td>70</td>
<td>28</td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>df</td>
<td>80</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>3.953654573</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>8.2609E-05</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.664124579</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.000165218</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>1.990063387</td>
<td></td>
</tr>
</tbody>
</table>

Table A36: t-test for difference in means for open home visits between those using the internet and those that did not use the internet
**H13: Average number of months spent searching for a house:**

F-Test Two-Sample for Variances

<table>
<thead>
<tr>
<th></th>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2.253571</td>
<td>1.054762</td>
</tr>
<tr>
<td>Variance</td>
<td>4.254516</td>
<td>0.934277</td>
</tr>
<tr>
<td>Observations</td>
<td>70</td>
<td>28</td>
</tr>
<tr>
<td>df</td>
<td>69</td>
<td>27</td>
</tr>
<tr>
<td>F</td>
<td>4.553806</td>
<td></td>
</tr>
<tr>
<td>P(F&lt;=f) one-tail</td>
<td>2.34E-05</td>
<td></td>
</tr>
<tr>
<td>F Critical one-tail</td>
<td>1.771303</td>
<td></td>
</tr>
</tbody>
</table>

Table A37: F-test for difference in means for duration of search between those using the internet and those that did not use the internet

**t-Test: Two-Sample Assuming Unequal Variances**

<table>
<thead>
<tr>
<th></th>
<th>Variable 1</th>
<th>Variable 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>2.253571</td>
<td>1.054762</td>
</tr>
<tr>
<td>Variance</td>
<td>4.254516</td>
<td>0.934277</td>
</tr>
<tr>
<td>Observations</td>
<td>70</td>
<td>28</td>
</tr>
<tr>
<td>df</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hypothesized Mean Difference</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>t Stat</td>
<td>3.907056</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) one-tail</td>
<td>8.8E-05</td>
<td></td>
</tr>
<tr>
<td>t Critical one-tail</td>
<td>1.661226</td>
<td></td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
<td>0.000176</td>
<td></td>
</tr>
<tr>
<td>t Critical two-tail</td>
<td>1.985523</td>
<td></td>
</tr>
</tbody>
</table>

Table A38: t-test for difference in means for duration of search between those using the internet and those that did not use the internet
H14: Average number of houses purchased previously:

<table>
<thead>
<tr>
<th>F-Test Two-Sample for Variances</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td><strong>Variable 1</strong></td>
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<tr>
<td>Mean</td>
</tr>
<tr>
<td>Variance</td>
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<tr>
<td>Observations</td>
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<tr>
<td>df</td>
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<tr>
<td>F</td>
</tr>
<tr>
<td>P(F&lt;=f) one-tail</td>
</tr>
<tr>
<td>F Critical one-tail</td>
</tr>
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Table A39: F-test for difference in means for previous house purchase experience between those using the internet and those that did not use the internet

<table>
<thead>
<tr>
<th>t-Test: Two-Sample Assuming Equal Variances</th>
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<tr>
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<tr>
<td><strong>Variable 1</strong></td>
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<tr>
<td>Mean</td>
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<tr>
<td>Variance</td>
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<td>Observations</td>
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<td>Hypothesized Mean Difference</td>
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<td>t Stat</td>
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<tr>
<td>t Critical one-tail</td>
</tr>
<tr>
<td>P(T&lt;=t) two-tail</td>
</tr>
<tr>
<td>t Critical two-tail</td>
</tr>
</tbody>
</table>

Table A40: t-test for difference in means for previous house purchase experience between those using the internet and those that did not use the internet