The Mediating Role of Attitudes in Using Investor Relations Websites

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Submitted in fulfillment of the requirements of the degree of Doctor of Philosophy

October 2010

Abstract

Public listed companies have been utilising their web presences to achieve many different goals including serving their Investor Relations (IR) functions. These functions can be regarded as effective when their intended users are satisfied with the information and facilities provided on companies' IR websites. Many studies indicate that user behaviours such as adoption, purchase decision and repeat use are reliable surrogates for website effectiveness. While some studies focus on online IR attributes as necessary for IR websites, few studies examine investors' perceptions and behavioural outcomes as a result of their uses of IR websites.

This study relies on the Dual Mediation Hypothesis (DMH) model which predicts investors' behavioural intentions as the consequences of their perceptions of IR websites and companies' brands, mediated by attitudes. This study validates the DMH model which has been commonly used in a product-purchase environment into an IR context. To gain a deeper understanding of the influence of attitudes, the original DMH model was modified to include specific perceptual antecedents of two attitudinal constructs which are deemed important in the application of the model beyond its common use.

This study finds that investors' behavioural intentions are the outcomes of investors' perceptions of Information Quality, Credibility, Usability, Attractiveness, Perceived Risk, Perceived Returns, Trust and Brand Familiarity, mediated by Attitude towards IR Websites and Attitude towards Brand. Particularly, it was found that investors' intentions to re-use IR websites are predicted by website attitudes and this attitudinal variable acts as a facilitator for investors forming their evaluations of the companies' financial positions. This finding suggests that attitudes play a major role in share-investment settings; thus the modified DMH model is recommended to be used in future research in assessing behaviours of both individual and professional investors as a result of using a new technology.

Student Declaration

"I, Azwadi Ali, declare that the PhD thesis entitled 'The mediating role of attitudes in using Investor Relations websites' is no more than 100,000 words length including quotes and exclusive of tables, figures, appendices, bibliography, references and footnotes. This thesis contains no material that has been submitted previously, in whole or in part, for the award of any other academic degree or diploma. Except where otherwise indicated, this thesis is my own work".

Signature : 

Date : 4 October 2010

Acknowledgements

The opportunity to do this thesis is no doubt one of my greatest blessings from God. It has been a very rewarding journey, especially to have been able to learn from many inspiring individuals and to continuously receive support, advice and friendship from many personalities.

First, I would like to record my warmest gratitude towards my supervisors, Professor Michael McGrath and Associate Professor Geoff Sandy, who have been of wonderful support throughout my study. I am very proud for having the opportunity of working with them. I will certainly remember and cherish their advice, motivation, inspiration, criticism and guidance throughout my life.

Second, I would like to thank several members of the Faculty of Business and Law without whom I would not be completing this thesis. My special thanks to Dr Michael Ntalianis whose assistance has made the data collection for this study possible. I will never forget Dr Rodney Turner who has introduced and helped me with data analysis using the SmartPLS application. I am also greatly indebted to my co-postgraduate students who have helped with piloting the survey instruments. Advice on writing up the thesis was offered by Dr Petre Santry and Angela Rojter, and I thank them for sharing their expertise.

Third, I would like to thank my employer, Universiti Malaysia Terengganu and the Ministry of Higher Education of Malaysia, who have provided financial support throughout my study.

The greatest support, however, inevitably came from my family, who had to put up with an absent partner and father. To Ashraf and Aishah: I cannot promise to be the best father, but I will give you all the love that I have. And dear Marlina: thank you so much for having accompanied me all the way with patience and love in my pursuit of this ‘selfish’ goal.

Table of Contents

Page no.

Page no.

Page no.

Page no.

List of Figures

List of Tables

Page no.

CHAPTER 1
INTRODUCTION

1.1 Background to the research

Individual investors[1] are increasingly being regarded as vital to companies in the management of share values (Vogelheim, Schoenbachler, Gordon & Gordon 2001). Relative to institutional and professional investors, these investors can easily and quickly participate in, or withdraw from, the market depending on their confidence in the prevailing market conditions. For example, total household ownership in the Australian share market has shown a declining trend, from a high of 55% in 2004, to 46% in 2006, and a low of 41% in 2008 (Australian Securities Exchange, ASX 2009). Such losses of investors in a short period of time – corresponding to a *bear market* – can cost companies' shares dearly. Similarly, failing to attract them when the economy recovers can restrict a company's shares from reaching their highest possible value. Therefore, the present study is interested in examining the effectiveness of companies' use of their Investor Relations (IR) websites in courting and building relationships with individual investors.

The Internet has levelled the playing field of investment between individual investors and professional investors (Hodge & Pronk 2006; Vogelheim et al. 2001). In 2004, *Better Investing* magazine documented that nearly 75% of all non-professional investors use the Internet for investing activities (Ritt 2004). This positive trend has also been seen as an increase in the numbers of individual investors engaging in do-it-yourself (DIY) investment approaches (Looney, Valacich, Todd & Morris 2006). When engaging in DIY investment, these investors are most likely to acquire information from cheap sources such as company websites. While financial analysts and institutional investors can easily access other financial information sources including specialised data bases (e.g. those of Bloomberg, Fortune & Reuters) and direct contact with company's IR staff, individual investors often lack a similar direct and easy access, so the availability of the information on a website would represent useful support for them (Quagli & Riva 2006). For example, of the individual investors surveyed by Loranger and Nielsen (2003), nearly all of them indicated that they would

[1] The term 'individual investors' is used interchangeably with 'non-professional investors' and 'retail investors' because the related literature seems to suggest that the terms carry similar meanings and it is difficult to clearly separate them.

eventually go to a company's website for financial information and to learn about the company. Similarly, 55% of 1,000 individual investors surveyed by the US Securities Exchange Commission in 2008 reported that they accessed information via the Internet, and 56% percent relied on individual company websites (Abt SRBI 2008). Therefore, when effectively designed, such a website can at least help investors to form positive attitudes towards the company, if not persuade them to trade in the company's shares.

Research on behaviours of individual investors has shown that their trading decisions are often psychologically biased. Despite having evaluated the financial position of a company, many individual investors are still subject to certain emotional elements such as attitudes and brand familiarity (Aspara & Tikkanen 2008; Massa & Simonov 2006). In addition, many individual investors are not well equipped to handle financial matters and make quality investment decisions (Looney et al. 2006; Rubaltelli, Rubichi, Savadori, Tedeschi, & Ferretti 2005). As a result, their DIY decisions tend to be more speculative, they trade more often, and monitor their portfolio too frequently (Barber & Odean 2002; Choi, JJ, Laibson & Metrick 2002; Konana & Balasubramaniam 2005). However, the purpose of this study is not to address investors' exposure to potentially undesirable financial consequences resulting from these behaviours; rather it concerns itself with how companies can leverage their web presences to attract and retain these investors, particularly by encouraging their positive attitudes towards such companies.

Generally, in the context of a persuasive message, users' attitudes are formed based on their experience gained from consuming, or being exposed to that message. For example, consumers have always been the target of commercial advertisements which induce their purchase intentions for products or services and, now that websites are seen to be capable of meeting advertising goals, companies are constantly using online strategies to trigger consumers' behaviours (Karson & Fisher 2005). Thus, in the same manner, IR websites need to be effectively designed to trigger positive behaviours in investors. In understanding that individual investors are psychologically biased, overconfident in their knowledge and tending to overreact to new information (Aspara & Tikkanen 2008; Barber & Odean 2001; Kyle 1985), a company's own IR website can be designed not only to establish relationships with such investors, but also to accelerate their trading behaviours in favour of the company's shares.

In summary, this research seeks to determine whether or not attitudes play a significant role in causing specific individual investors' behavioural intentions as a result of their use of, and exposures to, IR websites. In achieving this objective, a popular marketing framework called the Dual Mediation Hypothesis (DMH) was modified and validated by analysing 136 responses from a self-reporting survey.

1.2 Research problem and research questions

This present study revolves around applying an attitude mediation model in a context different from a commonly-used product purchase context. Therefore, the main problem addressed in this research is:

> ***How appropriate is the Dual Mediation Hypothesis (DMH) model for predicting individual investors' behavioural intentions as a result of using Investor Relations (IR) websites?***

This problem is addressed by attempting to answer the six research questions presented at the end of this section.

In the context of individual investors using IR websites for share evaluation, this study argues that attitudes may play a significant role in predicting individual investors' behavioural intentions only after such attitudes have been formed as a result of specific perceptual antecedents. These perceptual antecedents have been identified as *Information Quality* (IQ), *Credibility* (CRD), *Usability* (USB) and *Attractiveness* (ATR) for *Attitude towards IR website* (AT_ST); and *Perceived Risk* (RISK), *Perceived Returns* (RTN), *Trust* (TRS) and *Brand Familiarity* (FAM) for *Attitude towards Brand* (AT_BR). This study then postulates that individual investors' investment and website revisitation intentions can be predicted by these antecedents via a mediating role of the two types of attitudes. In addressing the research problem, this study has modified the original Dual Mediation Hypothesis (DMH) model introduced by MacKenzie, Lutz and Belch (1986) and used the model to predict investors' behavioural intentions.

The rationale behind using an advertising attitude model such as the DMH in this study is that IR websites have been seen as a complementary tool for companies in attracting investors, especially in the case of individual investors who are known to be psychologically biased (Kyle 1985), overconfident and tending to overreact to new information (Barber & Odean 2001). Therefore, an IR website can be strategically designed to expose these investors to a company's own views about its current

financial position and positive future potential in owning its shares. As a result of continued exposure to companies' own views, these individual investors may form positive attitudes towards such companies over rivals, which may then translate into favourable behaviours. In addition, since companies are not bound with rules and regulations for information disclosure and the manner of presenting such information on their websites, they can carefully select relevant information and present it through effective web designs.

Although most companies have been more occupied with satisfying the needs of large institutional investors (Vogelheim et al. 2001), the recent trend in household equity ownership suggests that they should also maintain relationships with individual investors who can enter and quit the market easily. For example, in 2006 approximately 7.3 million people or 46% of the Australian adult population owned shares in one form or another (ASX 2007), but that statistic fell to 41% in 2008 (ASX 2009). In addition, The New Zealand census of 2006 revealed that more than 20% of respondents had received income from investment activities (Statistics New Zealand 2007). Similarly, Vogelheim et al. (2001) reported that as of 1999, more than 48% of US households owned stocks and, of this total, more than 51 million owned stocks of individual companies as opposed to shares of mutual funds. This uneven trend of relying on income from investment activities shows that the public confidence in investments, especially in personal finance, is volatile. Therefore, it is imperative for companies to maintain good relationships with individual investors in managing their share values.

Realizing their financial limitations in managing large investment portfolios and paying for expensive expert assistance, many individual investors tend to adopt a DIY approach. For these investors seeking necessary information, the websites of individual companies have been regarded as a major information source (Abt SRBI 2008; ASX 2009; Loranger & Nielsen 2003). Since analysing a share normally involves common techniques such as valuing the share's intrinsic value and its future growth (Zhou & Pham 2004), non-professional investors may become better acquainted (though not expert) with cautious investment strategies after several times having invested in common shares. This suggests that the informational needs of individual investors are fairly 'standard' (Esrock & Leichty 2000). Therefore, companies should not avoid providing essential information on their IR websites, because failing to provide sufficient information may result in investors forming

negative attitudes towards these companies' websites, and perhaps choosing other sources of information.

In order to design an effective IR website, it is important to understand the factors that influence investors to complete their intended tasks satisfactorily. Approaches to IR website design, however, usually focus on having disseminated all available financial information, provided downloadable annual reports, and being seen as 'modern' (Ashbaugh, Johnstone & Warfield 1999; Bollen, Hassink & Bozic 2006; Deller, Stubenrath & Weber 1999; Ettredge, Richardson & Scholz 2001; Geerings, Bollen & Hassink 2003; Khadaroo 2005; Marston 2003; Marston & Polei 2004; Xiao, Yang & Chow 2004). These approaches seem to be based on the assumption that users require as much information as possible and Internet technology can save traditional printing costs of annual reports. Conversely, IR websites have been seen to be an excellent venue for companies to create relationships and provide dialogues with investors (Esrock & Leichty 2000). When good relationships with investors are established, chances are that they will favour the company over rivals, even when the company's IR website is not loaded with as much information as those of their rivals.

To be effective, an IR website should be able to satisfy the informational needs of its users, while at the same time making them feel 'happy' about using it. When the informational needs of investors are met, those investors can find it easy to conduct an evaluation of the company's share. Similarly, when they are happy, users are likely to form an intention to return to the website in the future. Therefore, certain factors are important for forming positive attitudes in investors towards the company itself and its IR website. In this respect, IQ and CRD can be regarded as essential factors that meet the needs of investors, whereas USB and ATR can be regarded as aesthetic factors that affect investors' emotions towards an IR website. These attitudes can then act as facilitators for investors to evaluate the company's financial returns and risk. Together with affective antecedents of attitudes including investors' trust in, and familiarity with the company, the financial considerations may affect their attitudes towards the company, which may then predict their intention to trade in the company's shares.

Since using an advertising attitude formation model is considered as relevant in predicting investors' behaviour, this study has chosen the DMH model as a basis for the research model presented in Figure 3.2, which is tested and validated to addresses the following research questions:

1. Can the Dual Mediation Hypothesis (DMH) model be used to predict investors' behavioural intentions in the context of Investor Relations (IR) websites?
2. Can Information Quality (IQ), Credibility (CRD), Usability (USB) and Attractiveness (ATR) be conceptualised as perceptual antecedents of Attitude towards IR websites (AT_ST)?
3. Can Perceived Risk (RISK), Perceived Returns (RTN) and Trust (TRS) be conceptualised as perceptual antecedents of Attitude towards Brand (AT_BR)?
4. To what extent does Brand Familiarity (FAM) relate to Attitude towards Brand and its perceptual antecedents?
5. Does Attitude towards IR website mediate the effect of its perceptual antecedents on Intention to Return (INT_RTN) to the site?
6. Does Attitude towards Brand mediate the effect of its perceptual antecedents on Intention to Invest (INT_INV)?

Answers to these questions contribute to the conclusions drawn in Chapter 6. The findings of this study, together with the research design, have both theoretical and practical implications which are also discussed in Chapter 6.

1.3 Justifications for the research and contributions

First, this research is justified because the effectiveness of IR websites is answered from the users' perspective. In many previous studies, the effectiveness of IR websites seems to be reflected by the extent to which they include as many IR items as possible (e.g. Ashbaugh et al. 1999; Marston & Polei 2004). However, quantity does not always represent quality; therefore, their effectiveness should be judged by the investors who are their target users. Moreover, this study is pertinent as responses from individual investors are more informative than those from professional investors for companies evaluating their IR websites. This is because professional investors have easy access to other sources of information, whereas individual investors consider companies' own websites as the primary information source.

Second, this research validates an attitude mediation model in a share investment setting. Investors' trading behaviours have long been assumed to follow a 'standard' evaluation of companies' risks and returns (Clark-Murphy & Soutar 2004; Zhou & Pham 2004). Since it has been shown that investors are psychologically biased (Kyle 1985), this study has conceptualised investors' behavioural intentions as also being predicted by emotional perceptions including attitudes and familiarity, as well as

the commonly used antecedents of financial considerations. This approach of including emotional perceptions is in line with recent research, which has called upon the inclusion of brand aesthetic perceptions as factors that influence investors' behaviours (Aspara 2009; Frieder & Subrahmanyam 2005; Hatch & Schultz 2003).

Third, studies that apply attitude mediation models in a natural setting are rare. Instead, many such studies have relied on specifically created stimuli that are thought to imitate real persuasive messages (e.g. Chen, Q & Wells 1999; Mackenzie et al. 1986; Karson & Korgaonkar 2001). For instance, instead of a real website, a temporary website is designed in order to expose participants to persuasive messages. It may be true that certain variables can easily be manipulated in such simulation of real settings, but their applications may not be actually adopted in practice. As suggested by MacKenzie and Lutz (1989) and Derbaix (1995), this study adopts a natural setting as it is important, especially in the case of persuasive messages (such as those presented on websites) which tend to evolve over time.

Fourth, it contributes to the literature on corporate governance which lacks findings on management's moral obligations towards its company's shareholders (Ryan & Buchholtz 2001), even though equity shareholdings are significantly high in Australia. Apart from disclosing mandatory information to the Securities Exchange, and releasing such information in their annual reports, companies are also expected to be transparent to their external constituencies – including individual investors. Company websites are excellent venues for providing the appearance of transparency. However, in contrast to the more general aspects of website design, implementation and evaluation, the online IR function has generally received relatively little attention (Rowbottom, Allam & Lymer 2005). Although several authors have considered the usefulness of online IR against that distributed in more traditional formats, no study provides data on characteristics of IR websites that may influence investors' investment decisions and what information is actually sought after by investors to make those decisions.

In summary, this research attempts to fill the knowledge gaps identified in the relevant fields. In doing so, it makes three major contributions. First, in terms of Investor Relations, it expands research on IR, especially in its 'demand-side' research. Second, in terms of contributing to knowledge, it extends an attitude mediation model and validates it in a new environment by replacing advertisements with IR websites. And third, by determining the antecedents of an effective IR website, it provides

information that might assist companies and other relevant parties in making informed choices in web design, maintenance and review of IR websites.

1.4 Methodology

The overall research design selected for this study is based on a positivist paradigm by following a relatively standard survey approach. After the research questions are formed, a conceptual framework and hypotheses are identified. Next, a relatively standard survey methodology is followed. The following paragraphs include a brief overview of the methodological approach adopted in this research, whereas a more detailed discussion regarding methodology, research design and issues related to data analysis can be found in Chapter 3 and 4.

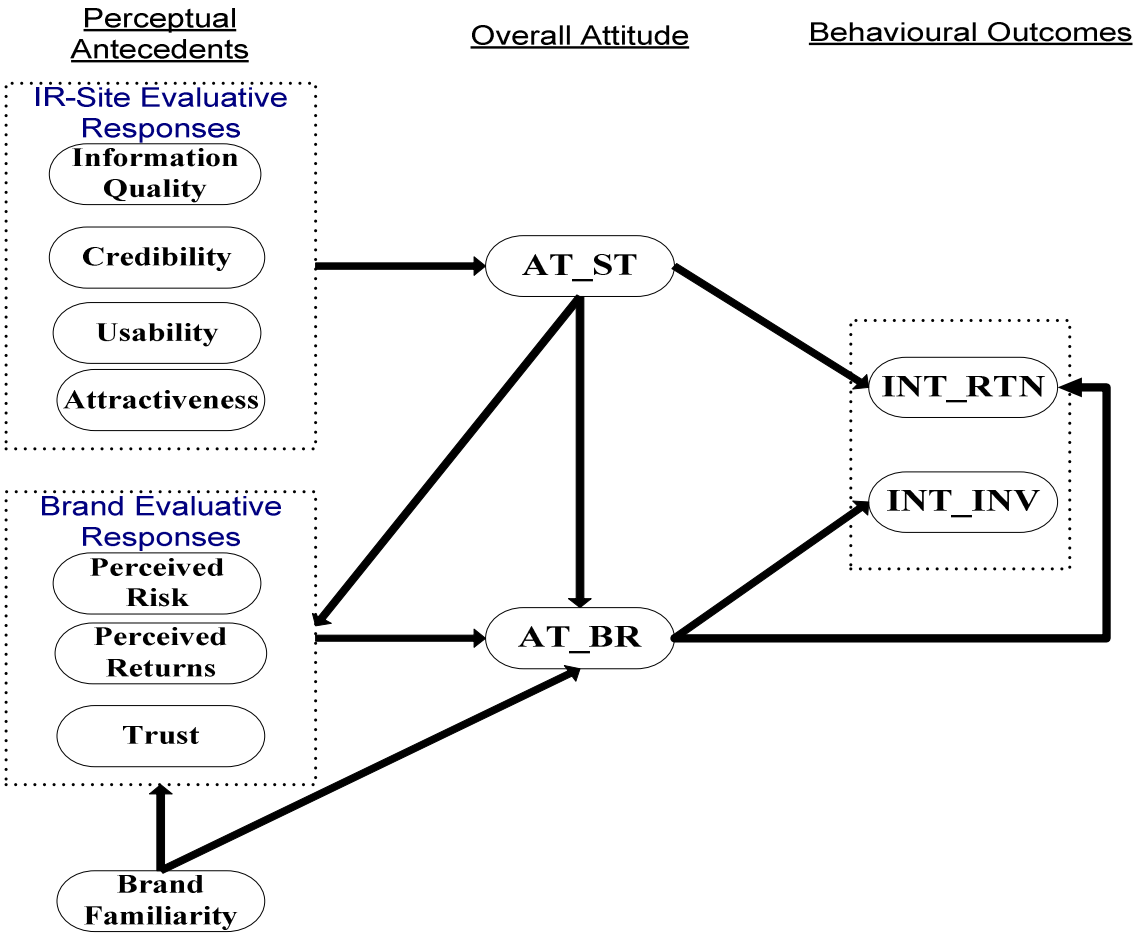
In selecting a natural setting, three Australian-based companies were initially selected based on a number of factors including ASX listing, IR rating, industry category and brand familiarity. The aim was to provide survey respondents with a number of real company IR websites with differing characteristics. Following this, a pilot survey was conducted on postgraduate students at Victoria University to check for questionnaire ambiguity and measurement reliability. Next, the actual surveys were run in two phases on undergraduate students at Victoria University who had undertaken an *Investment and Portfolio Management* subject. When completing the surveys, respondents were asked to act as real investors evaluating the companies' shares using online information. Both surveys were conducted online and the students participated in their own time. For the first survey, prior to answering the questionnaire the students were asked to complete certain information-seeking tasks regarded as necessary for real investors. In the second survey, a share evaluation assignment was administered to the same students to imitate real investment analyses, after which they were invited to participate in the survey. This approach was adopted in order to increase respondents' informed involvement in the subject matter when providing their answers, and to examine the moderating effects of their learning and experience.

The design and measurements used in the survey were based on an attitude mediation model. Here, this study has modified and extended the original Dual Mediation Hypothesis (DMH) model introduced by MacKenzie et al. (1986) and applied it into an Internet environment by replacing the original construct of 'advertisement' with 'IR website' (see details in 3.3). This is deemed an appropriate application of the DMH model because websites are constantly used on their customers

by organisations as tools of persuasion. Similarly, researchers are increasingly convinced that the persuasive impact of a communication is determined by spontaneous thoughts (cognitive responses) and feelings (affective responses) experienced by the audience as they process messages (Karson & Fisher 2005). These internal responses that support or contradict the message are supposed to mediate the effects on beliefs, attitudes and behaviours. Here, the DMH model suggests that cognitive responses of an advertisement affect a user's attitude towards the advertisement. This attitude is then expected to have a dual mediation effect on cognitive responses to the associated brand and on the brand attitude itself. Finally, the brand attitude is believed to drive consumer behaviour in purchasing the product or service related to the advertisement. Among attitude mediation models, the DMH model has been validated in many empirical studies (Brown & Stayman 1992; Karson & Fisher 2005; MacKenzie & Lutz 1989; Miniard, Batla & Rose 1990; Sicilia, Ruiz & Reynolds 2006).

In this study, the DMH model has been modified to fit the research setting by taking the same approach adopted by Karson and Fisher (2005), who have modified and extended the original DMH in their study to predict Intention to Return to commercial websites. Here, this study replaces the context of 'advertisement' with 'IR website', and the construct of 'purchase intention' with Intention to Invest (INT_INV). It also extends the model to include a path of Intention to Return to IR website (INT_RTN). Moreover, this modified model replaces cognitive responses with perceptual antecedents (specific evaluative responses), in accordance with suggestions made by MacKenzie and Lutz (1989) who noticed that unscaled cognitive responses lack reliability. Specifically, Information Quality (IQ), Credibility (CRD), Usability (USB) and Attractiveness (ATR) are hypothesised to influence Attitude towards IR websites (AT_ST), while Perceived Risk (RISK), Perceived Returns (RTN), Trust (TRS) and Brand Familiarity (FAM) are hypothesised to form Attitude towards Brand (AT_BR). The final conceptual framework used in the study is given in Figure 1.1. Using this framework, a questionnaire survey has been designed to answer the stipulated research questions as outlined in Appendix B. As can be seen in Appendix A, the consent form explicitly mentions that non-involvement in the survey does not jeopardise students' assessments in their course subject. Lastly, the share evaluation assignment is given in Appendix H.

Figure 1.1: Conceptual framework used in this study



1.5 Outline of the thesis

The structure of this thesis broadly follows the outline proposed by Perry (1998). Here, this introductory chapter articulates an overview of the study and includes a summary of the main research questions addressed in the study, as well as a brief glimpse of the research design in which these questions are investigated.

Chapter 2 presents a review of literature related to the use of corporate websites as a main communication tool between companies and their stakeholders. First, it provides an overview of current trends of household equity investments in Australia and nearby countries. Next, specific characteristics of individual investor trading behaviours and how these behaviours differ from those of professional investors are discussed. A review of how companies use their web presences to communicate and establish relationships with their stakeholders is then undertaken. Following this, research into the attitude-behaviour relation and its relevance to online IR context is

reviewed. The chapter concludes with a discussion of research gaps that have been identified from the related literature.

In addressing the identified research gaps, Chapter 3 presents the conceptual framework and hypotheses that are tested in the study. The original work by MacKenzie et al. (1986) is presented, followed by relevant empirical studies utilising the DMH model for predicting consumer behaviours. Related theories including the Theory of Reasoned Action (TRA) and Technology Acceptance Model (TAM) are also discussed. Since the research model used modifies the original DMH model, this chapter cites related works that consider websites as persuasive message tools, and those that replace an advertisement context with a website in their research models. Before the final research model and associated hypotheses are presented, literature that identifies relevant perceptual antecedents to the attitudinal constructs is discussed.

Chapter 4 discusses the methodology used in the research project. An initial survey was drafted based on measurements commonly used in the extant literature, with some additional new measures. This survey was then piloted by postgraduate students and senior lecturers before it was finally administered to undergraduate students undertaking a related share investment subject. The chapter then justifies the data analysis technique used to test the hypotheses and answer the research questions.

Chapter 5 represents a quantitative analysis of the survey responses collected. After preliminary examination of the data and its suitability for further analysis, the reliability of the data is examined using a Principal Component Analysis (PCA) technique. It continues with the fit assessment of the research model using a Partial Least Squares (PLS) analysis. After results of hypothesis testing are given, an additional analysis of a modified research model is undertaken.

Chapter 6 concludes the thesis by relating study findings with the research questions addressed in this study. It then considers the implications of the findings for both theoretical and practical contexts. It also discusses some limitations of the study and suggests possible directions for future research.

1.6 Definitions of terms and acronyms

This section clarifies definitions of several important terms and acronyms used in this study. When necessary, justifications to adopt these definitions over alternatives are given. For the purpose of this study, the followings are defined:

AIRA	:	*Australasian Investor Relations Association* is a non-profit organisation founded in 2001 with the main goal of providing members with 'best' investor relations practices.
ASX	:	The *Australian Securities Exchange* – the entity responsible for providing a systematic market for securities trading in Australia.
AT_BR	:	*Attitude towards brand* is the predisposition to respond in a favourable or unfavourable manner to a particular brand.
AT_ST	:	*Attitude towards IR website* is the predisposition to respond in a favourable or unfavourable manner to a particular IR website.
ATR	:	*Attractiveness* refers to user-perceived attractiveness which measures the degree to which an IR website is pleasing to users.
Accumulation Super	:	*Accumulation Super* operates like an investment account where contributions are invested in the members' chosen investment strategies and the super balance accumulates over time with investment returns.
Agency problem	:	A conflict of interest arising between creditors, shareholders and management because of differing goals.
Analyst	:	An *analyst* is a party (individual or firm) that specialises in recommending particular stocks or shares to investors.
Analyst following	:	The number of financial analysts following and providing coverage on a particular company.
AVE	:	*Average Variance Extracted* is a measure of the shared or common variance in a Latent Variable (LV) which is the amount of variance that is captured by the LV in relation to the amount of variance due to its measurement error (Fornell & Larcker 1981).
Background risks	:	Risks that are associated with individuals beyond their control such as the risk of volatile labour incomes and bankruptcy of private businesses.
Bear market	:	A prolonged period in which securities prices fall, accompanied by widespread pessimism.
Behavioural finance	:	A theory stating that there are important psychological and behavioural variables involved in investing that are different from the mean-variance optimisation proposed by standard finance theories.

Behavioural intention	:	Represents a person's relative strength of intention to perform behaviour.
Benchmarking	:	*Benchmarking* is the search for industry's best practices that lead to superior performance (Bogan & English 1994, p.4)
Best practice	:	Guidelines set by reliable agencies stating activities and processes deemed to be able to encourage honest self-regulation.
Beta	:	*Beta* is a quantitative measure of the volatility (riskiness) of a given share.
Blindfolding	:	In PLS path modelling, a *blindfolding* re-sampling procedure omits a part of the data matrix for the construct being examined and then estimates the model parameters (Lohmoller 1988).
CBSEM	:	*Covariance based Structural Equation Modelling* is a quantitative technique combining factor analysis and multiple regressions to estimate path values based on covariance matrix.
CFA	:	*Confirmatory Factor Analysis* is a statistical technique used to verify the factor structure of a set of observed variables.
CRD	:	*Perceived credibility* in information provided on IR websites and its source.
Complete market	:	In a *complete market,* everything that everyone cares about can be exchanged in a market transaction at no transaction costs, where no participants can exercise market power.
Composite reliability	:	*Composite reliability* is a measure of the internal cons**is**tency of the indicators, depicting the extent to which they indicate the common latent construct (Hair, Anderson, Tatham & Black 1998).
Content validity	:	*Content validity* is a non-statistical type of validity that involves the systematic examination of the test content to determine whether it covers a representative sample of the behaviour domain to be measured (Anastasi & Urbina 1997).
DIY	:	*Do-it-yourself* individuals are usually amateurs who perform certain tasks by themselves and normally consider such tasks as hobbies.
DMH	:	The *Dual Mediation Hypothesis* model is an attitude mediation model that postulates a direct effect of attitude towards advertisement on brand attitude and an indirect causal flowing through brand cognitions.
Defined Benefit Super	:	In *Defined Benefit Super*, the bulk of a superannuation benefit is calculated (or defined) using a formula which incorporates age, salary, years of membership, average service fraction and an average contribution factor.

EFA	:	*Exploratory factor analysis* is an orderly simplification of interrelated measures used to explore the possible underlying factor structure of a set of observed variables without imposing a reconceived structure on the outcome.
Efficient frontier	:	*Efficient frontier* is a line created from the risk-reward function, comprised of optimal portfolios.
Endogenous variables	:	*Endogenous variables* in causal modelling are the variables with causal links (arrows) leading to them from other variables in the model.
Exogenous variables	:	*Exogenous variables* in causal modelling are the variables with no causal links (arrows) leading to them from other variables in the model.
External validity	:	*External validity* involves the extent to which the results of a study can be generalized (applied) beyond the sample.
Extrapolation	:	*Extrapolation* is a method of treating late respondents as non-respondents to test for response bias.
FAM	:	*Brand familiarity* refers to the users'/consumers' ability to recognize and/or recall a name/brand.
Face validitiy	:	*Face validity* is an estimate of whether a test appears to measure a certain criterion.
Free simulation experiments	:	In a *free simulation experiment*, the researcher designs a closed setting to mirror the 'real world' and measures the response of human subjects as they interact within the system (Jenkins 1985).
GoF	:	*Goodness-of-fit* tests determine if the pattern of variances and co-variances in the data is consistent with a structural (path) model specified by the researcher.
H^2	:	is *cv-communality* which measures measurement model fit.
IFR	:	*Internet Financial Reporting* refers to the use of the corporate websites to disseminate information about the financial performance of the corporations (Poon & Li 2003).
INT_INV	:	*Intention to invest* is an investor's relative strength of intention to invest in a share.
INT_RTN	:	*Intention to return* is an investor's relative strength of intention to return to an IR website.
IQ	:	*Information Quality* measures how well the information provided on IR websites meets investors' expectations.

IR	:	*Investor Relations* – a strategic management responsibility that integrates finance, communication, marketing and securities law compliance to enable the most effective two-way communication between a company, the financial community, and other constituencies, which ultimately contributes to a company's securities achieving fair valuation. (National Investor Relations Institute, NIRI 2003)
IR website	:	A company's website that contains financial information and any information that is of use to an investor.
IU	:	In this study, *Information Usefulness* is operationalised as a composite variable of *Information Quality* and *Usability*.
Impression management	:	Refers to managers using judgment in financial reporting to alter financial reports so as to mislead some stakeholders about the underlying economic performance of the company.
Internal validity	:	*Internal validity* is an inductive estimate of the degree to which conclusions about *causal* relationships can be made based on the measures used, the research setting, and the whole research design.
Interpretivist	:	*Interpretivists* rely on the assumption that our knowledge of reality, including the domain of human action, is a social construction by human actors and that this applies equally to researchers. Thus there is no objective reality which can be discovered by researchers and replicated by others, in contrast to the assumptions of positivist (Walsham 1995).
PLS	:	*Partial Least Squares* is sometimes called 'component-based SEM', is a predictive technique which can handle many independent variables, even when predictors display multicollinearity.
Perceptual antecedents	:	A *perceptual antecedent* variable is a variable that occurs before the independent variable and the dependent variable.
Positivism	:	*Positivism* is a philosophy which suggests that a single reality exists which is objectively measurable, inherently understandable and outcome oriented (Kuhn 1996).
Q^2	:	*Stone-Geisser's* Q^2, also known as cv-redundancy is a measure of structural model fit.
RISK	:	*Perceived risk* measures perceived financial losses from investing in a company.
RTN	:	*Perceived returns* measures perceived financial gains from investing in a company.
Return momentum	:	*Return momentum* is a phenomenon of prolonged positive or negative returns of share prices after a significant event (e.g. earnings announcement) sparks the initial price movement.

Return reversal	:	Return reversal is a phenomenon of a sudden significant price movement in share prices as a result of a significant event subsides and moves in an opposite direction.
Risk-averse	:	The risk attitude of investors who weigh risks more than equivalent returns.
SEC	:	*Securities and Exchange Commission* is the authority responsible for establishing rules and regulations in the US securities markets, and overseeing market participants' adherence to the rules and regulations laid down.
SEM	:	*Structural Equation Modelling* is a technique for analysing data that is confirmatory in nature and where the variables interact simultaneously with each other (Kelloway 1998).
Scientific realism	:	*Scientific Realism* contains the assumptions of positivism; however, it seeks approximate truth rather than actual truth (Weston 1992)
TAM	:	*Technology Acceptance Model* (Davis, FD 1989) predicts a person's acceptance of technology based on relationships between two main factors including 'perceived ease of use' and 'perceived usefulness'.
TRA	:	*Theory of Reasoned Action* (Fishbein & Ajzen 1975) suggests that a person's behavioural intention depends on their attitude about the behaviour and subjective norms.
TRS	:	*Perceived trust* relates to the degree of believability in management of a company.
USB	:	The *Usability* construct measures the degree of which users find it easy to use and find information on IR websites.
VIF	:	*Variance Inflation Factor* diagnostic is used to assess the severity of multicollinearity problem in a regression design matrix.

1.7 Limitations and key assumptions

The findings of this study are limited to the phenomenon of IR websites and their specific users. Thus, the findings may not be relevant to other types of websites and website users other than individual investors. Moreover, since the survey participants involved undergraduate students who have been deemed representative of individual investors, the findings may not represent the opinions and perceptions of actual individual investors. However, the approach of using these students has been justified in order to address a more important goal – that is, in validating a proposed attitude mediation model in predicting investor behaviours. Moreover, students are normally

employed in experimental research designs (Karson & Fisher 2005; Rose 2001; Rose, Roberts & Rose 2004).

Second, because this study is a work of a cross-sectional research, its findings may not be relevant to IR websites beyond the timeframe considered in this study, since there is a high expectation that websites will evolve. Furthermore, companies may be subject to rules and regulations in the future which may restrict their strategies in designing and selecting information to be presented on their IR websites.

Third, the study findings are limited to the research model used. Beyond the variables conceptualised in the research model, there are other untested variables that may improve the model. This study also advocates that there may be research models other than the DMH that can also explain individual investors' behavioural intentions with regards to their reactions from using IR websites.

Nevertheless, this thesis makes assumptions in order to overcome the said limitations. First, by selecting only three IR websites, the study assumes that they may represent the designs of IR websites of other companies listed on the ASX. This assumption is supported by the view that designs of corporate websites and provision of information for investors on such websites have become 'standardised' as a result of *benchmarking* of industry leaders, easy access to new technology and the relatively cheaper cost to build and maintain websites nowadays.

Second, this study assumes that the knowledge of undergraduates studying relevant subject such as *Investment and Portfolio Management* may resemble the knowledge of actual individual investors. It also assumes that experience plays a less important role than knowledge in explaining individual investors' share evaluation techniques. In addition, this study assumes that these students have special interest in share investment and will most likely venture into share trading in future. Using *involvement* items in the survey and the administration of a share evaluation assignment are believed to be able to bridge any experience asymmetry between these students and actual individual investors.

Finally, this study assumes that companies have used their IR websites to market their shares to investors. Therefore, they engage in certain strategies that persuade their IR website users to form positive intentions towards owning their shares. Further to this, the study assumes that an attitude mediation model which is normally used in the context of a commercial advertisement is applicable in a share investment setting with respect to investors using IR websites.

1.8 Chapter summary

This introduction chapter has endeavoured to present a broad outline of the thesis. It has outlined the main research problem and its related research questions. Next, it provides justifications of the study, followed by a brief description of the research methodology adopted in addressing the main research problem. Next, key definitions, limitations of the scope of the study and its accompanying assumptions are stated. The following chapter provides a review of the literature related to the context of the study.

CHAPTER 2
LITERATURE REVIEW

2.1 Introduction

After describing the current trend in household equity ownerships in Australia and neighbouring countries, this review of literature explores the three major themes related to the study: Behavioural Finance; Corporate Communication; and Attitude-behaviour relation. Although these themes are not specific to IR websites, related literature within them seems to suggest that websites are excellent venues for companies to make the most of characteristics of individual investors in order to attract and establish relationships with them. From these themes, the discussion was narrowed down to address the main research problem: 'How appropriate is the application of the DMH model for predicting individual investors' behavioural intentions as a result of using IR websites?'

These themes were deemed relevant for identifying research gaps in the IR websites phenomenon based on three arguments. The first was that even though investors are generally interested in the financial positions of a company, investment decisions are sometimes affected by their level of satisfaction and emotional factors (Aspara 2009; Shefrin 2002). Second, as IR is a part of corporate communication strategies and grew out of Public Relations (PR), most companies now have a separate IR department to deal with their shareholders. For this reason, it is necessary to review corporate communication and PR as a basis for understanding IR functions, and how the Internet transforms such functions. Third, since a corporate message is normally evaluated according to user perceptions of its quality and usefulness, users may form various attitudes towards the website providing it. In addition, such attitudes may easily be formed when certain aesthetic factors accelerate their formations, especially when users can control the process of acquiring information on websites.

The main keywords used to gather the relevant literature during this Ph.D. project included: 'Investor Relations on the Internet'; 'Internet Financial Reporting'; 'Corporate Communication on the Internet'; 'Public Relations'; 'Customer Behaviour'; 'Behavioural Finance'; 'Customer Satisfaction'; 'Attitude Formation'; and 'Website Effectiveness'. Following discussion of the three dominant themes, this

chapter identifies gaps in the literature and provides reasons for employing an attitude mediation model to explain individual investors' behavioural outcomes.

2.2 Personal finance

Generally there are three reasons for individuals to engage in investment: 1) overcoming the decreasing nature of purchasing power; 2) saving for retirement and 3) achieving a certain financial goal such as buying a property or providing for future financial security. In achieving these objectives, individuals may choose various forms of investment vehicles, ranging from low risk investments including saving accounts and treasury bonds, to highly volatile direct ownership in public equity. Since almost everyone needs to address one of these objectives at some point in their lives, people are likely to make investment decisions sooner or later. The investment types and their extent tend to differ between individuals depending on their *risk propensity* and *background risks* at a particular point in time.

Although investing in real assets such as estate properties and vehicles is regarded as more important for an individual than equity ownership, the relatively high returns expected from equity have tended to attract many people in most economies to participate in share markets in recent years. This is because shares represent a good choice for a risky, high-return asset suited to long-term investing. However, a decision on whether or not to own shares represents a combination of choices including whether having investments is reasonable at a particular point in one's lifecycle, especially for very young households (Cocco, Gomes & Maenhout 2005). As has been documented in related literature, investment in public equity can vary according to several factors including age, gender, health, wealth and home ownership status. Moreover, at the aggregate level, investment in equity moves very much in accordance with levels of market confidence in the prevailing economic conditions (Jansen & Nahuis 2003). Therefore, it is important to understand that despite equity ownerships promising high returns, there are various factors associated with fluctuations over time and the moderate levels of share ownership observed across the globe.

2.2.1 Share ownership in Australia

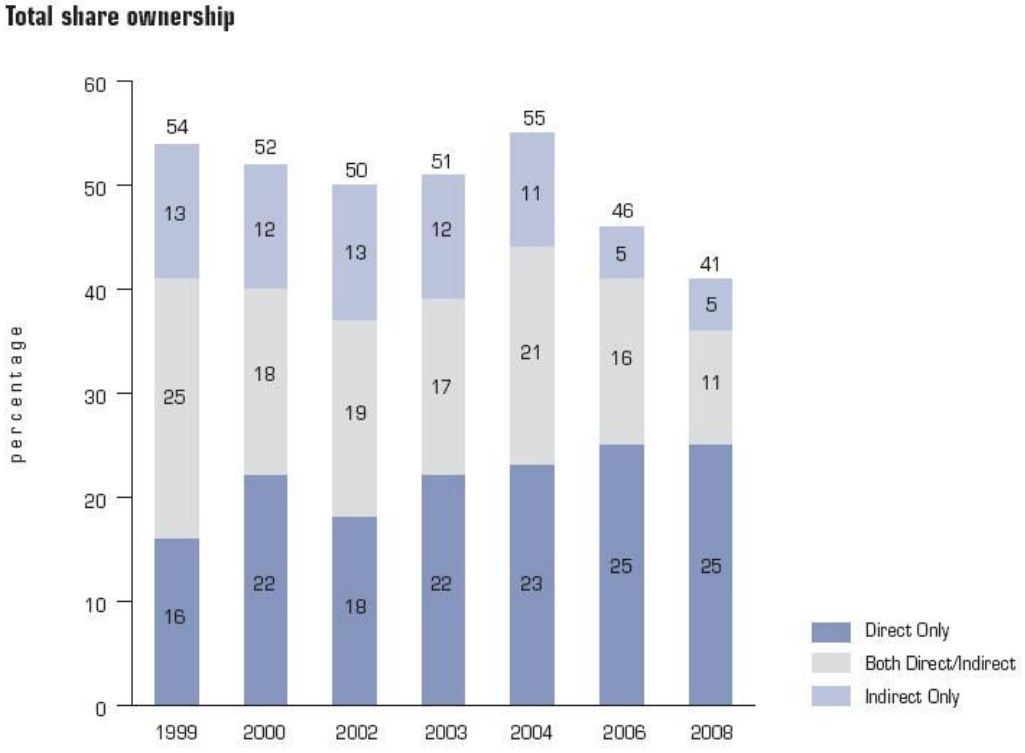
In appreciating the importance of public participation in the share market as driving the state of the national economy, the *Australian Stock Exchange* has been conducting share ownership surveys since 1991 and the 2008 Australian Share Ownership Study is the eleventh of its kind. In 2008, 6.7 million people representing 41% of the Australian adult population participated in the Australian share market – the lowest recorded market participation in a decade. From highs of 55% in 2004, total share ownership (direct plus indirect) fell in 2006 to 46% before falling again in 2008. The latest fall was attributed to a drop in the proportion of the adult population investing both directly and indirectly (ASX 2009). This can be seen as an indication of investors losing confidence in the prevailing market condition, especially in view of the recent global financial downturn.

Direct ownerships include investments in individual shares or other listed financial assets and share investments in self-managed superannuation funds, whereas indirect ownership means that an investor own shares via unlisted managed funds. From the 41% market participation in 2008, 36% was made up of direct investment, which was 5% lower than the 41% of direct investment in 2006. On the other hand, the level of indirect investment fell from 21% in 2006 to 16% in 2008. Nevertheless, the proportion of the population who own only direct investments has remained stable over the period, at 25% of the adult population (see the bottom blue rectangles in Figure 2.1). In other words, it seems that investors who choose their own investments were more risk-tolerant than indirect investors and remained confident in the market, whereas those who owned shares both directly and via mutual funds tended to withdraw from the seemingly volatile current market. This also suggests that investors with dual holdings are less likely to be self-directed, but tending to rely on professional advice. As commonly seen in many economies, investors switching from holding and non-holding of public equity are more likely to switch from not holding to holding shares when the market surges (Chapman, Dow Jr. & Hariharan 2005).

Apart from merely reporting the current trend in share ownerships in Australia, the same ASX study also surveys the market sentiment. It was found that in 2008, more direct investors indicated their preference for *blue-chip* shares while avoiding less familiar or new shares in their efforts to be more defensive in the falling market. However, when asked about the likelihood of their market participation in the future, 22% claimed that they would buy shares in the next 12 months. Similarly, most

investors found late 2008 to be a good time to buy or hold onto shares, rather than sell. This is not surprising in view of the sense of moderate confidence in the local market, as the Australian economy suffered relatively less from the recent economic downturn than its counterparts in northern America and European economies (Drum 2010; Swan & Tanner 2009).

Figure 2.1: Total share ownership in Australia from 1999 to 2008



(Source: ASX 2009, p.6)

2.2.2 Share ownership in other countries

Ownership in public equity has been seen as an attractive investment worldwide due to the potentially high returns on shares, especially when the time chosen for such investment is right. However, investment in common shares is almost certainly affected badly in times of recession due to high risk. Nonetheless, as investors generally agree that high returns are commensurate with high risks, their participation in and withdrawal from the market tend to follow prevailing market conditions. For instance, share ownerships were reported to have declined in most economies during the recent global financial crisis, beginning in late 2007.

The results of the most recent share ownership survey conducted on behalf of the American Federal Reserve show that financial assets as a share of total assets fell 1.8%, from 35.7% in 2004 to 33.9% in 2007 (Bucks, Kennickell, Mach & Moore 2009). Indeed, this fall was recorded even before the financial crisis hit the country, when the American house prices started falling in late 2007 and the subsequent bankruptcy of Lehman Brothers in 2008. From the same survey, it was found that the direct ownership of publicly traded shares among American households[2] fell from 20.7% in 2004 to 17.9% in 2007. Of this figure, the great majority of families holding shares directly owned shares in only a small number of companies, with families directly owning only one share making up 36.4% of the total. From a slightly smaller-scale telephone survey on behalf of the US Securities Exchange Commission (SEC) in 2008, it was found that 26% of respondents owned shares or mutual funds outside their employer retirement plans (Abt SRBI 2008). Although these figures indicate lack of participation in the equity markets, the US has been acknowledged as having high household equity holdings relative to most of other countries (Guiso, Haliassos & Jappelli 2003).

Rather closer to Australia, the equity holdings of New Zealand households have been relatively low since the major stock crash in 1987 (Davis, N 2009). In a study utilising data provided by the New Zealand Reserve Bank in 2007, Davis reported that only 3% of New Zealand household wealth was made up of direct equity holdings. One of the reasons cited for the low equity holding in New Zealand is that their assets were heavily weighted towards housing – which has increased in relative importance over time. Owning a house has also been suggested as a main reason for the relatively lower equity holdings of Japanese households (Iwaisako 2009). From household wealth data for the period between 1987 and 1999, Iwaisako concluded that conditional on the ownership of a house, equity accounted for less than 5% of total wealth.

Elsewhere, in European economies, equity holdings of the public can be regarded as moderate (c.f. BME Consulting 2007; FESE 2008; Fessler & Schurz 2008; Guiso et al. 2003). In a comprehensive share ownership study across major European economies for the year 2007, the Federation of European Securities Exchange (FESE)

[2] The term 'households' is used interchangeably with 'individuals' depending on the regular reference/terminology being used in the studies cited. In addition, in the case of a 'home phone survey', normally only one person per household is asked to participate even though there is potentially more than one investor in their family.

reported Italy as having the highest household market participation at 26.6%, the UK at a moderate participation level of 12.8% and the Slovak Republic with the smallest market participation of only 2%. In line with other economies responding to the financial crisis starting in late 2007 due to the declining housing prices in the US and the oil market turmoil occurring in the same period, household market participation across European economies also saw a declining trend in the period between 1999 and 2007 (FESE 2008). Overall, as presented in Figure 2.2, it has been demonstrated that household equity ownership in Australia is one of the highest in comparison with the levels reported by other countries.

Figure 2.2: International comparisons of share ownership

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Australia – direct	40	n/a	37	39	44	n/a	41	n/a	36
direct / indirect	52	n/a	50	51	55	n/a	46	n/a	41
Hong Kong – shares	22	20	20	18	24	29	n/a	36	n/a
Korea – stocks	7	8	8	8	8	7	7	9	n/a
Germany – shares	10	9	8	8	7	7	7	6	6
shares / funds	19	20	18	17	16	17	16	16	14
Switzerland – shares	32	n/a	24	n/a	20	n/a	20	n/a	20
shares / funds	34	n/a	25	n/a	21	n/a	21	n/a	21
Sweden – shares	22	22	23	22	22	21	20	19	18
UK – stocks / funds	26	25	25	24	22	21	20	20	18
Canada – shares / funds	49	n/a	46	n/a	49	n/a	n/a	n/a	n/a
USA – direct / indirect	n/a	52	^ 50	n/a	49	^ 50	n/a	n/a	45
New Zealand – direct	24	21	n/a	22	23	23	26	23	n/a

NB. Studies are not directly comparable. US and UK data is based on households, not individuals.
UK and New Zealand data use different sources to earlier editions, resulting in changes to previously published data.

(Source: ASX 2009, p. 34)

In short, equity ownership is regarded as one of the main sources of household wealth. Investment in financial assets (not only confined to public equity) comes second after investment in real property in making up one's total wealth (Iwaisako 2009; Heaton & Lucas 2000b). Nevertheless, due to the relatively high risk – especially that of equity investment – the extent of investment in most financial assets generally follows market confidence in the prevailing economic conditions. Therefore, investors switching from holding to non-holding of public equity, or vice versa, are a common phenomenon (Chapman et al. 2005; Jansen & Nahuis 2003). In addition, the level of actual market participation of an 'average' investor is still regarded as

significantly low relative to that of wealthier individuals, whose levels of market participation represent most of the reported figures in many studies (Bertaut & Starr-McCluer 2000; Bucks et al. 2009; Campbell 2006; Chapman et al. 2005; Peress 2004; Wolff 2004). Motivations for buying, holding or selling a common stock remain a puzzle to most researchers. Some suggest that investor behaviours are subject to certain constraints surrounding their participation in the market, whereas others suggest that there are determinants that cause differing behaviours of allocating one's assets (see following sub-sections). For example, these determinants are believed to shape equity shares in an asset portfolio and extent of risk diversification in that portfolio.

2.2.3 Factors affecting market participation

Despite the roles of share markets being substantially increased in many economies, market participation can still be considered low. As reported in the latest share ownership study in Australia, about 60% of Australian adults did not own shares in 2008 (ASX 2009). Similarly, nearly all publications of the *Survey of Consumer Finances* conducted for US households reported that more than half of American households do not own shares (Bucks et al. 2009). These figures were made up of both direct and indirect holdings of financial assets; therefore, the figures for direct equity holdings were considerably lower. Indeed, at a disaggregate level, direct equity holdings differ very much between 'wealthy' individuals and 'average' individuals (Bertaut & Starr-McCluer 2000; Campbell 2006; Chapman et al. 2005; Guiso et al. 2003; Heaton & Lucas 2000b; Peress 2004; Wolff 2004). Hence, it is important to understand those factors or barriers that attract or hinder market participation.

As equity holding is not universal across levels of wealth, *transaction costs* and *information costs* have been identified as two main barriers to market entry (Chapman et al. 2005). In this situation, fixed transaction costs can explain why market participation increases with wealth (Campbell 2006). These costs may include the time spent learning about investments (e.g. various characteristics of assets, risk diversification, portfolio management), complications of filing tax returns, and one-time entry costs associated with opening accounts with investment brokers or mutual funds. In addition, psychological factors (also considered as fixed costs) such as feeling uncomfortable in 'owning' equity of a company and less interaction with other households in the community also hinder market participation (Hong, Kubik & Stein

2004). In other words, some people perceive their status and life-style as tending to change after becoming active investors. After these fixed costs, investors face ongoing *variable* costs including those related to buying and selling financial assets as well as the costs of maintaining asset portfolios. These ongoing participation costs, even at a moderate level, may further hinder market participation by individuals (Vissing-Jorgensen 2003).

Information costs are normally associated with perceived complexity in completing an investment activity and purchasing unfamiliar securities (Chapman et al. 2005; Vissing-Jorgensen 2002). Recognising these costs as barriers to market entry, many public agencies have engaged in both formal and informal activities targeted at improving financial literacy among the public. These efforts include the introduction of a specialised personal finance subject at secondary schools, public surveys and quizzes about financial literacy, and provision of educational information sites on the Internet such as those available on the ASX and NZSX websites. However, the introduction of a personal finance subject at secondary schools has had mixed results in the long-term effectiveness of helping young people to become familiar with investing in their adult lives (Mandell & Klein 2009; Peng, T-CM, Bartholomae, Fox & Cravener 2007; Worthington 2006). Despite these mixed results, any effort that can encourage an even distribution of wealth should be welcomed. Clearly, by improving subject syllabus and its delivery to students, such intended effectiveness can be achieved.

Low market participation is not the only puzzle surrounding the behaviours of individual investors. Standard finance theory suggests that an investor should manage a sound asset portfolio in order to diversify risks. Interestingly, more than 60% of Australian investors held less than six shares in their portfolios in 2008 (ASX 2009), whereas more than one-third of American households held only one share in 2007 (Bucks et al. 2009). Scholars have also pointed out that many individual investors do not follow portfolio theory's predictions (Campbell 2006; Cardak & Wilkins 2009; Guiso et al. 2003; Iwaisako 2009; Peress 2004; Wolff 2004). In providing explanations of differing investor behaviours, they propose alternative determinants of asset allocation which include factors related to *background risks* and *behavioural* motives.

2.2.4 Determinants of asset allocation

Because individuals are known to have varying goals (immediate and long term) and differing attitudes towards risk (Kahneman & Tversky 1979), the extent of their investment and asset allocations in their portfolios may vary. In addition, their behaviours are often subject to their capabilities and readiness to actively manage an asset portfolio, both of which are highly dependent upon their background risks. Under the assumptions of *complete markets*, these risks can be priced and capitalised into wealth, therefore having no influence over decisions to allocate assets (Heaton & Lucas 2000b). However, this kind of a market is far from a reality, whereas in an incomplete market wherein people conduct their own affairs, background risks are normally non-tradable and uninsurable.

The main sources of background risk include labour income, house ownership and private business ownership. A number of calibration studies (Cardak & Wilkins 2009; Cocco et al. 2005; Guiso & Paiella 2008; Haliassos & Michaelides 2003; Heaton & Lucas 2000a; Heaton & Lucas 2000b; Palia, Qi & Wu 2009) confirm that background risks have an impact on portfolio choice, because these risks need to be hedged in a perfect complete market if they are to be eliminated. Since the market is incomplete, such risks cannot be insured by financial assets, causing individuals' optimal portfolios to deviate from the market portfolio to the extent that individual hedging motives are at variance with the market's average hedging motive to non-market incomes (Palia et al. 2009). Therefore, one view of an 'optimal' portfolio is likely to differ from another. This heterogeneity in asset allocation probably explains the enormous variations across households in portfolio allocations, ranging from the majority who hold no shares to a sizeable number who hold shares almost exclusively (Heaton & Lucas 2000b).

Labour income, usually derived from human capital, is regarded as the most obvious source of background risk. Generally, for individuals to receive income from their human capital they need to acquire knowledge and skills. Therefore, with varying levels of knowledge, skills and experience, some people think it highly probable that they will earn a large income from their human capital, whereas others are pessimistic about their human capital. These attributes that make up one's human capital are normally non-tradable and not easily transferable. In addition, the security of one's occupation normally correlates with the prevailing economic conditions. For example, a shopfloor car assembly factory worker made redundant due to a slump in the car

industry will find it difficult to find suitable occupations in another industry. With the exception of public servants, most people face highly volatile, difficult to insure labour income risks.

Mixed empirical evidence regarding labour income risks having a role in the determination of portfolio choice has been observed in previous studies. For example, by using Italian survey data, Guiso, Jappelli and Terlizzese (1996) found that uninsurable income risks reduce one's overall exposure to risk when a smaller proportion of risky assets is held. In this regard, under the condition that one favours prudence, non-tradable income risk can generate precautionary savings and increases the demand for both safe and risky assets, thus making their returns lower than it would be in a complete market environment. Similarly, Hochguertel (2003) found that labour income risks induce precautionary actions by households aimed at holding safer investment portfolios. Interestingly, Cocco et al. (2005) provided evidence that labour income acts as a substitute for risk-free assets (which somewhat answers the low risk-free rate puzzle). Therefore, in the presence of labour income the demand for holding equity increases, whereas the demand for fixed income securities remains low. With regard to labour income risk in an optimal asset allocation along a life cycle, investment in risky assets (equity) has been found to increase with age in the early part of the human life cycle following a hump shape that peaks when investors are in their fifties (ASX 2009; Benzoni, Collin-Dufresne & Goldstein 2007; Cocco et al. 2005; Viceira 2001). This is because investors allocate more of their wealth into shares when their human capital is large and this allocation peaks prior to their retirement age, after which they normally switch to relatively safer financial assets.

The second most cited background risk affecting choices of portfolio allocation is owner-occupied housing, considered as the most important real asset in the life of an individual (Campbell 2006; Cocco 2004; Heaton & Lucas 2000b; Iwaisako 2009). Investment in real estate commonly exhausts individual wealth, especially in young households. Clearly, due to investment in housing, younger and poorer investors have less wealth to invest in financial assets (Cocco 2004). Moreover, in times when house prices soar, house buyers need to be extra prudent both in their consumption and their investments until their financial condition stabilises. For example, the low rate of investment in financial assets by New Zealand households in recent years has been associated with rising house prices and reinforced by the tax-favoured status of housing as an investment (Davis, N 2009).

When regarded as a source of consumption services, investment in housing is likely to create highly leveraged positions in real estate for younger and poorer households (Flavin & Yamashita 2002). For these households, investment in housing is often financed through a mortgage contract to create a leveraged position in residential real estate (Cocco 2004). One interesting finding by Heaton and Lucas (2000b) is that a higher mortgage correlates with a higher level of shareholding, suggesting that some shares are indirectly financed by the mortgage debt. In explaining this relationship, Cocco (2004) explained that due to the consumption role of housing, investors with more human capital tend to buy more expensive houses and borrow more. This human capital is seen as a risk-free asset; therefore, asset allocation is tilted towards shares instead of other safer investments.

Some researchers have examined the effect of the decision to either own or rent a house on subsequent investment decisions in financial markets. One main finding in the relevant literature is that individuals consider active investment in risky financial assets only when excess funds are available after they own their house. In this regard, relatively risk-averse individuals may consider investing in public equity only when they have determined that extra funds are available after mortgage payment obligations have been met. In his research, Iwaisako (2009) found that the average equity share is larger for homeowners than for non-homeowners for almost their entire life cycle. In contrast, Cocco (2004) demonstrated that due to investment in house ownership, younger and poorer investors have limited financial wealth to invest in equity. Moreover, as younger investors normally earn relatively less than older investors, their borrowing constraints tend to be larger. Similarly, Yao and Zhang (2005) found that when owning a house, investors reduce the proportion of equity in their net worth, suggesting that home equity serves as a substitute for risky assets. Their findings also indicate that people who own fewer liquid assets (bonds and shares) tend to rent houses instead of owning them.

As the third main source of background risk, proprietary business income risk (entrepreneurial risk) has been shown to play a significant role in determining an investor's decision to hold public equity. As the first to examine its effect, Heaton and Lucas (2000a) demonstrated that shares of stockholdings are negatively related to levels and variability in the growth rate of proprietary income. The main reason behind this finding is that, at the aggregate level, business income is deemed to be considerably more variable than labour income. For example, in an economic recession

a proprietor can lose his income for many months or years, whereas a paid worker is likely to be subject only to salary cut before a harsher decision enforcing redundancy is made. Therefore, proprietors who are facing highly variable business risks tend to choose safer financial assets than public equity. On another note, at the individual level, a proprietor with low business income variability is able to accumulate wealth in a shorter period than an 'average' working individual. This income from private business has been regarded as the main reason for wealth inequality in many countries, as not only do successful proprietors get rich quickly but they also own other financial assets, either as part of a wealth accumulation activity or as insurance covering business failure.

Equity ownership has also been found to relate with age (after controlling labour income risk) and health-related factors. For instance, equity ownership normally peaks for individuals in their late forties or fifties, though in some economies the holding of equity shares continues to rise even after retirement (Iwaisako 2009). Conversely, younger investors are likely to have relatively stronger financial constraints than older investors who have stable income and already own a house. Similarly, individuals who realize their poor state of health tend to allocate their wealth into less risky assets (Rosen, HS & Wu 2004). In contrast, Christelis, Japelli and Padula (2009) argue that information constraints restrict the cognitive ability of older investors to process information related to share evaluation, leading to a preference of less information-intensive assets such as bonds and indirect ownership in equity. Direct evidence for this relationship between skills, knowledge and investment behaviour has also been found in Lusardi and Mitchell (2007) and Graham, Harvey and Huang (2009). In other words, several demographic variables have been considered as having significant roles in explaining investment decisions by individuals.

Despite results of many studies supporting the importance of background risks and household-specific attributes (e.g. age, health and risk preference), public equity risk premium remains a puzzle because some variations in market participations have not yet been fully answered by these determinants. This has led some researchers to consider emotional elements and behavioural biases to explain variability in individuals' participation in financial markets.

2.3 Behavioural finance

Behavioural finance encompasses research that is not based on the traditional assumptions of expected utility maximisation by rational investors in efficient markets (Ritter 2003). Instead, it relies on two strong arguments: that the ways people think tend to differ from one another (*cognitive psychology*); and that there are *limits to arbitrage* (i.e. when markets are inefficient). Empirical support has been found for these two aspects making up behavioural finance in explaining investor behaviour. However, this review only focuses on the first building block of behavioural finance – cognitive psychology – as it is more relevant in the context of this study. Due to cognitive psychology which endeavours to explain investor behaviours, some patterns of cognitive bias have been identified in related research. These include the biases of *overconfidence*, *heuristics*, *mental accounting*, *disposition effect* and *conservatism* which have been associated with gender, age, entrepreneurship, culture, excessive extrapolation, loyalty and familiarity.

2.3.1 Overconfidence

Overconfidence refers to the tendency for people to overestimate their knowledge, abilities and precision of private information. The psychology literature is rich in references documenting that most people are overconfident most of the time – that is, they believe they are more skilful or knowledgeable than they really are (Barber & Odean 2001). For example, many people think highly of their ability to make wise choices in investment. These people believe that they can time the market and pick the next hot shares that will yield the highest returns. When the market is rising, most shares tend to do well. These shares most likely include those that they have picked and again, most people will take that as confirmation of their acumen (Deaves, Dine & Horton 2006). On the other hand, when their shares drop in price, they will generally blame it on circumstances over which they had no control, such as the general condition of the market and the economy. Such *self-perceived competence* has been found to play a role in investors' willingness to act on their own judgement (Fox & Tversky 1995; Graham et al. 2009). For instance, Graham et al. (2009) have documented that perceived competence leads to overconfident investors who tend to trade too often.

The dangers behind overconfidence include excessive trading and undesired reactions to new information. It was found that investors who traded most fared worse than more conservative investors (Barber & Odean 2001; Shefrin 2000). This is because trading becomes too excessive in volume when it exceeds the need to be prudent. Clearly, excessive trading can lower *realised returns* because each trading incident requires an investor to pay a transaction cost; these costs build up and thus reduce overall profits. In addition, movements in share price over short periods are often less predictable than those over long periods, causing hasty investors to regret not being more patient when their shares are experiencing *return momentum* (share prices moving upwards).

Furthermore, failing to realise that they have reacted to financial news too quickly is frequently the cause of investors making unwise investment decisions. In this regard, investors tend to consistently overvalue the prospects of the 'best' and undervalue those of the 'worst' (Dreman & Lufkin 2000). For example, negative news about a company performing well tends to cause its share price to plummet due to overreactions by investors, whereas positive news of a poor-performing company only initiates an increment in its share price that cannot be sustained (Dreman & Berry 1995). Although investors may also under-react to news, their overreaction is normally the main consequence of overconfidence. Some researchers also suggest that the overreaction of selling winning shares too early is the result of investors being predisposed to seek pride in order to self-acknowledge that their original purchase decisions were correct (see 2.3.3).

Among investors, men especially are likely to be overconfident (Barber & Odean 2001; Ritter 2003). For example, Barber and Odean found that men tended to trade more often and did worse than women investors. Gender differences in confidence are believed to be highly task-dependent, with men generally being found to be more overconfident than women in 'masculine' tasks (Barber & Odean 2001; Lundeberg, Fox & Puncochar 1994). Although matters that relate to financial management cannot be directly associated with 'masculinity', men are easily inclined to feel more competent than they really are (Prince 1993). This may be due to the fact that many 'fixed costs' related to participation in the market need to be overcome before one can become an active investor, leading men to think highly of their personal abilities. In addition, overconfidence has been suggested to be the result of a self-serving attribution bias (Gervais & Odean 2001). This bias indicates that people,

particularly men, tend to take too much credit for their success; therefore believing in their ability to produce repeat successes.

People with entrepreneurial characteristics and those working in positions requiring them to conduct entrepreneurial tasks have also been reported to demonstrate overconfidence. Forbes (2005) found that individual age, company decision comprehensiveness and external equity funding all affect the degree to which entrepreneurs are overconfident. In addition, founder-managers are shown to be more overconfident than are new-venture managers who have not founded their own businesses. These biases seem to support the view that entrepreneurship is conditional upon age, experience and business ownership, and for many entrepreneurs these biases can be seen as a response to certain conditions associated with the task of entrepreneurship including information overload, high uncertainty and high time management pressure.

2.3.2 Heuristics

Investors following the rules of heuristics tend to lead to suboptimal investment decisions. The main reason for them using rules of thumb is that these rules make decision-making easier, especially in cases of equity investment where investors face too many pieces of information, some being more useful than others. Therefore, when it is difficult to make investment decisions, they tend to follow three (among many) major heuristics including 'availability', 'representativeness' and the '1/N rule'.

The first most cited heuristic is that investors find it is easier to invest in shares that are easily available to them (e.g. local and familiar shares). Although knowing that the benefit from *risk diversification* can be better achieved by managing portfolios of local and international assets, many individual investors may find it costly and time-consuming to learn about unknown international shares or less familiar local shares. When investing only in familiar shares, an investor is potentially facing the problem of too little diversification. While retaining an under-diversified portfolio can be the result of overconfidence (Ritter 2003), here investors tend to choose small portfolios to avoid extra transaction costs (e.g. from learning and acquiring new information). Regardless of its causes, under-diversification can put investors at high risk, especially when the market surges.

Investments in shares issued by employing companies have been found to be significant in employees' allocations of retirement account plans. In his famous *familiarity breeds investment* article, Huberman (2001) found that the investors in Regional Bell Operating Company (RBOC) tended to be its own customers and employees. From data of the US 11-k filings, Benartzi (2001) reported that a third of the assets in large retirement savings plans were invested in the employing companies' shares. Similarly, from a large retirement plan of a global consumer product company in the US, Agnew (2006) reported that 66% of the company's employees invested their entire 401 (k) plan contribution in that company's shares. Clearly, over-reliance on company shares can cause severe diversification problems, because if the company collapses (e.g. Enron and Lehmann Brothers), employees with large company shareholdings in their retirement plans can lose much of their retirement wealth at the very time they lose their jobs. Moreover, many related studies found that employee contribution into company shares is significantly related to the company's recent performance, suggesting an effect of excessive extrapolation or representativeness (Agnew 2006; Benartzi 2001; Choi, JJ, Laibson, Madrian & Metrick 2003; Huberman & Sengmuller 2004; Liang, N & Weisbenner 2002).

On the other hand, Aspara and Tikkanen (2008) have argued that many individuals engaging in investment behaviour and trading of a company shares also engage in consumption of that company's products. In examining who are most likely to invest in or consume products of a company, Schoenbachler, Gordon and Aurand (2004) found support for both links between individual product-buying and share-investment behaviours: first, individuals tend to repeatedly buy the products of companies in which they hold shares; and second, individuals may buy shares in a company because they have had positive experience with its products which they buy regularly. When investing in familiar shares, individual investors exhaust their resources and thus end up with under-diversified portfolio.

The second main rule of heuristics is that investors' judgements tend to follow patterns that are similar to the company's historical returns – the representativeness bias. A common example of this bias is when investors making wrong decisions in uncertain situations by looking for familiar patterns (e.g. earnings announcements) and assuming that future pattern will resemble past ones. Although this representativeness or excessive extrapolation has been seen as a major 'mistake' made by individual investors in retirement saving plans (Benartzi 2001), it is also common in equity

investment. Investors are said to follow this bias in their equity investments because they undervalue long-term averages, but tend to put too much weight on the recent experience (Ritter 2003). This has led to many investors investing in more 'glamour' shares than 'value'[3] shares. As found in the study by Lakonishok, Shleifer and Vishny (1994), investments in glamour shares performed poorly compared to investment in value shares (the average total return over a five-year period was 81.8% for the glamour shares and 143.4% for the value shares).

The representativeness bias has several implications to investment decision-making. First, investors may misattribute good companies that have good characteristics (e.g. capable managers, quality products and consistent dividend payments) as good investments (Shefrin 2000). Second, as investors misattribute good characteristics such as positive past returns and stable past dividends as indications of good investments, they may consider these recent achievements to be representative of what they can expect in the future (i.e. extrapolation). Therefore, by investing in shares that have recently recorded increases in earnings growth, they tend to have a myopic focus. Classifying good investments as companies with a history of consistent earnings growth ignores the fact that few companies can sustain the high levels of growth achieved in the past (Baker & Nofsinger 2002). In other words, return momentum can only last for a short time before a possible *return reversal* takes place (DeBondt & Thaler 1987). This narrow-minded focus of treating recent performance to continue has been found in many empirical studies including Benartzi (2001), Dhar and Kumar (2001) and Chen, G, Kim, Nofsinger and Rui (2007).

The third rule of heuristics can be described as investors taking a shortcut of choosing 'a bit of everything' when they try to manage diversified portfolios (Benartzi & Thaler 2001). For example, when faced with a range of choices for investing their retirement money, many people allocate using the 1/N rule, despite some considering that it is just a naïve diversification strategy (Benartzi & Thaler 2001). This is due first to the fact that investors might choose a portfolio that is not on the *efficient frontier* and second, they might pick the wrong point along the frontier resulting in a desired optimal portfolio based on Markowitz's (1952) mean-variance setting not being

[3] Glamour shares are growth shares with low book-to-market ratio, indicating that investors are willing to pay a high price for such shares due to their optimism in the shares' future earnings, whereas value shares are shares with high book-to-market ratio, indicating high earnings relative to current share price.

achieved. However, as in the case with many models, the true parameters that make up mean-variance optimisation are unknown and have to be estimated from data.

Despite negative assumptions about the 1/N rule, it may not, after all, be irrational. For example, from data that showed more than half a million participants of 401(k) retirement plans placing their allocations evenly across the funds they chose, Huberman and Jiang (2006) failed to detect irrationality from following this *conditional* 1/N rule. The conditional 1/N is different from Benartzi and Thaler's definition of the 1/N rule (framing 1/N rule), since by representing a subset of the many funds offered in such plans, it can be considered more rational (c.f. Agnew 2006). Similarly, despite many critics on 1/N naïve diversification, DeMiguel, Garlappi and Uppal (2009) showed that none of a total of 14 possible investment models proved to be consistently better than the naïve 1/N benchmark.

2.3.3 Disposition effect

The disposition effect, which is the tendency to hold on to losing stocks for too long while selling winning stocks too early, is arguably one of the most studied patterns of individual investing. A disposition effect is said to take place when people are avoiding regret and seeking pride (Shefrin & Statman 1985). When an investor sells a 'winner', she experiences the pleasant feeling of having made a good decision in the original purchase, whereas by holding a share when its price declines after purchase, she tries to avoid feeling regret. As a result, she might end up selling good-performing shares and keeping poor-performing shares, should the former continue doing well whilst the latter continue to decline (Baker & Nofsinger 2002). For instance, Odean (1998) found that when investors sold a winner, the same share outperformed matching shares in the following year by an average of 2.35%, while the loser shares that investors kept under-performed by -1.06%.

This disposition effect can be seen as an implication of extending Kahneman and Tversky's (1979) *prospect theory* to investment decision-making. In this theory, the utility function in the area of gains is said to be concave, while it is convex in the area of losses. Since an investment decision is the result of following a process of mental accounting, investors keep track of gains and losses at the individual shares level rather than, as proposed by standard finance theory, at the portfolio level (Thaler 1985). In this regard, the result of a combination action of selling poorly-performing

shares early while holding well-performing shares longer is likely to be better than one in which investors are predisposed to selling and holding otherwise.

The disposition effect is also seen as a result of investors under-reacting to important news. In this instance, under-reaction which puts an investor at an informational disadvantage refers to cases in which market participants react to news slowly (over weeks, months, even years) and/or insufficiently (Dreman & Lufkin 2000). Should every investor appropriately react to important news, the market becomes efficient and therefore, shocks in prices may not continue for long. Moreover, under-reaction has been associated with the *conservatism* attribute of an investor. Conservatism is described as individuals' tendency to update their beliefs too slowly despite the evidence relative to the *Bayes* rule[4] indicating that a revision in belief is better. When investors react to such news slowly, they are actually trading on 'noise' and not on the information given, because the actual effect of such news has already subsided. Some researchers have even argued that the disposition effect displayed by investors is one of the causes of return momentum. In this respect, an equilibrium model developed by Grinblatt and Han (2005) has been tested empirically and shown to be able to explain return momentum patterns as being due to disposition effects (Frazzini 2006).

The disposition effect is said to vary across different individuals. For example, Dhar and Zhu (2006) found that wealth levels and financial literacy were significantly related to the display of disposition effects. Particularly, they found that wealthier people and individuals employed in professional occupations exhibited lower disposition effects. In addition, Glaser and Weber (2007) showed that experienced investors were better able to correctly estimate their realised portfolio performance than novice investors. Similarly, Weber, M and Welfens (2007) demonstrated that learning attenuates the magnitude of disposition effects. All these findings seem to suggest that the severity of the disposition effect can be reduced by improving financial literacy among retail investors and encouraging them to participate actively in the share market so that they may learn from experience.

[4] The principle of inverse probability based on conditional probability theory. The essence of the Bayesian approach is to provide a mathematical rule explaining how one should change his/her existing beliefs in the light of new evidence.

2.3.4 Social effects on individual investors

Despite behavioural biases displayed by individual investors being explicable by investors' cognitions and emotions, such biases have been seen to vary geographically. Therefore, it is imperative to acknowledge specific factors such as social interaction and culture as having a role in an individual's investment decisions. For example, their investment decisions may be fuelled by recommendations from peers and family. In seeking investment advice and information, 36% of direct investors surveyed by the ASX in 2008 reported that they sought advice from trusted family and friends. Similarly, individuals may find it easier to learn about opening a mutual fund account by talking to their friends than through using other mechanisms (Brown, JR, Ivkovic, Smith & Weisbenner 2008). Even without verbal recommendations or advice, people watch the behaviours of others and learn through interacting with them, hence behaving accordingly.

Several recent studies have accommodated the effect of social interaction on market participation. For instance, Hong, Kubik and Stein (2004) found that 'social' households (defined as those who interact with neighbours, or attend church) were substantially more likely to invest in the market than non-social households. Similarly, Duflo and Saez (2002) demonstrated that an individual's decision about whether or not to participate in particular employer-sponsored retirement plans was conditioned by the choices of their co-workers. As found by Brown, JR et al. (2008), an individual is more likely to participate in the share market when a higher proportion of individuals in the local community are share market participants. Using Italian data, Guiso, Sapienza and Zingales (2004) found that in high-social-capital areas, households were more likely to invest less in cash assets and more in equity. They also found the effect of social capital was stronger among less educated people and in places where legal enforcement was weaker.

If social interaction truly has a significant effect in motivating individuals to invest, then this effect tends to vary with culture because social interaction is exhibited more in some cultures and less in others. Cultural differences are frequently expressed in cognitive studies as an individualism-collectivism continuum (Hofstede 1980). On this continuum, Asian cultures are located on the right end due to being situated on a more socially collective paradigm. At the other end, Western cultures tend to exhibit an individualism paradigm. For example, in Asian cultures, family members are likely to step in to help one family member who encounters a catastrophic financial loss,

whereas in Western cultures a person making a risky decision is expected to bear the adverse consequences of that decision personally (Chen, G et al. 2007). In a multi-ethnic country like Australia, one can expect that these differing cultures are converging, although at present the dominant societal culture can be seen as Anglo-Saxon due to the country's historically colonial links with Britain and some adaptations from the US (Seah & Bishop 2006). In a collective-oriented culture, the extent of financial market participation can go either large or small, depending upon the majority of people who regard investments as beneficial. The fact that market participations in Asian cultures are still less than their Western counterparts suggests that there are other factors which are more significant than the differing cultures alone, including the roles of technology and financial literacy. These, however are not discussed in length in this thesis.

2.3.5 The media and the Internet

The media has been constantly used by many organisations to spread their views and convince people. When used strategically, the media can have a tremendous influence on individuals who may behave according to their resulting cognitive bias. At the national level, most securities exchanges utilise the media to make financial markets as *liquid* as possible. In this respect, owners of financial assets can carry out transactions easily. At the same level, many media providers publish the daily performance of the share market, as well as selected performances of individual industries and companies. At the individual level, almost every publicly traded company constantly 'markets' itself to investors. By doing so, their share prices can be maintained at 'fair' values. To meet this objective, many companies use all types of media – particularly the Internet, which has had a great effect on market participation.

The rise of the Internet has dramatically changed the way people seek information, with individual investors arguably being the most affected group of investors. Particularly, the Internet has levelled the playing field of investment between individual investors and professional investors, resulting in investors using the Internet to find information relevant to their investment decisions (Elliott 2006; Vogelheim et al. 2001). Although less able to access specialised databases such as Bloomberg or Fortune, these individual investors can rely on many free financial portals including Yahoo! Finance and Money MSN. All sorts of websites are available to suit different

types of individual investors, ranging from those targeted at helping beginner investors learning about investment (e.g. http://www.asx.com.au/resources/ education/index.htm and http://www.investopedia.com/) to those designed for more experienced individuals who only need information to carry out short-term trading (e.g. screens displaying share price movements).

The online approach of personal finance has prompted individual investors to take personal control over their investments at an increasing rate (Looney & Chatterjee 2002). The 2008 Australian Share Ownership Study found that 41% of respondents used the Internet to find information for making investment decisions (ASX 2009). Similarly, 55% of 1,000 individual investors surveyed on behalf of the US Securities Exchange Commission in 2008 reported that they accessed information via the Internet, and 56% percent relied on individual company websites (Abt SRBI 2008). Although it is not conclusive whether the Internet has made individual investors more confident or confident investors tend to choose the Internet as their primary information source, many individual investors seeking online information seem to be self-reliant in their decision-making processes (ASX 2009; Loibl & Hira 2009; Teo, TSH, Tan & Peck 2004). This trend of self-investing has also led to the proliferation of Internet brokerages offering trading services on the Internet at very low commission rates compared to those charged by traditional brokerages.

One of the major causes of the recent trend in empowerment of personal finance is the proliferation and widespread availability of low-cost online brokers. These have facilitated online trading by allowing investors to perform basic front-end transaction tasks (Elliott 2006; Ryan & Buchholtz 2001). In the 2008 Australian Share Ownership Study, 56% of respondents indicated that they used Internet discount brokers, while 30% used full service brokers to trade (ASX 2009). Internet brokerages can be classified into three groups: cheap, medium and premium. The cheap discount Internet brokers target highly active day traders who are after fast execution and no-frills services. The medium Internet brokers charge higher prices in exchange for the provision of more value-added services such as access to market reports or online financial planning. The premium Internet brokers commonly target high-end markets where investors are not price-sensitive but are expecting high-quality services such as extensive access to proprietary reports and personal financial consulting services (Lee-Partridge & Ho 2002).

The proliferation of DIY investing via the Internet should also be viewed with caution. First, with the abundance of information available on the Internet, investors need to select reliable information and ignore the unnecessary. All too often people find themselves surfing the web looking for investment options only to be bombarded with copious amounts of information without much filter. For example, an investor interviewed by Kingford-Smith and Williamson (2004) was found to rely on a website that contained charts and graphs found using the Google search engine, without paying much attention to the reliability and credibility of the information provided on that website (www.incrediblecharts.com). Actions such as this may cause investors to unnecessarily overreact. One example of overreaction by DIY investors was reported as occurring on 'Black Tuesday' (22nd January 2008) when the website of the biggest online broker in Australia, *CommSec* crashed due to almost 40,000 transactions being logged during the first hour of the day (*The Age*, 23 January 2008).

Second, when faced with too much information, overconfident investors may practise undesired behaviours such as trading too often or selling winning shares too soon. For example, Barber and Odean (2002) studied 1,607 investors who had switched from trading using offline modes to online services and found that they had nearly doubled their number of trades. Investors may experience an *illusion of knowledge* when facing too much information on the Internet because they may not have sufficient training, skills and experience to accurately interpret such information (Baker & Nofsinger 2002). Of these online investors who tend to follow such behavioural biases, many are men, who are found to be more overconfident, trade too often and perform worse than women (Barber & Odean 2001).

In short, there are several societal factors that can explain investor behaviours beyond the standard finance theory predictions and behavioural finance theories. Such complications in singling out the main determinants of investors behaviours have arisen due to the complex characteristics of individual investors which differ greatly from those of professional investors. However, their informational needs seem to be homogenous because ultimately they are depending upon information that is relevant for evaluation of an ordinary share. In realizing the importance of marketing their shares to individual investors, and that these investors need 'standardised' information, many companies are now strengthening their Investor Relations function through leveraging their web presences to establish relationships with them.

2.4 Corporate communication

The concept of corporate communication can be defined as 'an integrative communication structure linking stakeholders to the organisation' (van Riel & Fombrun 2007, p.14). In other words, corporate communication serves as a liaison between a corporate organisation and its stakeholders. It encompasses any communication issued to the stakeholders that makes them aware of the organisation's visions and missions and how the organisation tries to meet those visions and missions. By communicating to stakeholders their periodical 'performances' in achieving the stated missions, corporate communication helps organisations to create distinctive and appealing images, build strong corporate brands and develop reputation capital (Dowling 1994; van Riel 1995).

Although corporate communication also includes internal communication such as takes place between management and employees, the focus of this literature review is devoted to external communication between organisations and their external stakeholders. These external stakeholders may come from various groups ranging from the general public to more specific groups such as investors and the media. Because communications towards these different groups carry different messages and priorities, most organisations now have different departments to deal with varieties of stakeholders. Arguably, the general public is the external constituency that dominantly receives attention from organisations; hence the rise of Public Relations (PR) functions.

2.4.1 Public relations

The underlying goal of public relations is to influence the public and mould their opinions. In tracing the history of modern public relations, one could begin at the first tool of mass media, that of the printing press invented by Johann Gutenberg (Man 2002). Interestingly, the use of printing from movable type arose in East Asia well before it did in Europe (Christensen 2007). In the 14th century, these printing technologies spread quickly, and news and books began to travel faster across Europe as a result of the European Renaissance (Man 2002). By the 17th Century, newspapers began to appear and ordinary people gained greater access to information and ideas. In response, governments and their leaders became increasingly concerned with public opinion. In 1623, Pope Gregory XV created the College for Propagating the Faith, the first large-scale use of public relations (Brown, RE 2004), created by the Roman

Catholic Church to retain followers and solicit converts in the aftermath of the Reformation.

As a result of the Industrial Revolution in Western countries, railroads expanded and united many parts of the world and made it possible for the mass-production and distribution of goods. Particularly in North America as the railroads expanded, railroad tycoons used persuasive techniques to lure people into new Western cities. As a result, along with the booming population came industry and increased railroad profits. Thus, from the dawn of the 20th Century the practice of public relations spread and continued to evolve (Brown, RE 2004).

The practice of modern PR arguably began with the recruitment process of soldiers to fight in the two world wars. For example, a specialised communication campaign was designed that targeted non-English speaking draft-eligible men to participate in World War I under the US flag and was run by the Committee on Public Information led by two well-known PR figures, Edward Bernays and Carl Byoir (Tye 1998). The function of PR then continued to evolve in the political arena. With the rise of democracy, the value of PR became obvious, because it undoubtedly took persuasion and influence to assist multitudes of citizens in coming to a consensus. Without effective dissemination of facts, interaction between groups and an open exchange of ideas in a democratic society simply could not have succeeded.

The practice of PR as a profession expanded into corporate organisations as a result of public pressure on those organisations to disclose related information when undesired events occurred. For instance, in 1906 following a Pennsylvania Railroad accident, Ivy Lee issued what is often considered to be the very first press release, convincing the company to openly disclose its information directly to journalists (Ingham 1983). Gradually, requirements to disclose information to the public expanded beyond answering to them about the causes of specific events. These days, many corporate organisations have been following ‘disclosure volunteerism’ and Corporate Social Responsibility (CSR) approaches in order to maintain public confidence by being open and honest (Botan & Taylor 2004).

In the past, PR exhausted all available outlets for disseminating information and as technology grew more complex, the PR industry strengthened. The telephone, television and radio all helped foster the PR industry and facilitate its expansion. More recently, the PR industry has been greatly enhanced by the advent of more convenient technologies. For example, organisations have even been able to utilise satellites to

transmit information much faster and more efficiently. In addition to being able to reach multitudes of people almost effortlessly, software and computing techniques are making transmissions of professional and persuasive messages that include graphics and designs. More recently, the widespread use of Internet and World Wide Web has fuelled an explosion of PR.

Today, the practice of PR is a multi-million dollar industry with most modern developments in PR being linked to political reform movements, playing a major part in who becomes elected and what laws are passed. In a similar way, the PR function in a publicly listed company fosters stakeholders' confidence in that company. Particularly, company shareholders who literally own the company are interested in it being a 'going concern' entity that will continuously generate incomes for them. In coping with the needs of this specific group of stakeholders, most companies now have a separate Investor Relations department (Laskin 2006).

2.4.2 Investor relations

The generally accepted definition of IR is 'a strategic management responsibility that integrates finance, communication, marketing and securities law compliance to enable the most effective two-way communication between a company, the financial community and other constituencies' (National Investor Relations Institute 2003). This definition recognises that IR is a strategic function, one that combines a strong understanding of finance and accounting with the disciplines of communication and marketing with regulatory responsibilities (AIRA 2006). A slightly more to-the-point definition than that of NIRI is that of Marston's (1996, p. 477), who defines IR as 'the link between a company and the financial community, providing information to help the financial community and the investing public evaluate a company'. Her view suggests that the role of investor relations is to complement existing information flows, not by adding new information content but by improving the method of providing that information. Because investors are of strategic importance to companies with needs differing greatly from the general public, most companies do not perceive IR to be a part of the PR function (Petersen & Martin 1996), and therefore deal with them separately.

The first known IR department in a company was established by General Electric in 1952 to cope with the high demand of return investors during the post-war prosperity and share market boom (Brennan & Tamarowski 2000). Since then, almost every publicly traded company has devoted a specialised IR department to handle the needs of their various investors. Specifically, the field of IR gained considerable momentum following the 1996 Texas Gulf Sulfur case in which the US Supreme Court ruled that a company must immediately disclose any information that may affect the value of a share. In this case, it was the discovery of a rich mineral body (Clark, CE 2000). Similarly, following the collapse of giant companies such as Enron and WorldCom in the late 1990s, publicly traded companies are now subject to constantly tightening regulations designed to reduce information asymmetry between internal and external constituencies, as well as maintain transparent corporate governance practices (Rockness & Rockness 2005).

Interestingly, the function of IR has also evolved rapidly along with continuously reviewed rules and regulations targeted at motivating voluntary disclosure and self-regulating schemes, and due to increases in *shareholder activism*. As share markets in many economies grow, the profession of financial analyst has also grown in importance. These analysts demand for increasingly detailed financial information about companies in order to provide advice to their clients, both for institutional and individual investors. These analysts have been relying more on specific organisational departments to supply them with rich information since such detailed financial information has not been available through the more traditional PR functions. Therefore, by voluntarily disclosing relevant information, many analysts have been able to utilise the information given to provide coverage on such companies.

The rise of investor activism in a company can be associated with investors who are dissatisfied with some aspect of company's management and operations. Specifically, such a rise results from poor performance of the board of directors who fail to control and monitor their company's management (Gillan & Starks 2007). In extreme cases, these dissatisfied investors (in large groups) may initiate takeovers and Leveraged Buyouts (LBOs) aimed at accomplishing fundamental corporate changes. Large institutional investors have more opportunity than others to strategically become shareholder activists because of their larger stakes in companies. As for individual investors, the rise in their shareholder activism has come from collaborating together in

large public pension funds, putting pressure on poor management to refrain from deviating from their shareholders' interests.

Many benefits can be obtained from successful IR functions. First, it has been argued that 'active' IR correlates with higher *analyst followings* because active IR reduces the cost of information acquisition by analysts (Brennan & Tamarowski 2000). When there are many analysts covering a company, it can be expected that they will present their reports to large numbers of investors. As a result, such a company can expect large numbers of investors who may be interested in holding and trading its shares. Second, by actively disclosing information to the public, a company can reduce the *information asymmetry* between investors and the company's management. As theorised by Kyle (1985), the degree of information asymmetry is negatively related to the liquidity of shares. When a share is illiquid, it may not be trading in the market at its *intrinsic value*. Third, increases in liquidity are expected to reduce investors' required rates of return (cost of equity) in particular shares, making them more attractive and easily able to increase in value (Amihud, Mendelson & Lauterbach 1997).

A company's disclosure policy is arguably the most significant aspect of IR management (Brennan & Tamarowski 2000). This policy must be managed while complying with an increasing number of regulations that offer more confidence to investors. For instance, companies are now subject to continuous disclosure rules under which they must notify the ASX of any information which may have *material* effects on their share prices and values. By adopting this regime, the regulators give assurance that companies will not hide price-sensitive information from public knowledge, thus reducing information asymmetry and avoiding *insider trading*. With the help of recent technologies, companies can announce such important information on their websites as soon as regulators have been made known of the matter. Therefore, the goals of IR can be better met through leveraging companies' web presences, because not only does this technology complement legal requirements, it also enhances investor confidence.

2.4.3 Investor relations on the Internet

The Internet has paved the way for companies to effectively communicate with their stakeholders quickly and at low cost, as compared to traditional means of corporate communication. Since it has been almost a must for publicly traded companies to have corporate websites, leveraging their web presences to establish good relationships with investors clearly provides an added benefit. In addition, because companies can voluntarily disseminate investor-related information on their websites, they can select favourable information to properly and 'persuasively' design IR websites to engage investors directly, and not through third-party providers.

websites have been seen as a venue for creating relationship with specific web users (Esrock & Leichty 2000; Hamid & McGrath 2005). When it comes to corporate communication, the Internet has enabled companies to build relationships with their customers more easily and quickly by offering interactivity, dynamic content and personalised information through corporate websites. Furthermore, websites provide a control channel through which companies can communicate and disseminate information to the public. It is therefore vital for companies to have an integrated marketing, public relations, and information technology strategy to develop lasting, value-added presences online (McCarthy, Aronson & Petrausch 2004).

IR on the Internet can act as a specific instrument for reducing information asymmetry, which in turn lowers agency costs (Ashbaugh et al. 1999; Ettredge et al. 2002b). Information asymmetry exists when managers possess private information about the company and its current and prospective earning streams that current and potential shareholders do not have. This has always been the major reason for *earnings management* activities in which management report companies' financial performances based on the information which is already public knowledge (Dye 1988; Trueman & Titman 1988; Richardson 2000). Corporate reporting on the Internet partially remedies this situation by enabling investors to obtain important information easily and at low cost. Furthermore, the traditional paper-based disclosure has limitations and costly due to increase in investor geographic dispersion, which has meant that the paper form becoming increasingly expensive and limited in capacity to reach users. In contrast, Internet disclosure is cost-effective, fast, flexible in format, and accessible to all types of users within and beyond national boundaries (Debreceny et al. 2002).

Traditionally, the role of IR has been to distribute corporate reports (annual and interim), organize annual general meetings, arrange press and financial analyst conferences and attend to telephone calls (Bollen et al. 2006). Apart from being used as an alternative means of implementing these IR activities, the Internet can also act as a new form of communication with investors (Deller et al. 1999). Because investors are highly reliant on the information provided on company websites (ASX 2009; Loranger & Nielsen 2003), companies should constantly manage their IR websites to satisfy investors' informational needs. As companies continuously dealing with Internet-savvy investors including young and DIY investors who trade online using online information, effective IR websites are very useful for their continuing survival and success.

However, companies may mistakenly assume that they are utilising an IR function via their IR websites, when they are simply reporting information in online form. This practice known as Internet Financial Reporting (IFR) is seen as one-way communication, rather than as an activity that allows companies to understand and learn investors' preferences. Most companies begin having a web presence to appear as modern and following industry leaders. Thus, they start utilising web technologies by initially providing brief information about their businesses, later adding 'some' financial information for investors. However, many have become complacent with this one-way communication, not realising that their IR websites should be used to build, nurture and maintain relationships with investors. This practice of IFR (seen as a 'supply-side' of IR) is common in many industries and received wide attention from researchers investigating the phenomenon. Interestingly, some literature mistakenly uses the term IR to represent IFR activities.

2.4.4 Internet financial reporting

IR is a general concept covering both soft and continually evolving technical aspects of corporate communication. This leads to the view that the evaluation of future trends in corporate web reporting is an 'evergreen' subject due to the rapid technological progress of digital tools and the transformation of business context (Lymer 1999; Jones & Xiao 2004). Early Internet adoption for corporate communication can be seen through the practice of reporting and disseminating of financial information, which explains why earlier studies in this area are known as IFR.

The first phase of IFR studies can be labelled as the 'descriptive' phase. This phase included some country-specific studies including those of Gowthorpe and Amat (1999), Hedlin (1999), and Ettredge et al. (2001), while Deller et al. (1999) presented international comparisons of IFR practices. Results of these studies are limited to format features and the extent of information content of IR websites. For examples, Gowthorpe and Amat (1999) only discussed the number of Spanish companies who communicated quarterly and annual reports on their websites. Hedlin (1999) went further by including results of Swedish companies which used corporate websites to include graphics, press releases and uses of hyperlinks. Deller et al. (1999) on the other hand, studied different parts of financial reports including balance sheets, profit and loss accounts, cash flow statements and notes to the accounts, comparing findings from the US, UK and Germany.

The second phase of IFR research can be described as the 'explanatory', as these studies went further than simply describing the content and format features of IR websites by testing the determinants of IFR. The first indication of this research is that there may be a positive relationship between size and disclosure (Ashbaugh et al. 1999; Marston 2003; Pirchegger & Wagenhofer 1999). For example, Craven and Marston (1999) found that the extent of financial disclosure on the Internet is positively associated with company size, but not associated with industry type. The second most tested IFR determinant is profitability, as Marston (2003) suggested that profitable companies have more financial resources to apply to the provision of additional information. Other tested determinants include industry type, gearing level and reputation of the external auditor, all of which have been supported in a number of studies (Bonson & Escobar 2006; Debreceny et al. 2002; Ettredge et al. 2002a; Martson 2003).

The more recent studies can be described as 'normative', as they have included users' reviews of corporate websites, the identification of relevant trends, and recommendations by expert users and professional accounting agencies (e.g. FASB 2000; Lymer & Debreceny 2003). Yet another approach to IFR concerns the impact of web reporting using distinctive features including XML-XBRL web language and hyperlinks to footnotes that may 'dictate' users' information searching activity (e.g. Debreceny, Gray & Mock 2001; Dull, Graham & Baldwin 2003; Hodge, Kennedy & Maines 2004).

In short, all of the above IFR studies deal only with the provision of financial and other investor-related information on IR websites, but lack findings on the usefulness of IR websites as perceived by their intended users. As stressed earlier, IR is two-way communication where companies not only provide information to investors, but also seek feedback from them; hence those reviewed IFR studies in the preceding paragraphs may only explain the phenomenon of IR websites from the 'supply-side' view. Therefore, to provide a balance it is necessary to review studies related to the 'demand-side' of online IR functions.

2.4.5 The demand-side of IR websites

Studies that have examined the effectiveness of IR websites as perceived by their users are few. The first of such demand-side research on IR Wesbites has been led by Ettredge et al. (1999) who examined the relationships between features of IR websites and user characteristics. They found that the information provided on websites varied systematically with levels of analyst following, and with share ownership by retail investors. Specifically, they found that higher levels of analyst following were associated with relatively objective and more extensive data, whereas higher levels of retail ownership were associated with relatively subjective and more abbreviated information.

Following Ettredge et al. (1999), Gowthorpe (2004) conducted a study based on an indirect test on users' demand of online financial information through 20 interviews with finance directors of small UK public listed companies. The main question in the interviews concerned the methods used by corporate managers to assess the information needs of their stakeholders and the extent to which they sought to meet those needs with website disclosure. Interestingly, results from their interviews revealed that those corporate managers tended to use their experience to imagine the stakeholders' needs in a very unsystematic way, as a basis for designing their IR websites. Further, these managers often visited their competitors' websites to get new ideas about 'reasonable' information content. They also relied on their regulation duties of disclosing material information to the securities exchange by providing the same information on their IR websites on the same day. Therefore, by merely assuming investors informational needs, Gowthorpe derived this practice of asymmetrical dialogue between companies and their stakeholders as 'companies talk but don't listen up'.

The studies of Beattie and Pratt in 2001 and 2003 used a similar approach. The 2003 study was based on a large direct analysis carried out in the UK involving individuals deemed to be potential users of corporate web reporting: expert users (investment analysts, fund managers, and corporate lenders), non-expert users (private shareholders), preparers (finance directors) and auditors (audit partners). The authors submitted five topics to their sample: frequency of use of Internet; attitudes to define the scope; the frequency and the structure of web-based reporting; usefulness of navigation and search aids; and portability of information-file formats. In other words, their main aim was to define intra-group and inter-group similarities of preferences in such a way that a policy maker could obtain important input for subsequent decisions in order to establish some common rules. They found that all expert user subgroups (investment analysts, fund managers, and corporate lenders) expressed very similar preferences, so 'there appears to be no need for future research to consider their needs on such matters separately' (Beattie & Pratt 2003, p. 180). However, they found some important inter-group differences needing more attention from policy makers.

Inter-group differences in the use of IR websites have also been considered in the study of Loranger and Nielsen (2003) who examined differences between individual and professional investors, via a *free simulation experiment*. The main difference found between these users was that individual investors were highly reliant on companies' IR websites and free finance portals such as Yahoo! Finance and MSN Money, whereas professional investors, although visiting companies' own websites to acquire information, tended to rely upon specialised services from Bloomberg, Reuters and First Call. In addition, these users were found to exhibit differences in uses of specific functionalities on IR websites. Particularly, professional investors were very interested in 'soft' information about a particular company such as management's statements and speeches, while individual investors tended to use simplified versions of financial information and rarely spent much time reading detailed annual reports.

In the Italian context, Quagli and Riva (2006) studied similarities in behaviour of information acquisition and differences in using information between corporate lender officers and financial analysts. They found that both of these user groups perceived financial information disseminated via the Internet as very important compared to the more traditional paper-based financial disclosure. Similarity was also found in the perceived importance of different websites, as they viewed public listed companies' websites as the most important source of financial information on the

Internet. With regard to uses of specific financial information, it was found that downloadable annual reports were the most important feature of IR websites for both users. The most noticeable difference between these users was their perception of the importance of webcasts of corporate presentations for their informational needs, which corporate lenders regarded as important and financial analysts did not.

On the whole, these demand-side studies on the IR website phenomenon still lack output from individual investors who are generally known to have different characteristics from expert users. Although Loranger and Nielsen (2003) have provided some insights about individual investors' views of IR websites, their findings were limited due to the small number of respondents – only 24 individuals. As a result, the present study evaluating individual investors' reactions towards IR websites partially addresses these inter-group differences. Since IR website users can be considered as information seekers rather than common web users, the types of information and the ways they are presented on IR websites are important considerations for companies in designing and maintaining effective IR websites.

2.4.6 Information sought after

General consumers may be classified as low searchers, high searchers or selective searchers (Kiel & Layton 1981). Due to the fact that investors seek specific information (risk and returns) to help them make investment decisions, they can be considered as selective searchers. Therefore, it is necessary for companies to review the information provided on their IR websites as to whether or not the provided information is highly sought after by both professional and retail investors.

For many investors, IR websites can be considered as the 'first port of call' for information regarding a company, including its press reports, ASX announcements and general shifts in stock prices that might have implications for its shares (ASX 2009; Loranger & Nielsen 2003). Any of these events may spark a visit to a company website. However, when a website contains poor and outdated information, users may be driven away to choose other information source (McGrath 2006). In this situation, investors may choose to visit websites of financial analysts, financial portals, or even competitors' websites – especially if the competitor has a better website offering more up-to-date information and more comprehensive share price listings.

While companies must provide IR information to attract and retain investors, they must be realistic about the types of content and features that users need most. Loranger and Nielsen (2003) found that users of IR websites indicated that they went to company websites to find press releases, SEC filings, annual reports, quarterly reports, company backgrounds and historical financial information. As for prioritising information on IR websites, they recommended three categories of IR information which are presented in Table 2.1.

Table 2.1: Information on IR websites based on priority

Level of priority	Types of information
High Priority (most important)	Company information Share quote Share chart One-page financial overview News releases Quarterly reports Annual reports SEC filings (or equivalent) Frequently Asked Questions (FAQ) Purchasing share Shareholder resources Information request IR contact
Medium Priority (nice to have or helpful)	Analyst contact information Company events Dividend history Stock splits Insider trading activity
Low Priority (not important or not often used)	Email alerts Analyst ratings Historical price look-up tool Investment calculator webcasts and presentation slides

(Source: Loranger & Nielsen 2003, p.19)

After companies have decided the types and depth of information and functionalities to place on their IR websites, based on agreed priorities, they then need to consider how investors can access such websites and review the usefulness of the provided information. For example, in finding a particular website, 40% of the participants in Loranger and Nielsen's study guessed the company's domain name of, for example, *www.company.com*, while 36% used the Google search engine. This suggests that it is important for companies to have mnemonic web addresses that are familiar to the public, as well as having high-ranked search engine results.

With regard to information usefulness, companies should consider providing truthful, accurate and reliable information because most investors learn from their experience. For example, investors may not revisit a company's IR website after they have experienced a 'wrong' investment decision when relying on less truthful information provided on that IR website. This is an occasion where companies should consider emotional factors influencing investors, such as attitudes and satisfaction, that may affect valuations of their shares.

2.5 Attitude-behaviour relation

Attitude is defined as a predisposition to respond in a particular way towards a specified class of objects (Rosenberg 1960). Attitude has become a continuing area of interest for social scientists, and the digital world is no exception. Related literature in the IS field indicates that a user's prior positive attitudes towards an information system increase their actual use of the system (DeSanctis 1983). The same evidence was also found in the acceptance of commercial websites (Teo, H-H, Oh, Liu & Wei 2003). Since commercial websites are designed to meet different goals of their users (Schaupp et al. 2006) and pages such as 'product-related', FAQs and 'about us' within these websites may have different objectives, the attitudes of all respective users are relevant to measure the success of a company's online presence.

Attitude is suggested to represent a summary evaluation of a psychological object captured in bipolar dimensions such as good–bad, harmful–beneficial and pleasant–unpleasant (Ajzen 2001; Petty, Wegener & Fabrigar 1997). Primarily based on the need to evaluate (analogous to *need for cognition* in the Elaboration Likelihood Model), individuals are said to differ in their chronic tendency to engage in evaluative responding (Ajzen 2001). Particularly, individuals with a high level of need to evaluate a psychological object are more likely to hold attitudes towards that object (Jarvis,

WBG & Petty 1996). Because investors visit a company's IR website in order to evaluate its financial performance, they can be grouped into these web users with a high need to evaluate, thus their attitudes towards that IR website can easily be formed.

Generally, attitude formation is believed to follow the Expectancy-value model which predicts that evaluative meaning arises spontaneously and inevitably as users form beliefs about the object (Ajzen & Fishbein 2000; Fishbein & Ajzen 1975). Under this model, individuals respond to novel information/image/audio about an object by developing a belief about that object. Next, they will assign a positive or negative value to each attribute on which the belief is based, followed by an expectation being formed or modified based on this interaction between belief and value. Eagly and Chaiken (1993) argued that attitudes can not be formed until individuals respond evaluatively to an object/entity and that, once formed, attitudes predispose evaluative responses when the attitude object is subsequently encountered. For example, when an investor finds out that a company has a reputation for being honest, and based on the expectation that finding truthful information on the company's website will be easy, he or she will assign a positive value when they find such information, which leads them to form positive attitudes towards the company and its website.

Following the notion of the Expectancy-value model, most researchers have come to an agreement that attitudes are represented in memory (Olson & Zanna 1993). Therefore, when encountered with a typical object, individuals can be expected to form attitudes more quickly than in a situation which requires them to prolong their evaluation of an unfamiliar object. For investors seeking related information on the Internet, their evaluations can become 'standardised' because of repeat activities being performed on different companies. Thus, one can assume that their attitudes are easily accessible in memory and that their expectations of IR websites tend to be specific, including their requirement of certain types of information that are deemed as highly important and regarded as useful for making an investment decision. As a result of attitudes being formed, individuals can then be expected to perform related behaviours.

2.5.1 Theory of Reasoned Action, Theory of Planned Behaviour and Technology Acceptance Model

The utility of the attitude concept rests on the assumption that attitudes influence behaviours (Olson & Zanna 1993). In order to predict human behaviour, Fishbein and Ajzen (1975) proposed that behaviours follow the formations of beliefs, attitudes and intentions to perform those behaviours. Based on this framework, Ajzen and Fishbein (1980) proposed that human behaviour can be predicted by the Theory of Reasoned Action (TRA). The theory assumes that an individual's belief on the results of performing a particular behaviour would affect the individual's attitude. This positive or negative attitude would then determine the relative strength of the individual's intention to perform that behaviour. Next, the behaviour can be expected to be performed when the individual has a strong intention to perform it.

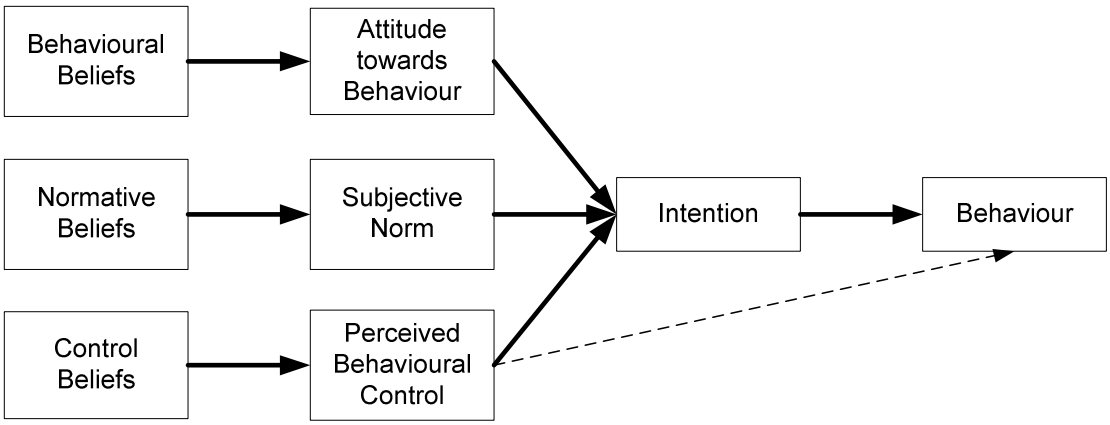
In addition, the TRA proposes that the intention to perform a particular behaviour is jointly influenced by attitude and subjective norm, which is affected by the normative beliefs about that behaviour among important individuals such as family members and peers. Fishbein and Ajzen (1975, p.302) clarified the subjective norm as 'the perception that most people who are important to him think he should or should not perform the behaviour in question'. Although TRA has been validated by various research in consumer and health behaviour (Hale, Householder & Greene 2002), two main reasons have been identified for it being less popular than its successor Theory of Planned Behaviour (TPB) and the 'competing' theory of Technology Acceptance Model (TAM) in the IS domain. First, evidence found for the construct of subjective norm in certain information systems has been rather weak (Davis, FD, Bagozzi & Warshaw 1989). Second, intentions are suggested as being conditioned upon time and events which are unrelated to a particular behaviour, and these external variables are not conceptualised in the TRA model (Sheppard, Hartwick & Warshaw 1988).

In addressing the said limitations of the TRA model, Ajzen (1985) proposed the TPB model as an extension to the original TRA model. According to the TPB, people act in accordance with their intentions and perceptions of control over a particular behaviour, while intentions in turn are influenced by attitudes towards the behaviour, subjective norm and perceptions of behavioural controls (Ajzen 1985; 1991). In other words, TPB acknowledges a limitation of TRA: specifically, that an individual's behaviour is subject to his or her volitional control. As indicated by other researchers (Bandura, Adams & Beyer 1977; Bandura, Adams, Hardy & Howells

1980), an individual's confidence about his or her ability to perform a particular behaviour will directly influence the actual behaviour. The TPB is presented in Figure 2.3.

In order to address the volitional issue in the TRA, Ajzen (1985, 1991) adopted all constructs from the TRA and proposed perceived behavioural control as the additional antecedent of individual's intention. The control beliefs are defined as the individual's beliefs about the availability of factors including time, skill and money that correspond to a particular behaviour. The perceived behavioural control is defined as an individual's perception of the easiness of performing a particular behaviour. In the present study, investors may be interested in investing in a particular company only when they have time and skill to evaluate the company and have money to invest. The perceived behavioural control can also be seen as similar to the concept of 'self-efficacy' in the social cognitive theory proposed by Bandura (1977, 1982).

Figure 2.3: Theory of Planned Behaviour

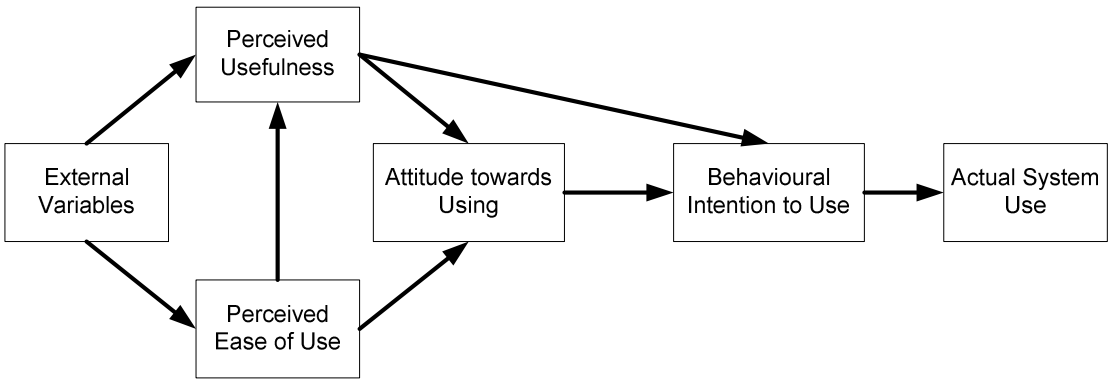


The applicability of the TPB has been documented in various contexts of human behaviour including condom use (Reinecke, Schmidt & Ajzen 2006), smoking (Norman, Conner, Bell 1999) and eating low-fat foods (Paisley & Sparks 1998). Interestingly, despite acknowledging that the TPB can be used to predict a wide range of behaviours, Mathieson, Peacock and Chin (2001) suggested that customised instruments are necessary when adopting TPB model in different contexts. In addition, Ogden (2003) found inconsistent roles in the constructs of attitudes, subjective norm and perceived behavioural control in her review of previous studies utilising the TPB. Particularly in the context of technology acceptance, the framework of beliefs,

attitudes, intentions and behaviours within the TPB is believed to have significant predictive power after being modified to include specific constructs that can measure an individual's perceived difficulty and perceived benefits from using that technology. This view has led to the proliferation of the TAM framework in the IS domain.

The technology acceptance model specifically targets users' acceptance behaviours towards an information system (Davis, FD 1986, 1989). TAM has become one of the most widely applied models for explaining and predicting usage intentions and acceptance behaviours of information technology (Venkatesh 2000). As presented in Figure 2.4, TAM modifies the 'belief' construct in the original TRA and TPB by including the constructs of 'perceived usefulness' and 'perceived ease of use'. As pointed out by Davis, FD et al. (1989), external variables including individual differences, situational constraints and managerial controllable interventions are the determinants of both perceived usefulness and perceived ease of use. In the context of investors using IR websites, these determinants can be seen as the differences in characteristics between individual investors and professional investors, and access to the Internet, whereas managerial controllable interventions are not important as investors seek for online information by themselves.

Figure 2.4: Technology Acceptance Model



Although TAM has been validated in many different areas including communication systems, office systems and specialised business systems (see Lee, Kozar & Larsen 2003 for a meta-analysis study), it is not without limitations. First, research utilising TAM has tended to rely on self-reported usage as a measurement of actual system use, which can be distorted by bias relationships (Agarwal & Karahanna 2000). Second, most TAM research are based on behaviours reported at a single point

of time, which make it difficult to examine changes in users' beliefs and intentions over time.

Overall, TRA, TPB and TAM have been used to predict human behaviours in many different contexts. However, they are still lacking consistency in the explanations provided by each construct embedded in these models. In particular, human behaviours in contexts that require people to judge 'persuasive' messages such as those included in product advertisements and those presented on corporate websites are often examined via marketing concepts. This is because attitudes of people being exposed to persuasive messages can be 'pushed' into liking the provider of such messages.

2.5.2 The Elaboration Likelihood Model

The single largest topic within the attitudes literature is persuasion, because attitudes can change as a result of exposure to information from others (Olson & Zanna 1993). In the marketing domain, the Elaboration Likelihood Model (ELM) has received a lot of attention from researchers in the field. The ELM explains that individuals process information via one of two possible routes: the central route or the peripheral route (Petty & Cacioppo 1986). The central route involves deliberate, conscious consideration of information. Because of the additional cognitive effort required, individuals typically process information through the central route only when properly motivated to do so. For example, information that individuals deem as important or critical would be processed through this more cognitively-intensive route. In contrast to the central route of processing, the peripheral route involves limited cognitive effort in relation to processing information, where individuals process information in a more superficial manner.

An individual's motivation to process a message carefully is said to be affected by several factors. First, as *issue importance* increases for a message recipient, his/her careful message processing should increase as well (Petty & Cacioppo 1986). Second, *self-referencing* was found to encourage individuals to remember their own experiences with the attitude object, thus motivating greater elaboration (Burnkrant & Unnava 1989, 1995). Third, Maheswaran and Chaiken (1991) suggested that the *sufficient principle* explains message elaboration being based on an individual's perception of the amount of deliberation needed to provide them with 'sufficient' judgemental confidence. In this study, they found that when a task is important,

subjects exhibited more systematic processes than when a task is unimportant, especially when the message was congruent with their prior expectations.

The degree of persuasion to take effect on changing attitudes of message recipients is based on the processing routes taken by them. Arguably, a message is considered 'persuasive' and 'effective' in diverting the attention of message recipients to perform a favourable behaviour when it motivates them less to evaluate the message carefully, thus following a peripheral route (Eagly & Chaiken 1993). This effort of triggering a quick, favourable response by the message recipient can be better achieved when the message provider has certain source characteristics, including being perceived as credible, attractive and having vocal pleasantness. For example, Lafferty, Goldsmith and Newell (2002) found that spokesman credibility had a greater effect on consumers' attitudes towards an advertisement, while Brownlow (1992) found that people with a babyish facial appearance and physically attractive communicators are liked more and have a positive impact on attitude changes. In addition, Carli (1990) found that women who spoke tentatively were more persuasive with men than were women who spoke assertively.

When a persuasive message induces its recipients to form a positive attitude towards its provider, the recipients can be expected to perform a favourable behaviour. Regardless of the message having persuasive role on its recipients, the influence of attitudes on recipients' intentions and behaviours has been supported in many studies. It is important to note that the ELM does not specify that an adequately elaborated message necessarily leads to a favourable behaviour; rather, it indicates only that the arguments associated with a message will be scrutinised through an elaboration process conditioned upon the presence of persuasive factors within a particular message. Hence, it remains as a 'process-oriented' approach, rather than a 'variable-oriented' approach to persuasion (Dillard & Pfau 2002; Tam & Ho 2005). A more variable-oriented approach that addresses the effect of a persuasive message especially in the context of advertisements, and has increasingly been applied in the context of corporate websites, is the Dual Mediation Hypothesis (DMH) model proposed by MacKenzie et al. (1986) – discussed in detail in Chapter 3.

2.5.3 Attitude towards website

A website can be regarded as a stimuli-based decision-making environment (Tam & Ho 2005). In such an environment, web users can easily form their attitudes towards a particular website, which can then motivate their respective behaviours. Chen, Q and Wells (1999) were the first to apply the concept of attitude on website acceptance. Analogous to the definition of attitude towards advertisement of MacKenzie et al. (1986), Chen, Q and Wells (1999, p. 28) adopted the definition of attitude towards website as a 'predisposition to respond favourably or unfavourably to web content in natural exposure situations'. They argued that as the Internet has become more important and more parallel in its use of advertising with utilisation of traditional media, the attitude towards website could prove useful for evaluating website effectiveness in a similar manner to that used in evaluating an advertisement.

Following Chen, Q and Wells (1999), a number of calibration studies have documented evidence on the role of attitude towards website on subsequent users' behaviours (e.g. Balabanis & Reynolds 2001; Bruner & Kumar 2000; Chen, Q, Clifford & Wells 2002; Gao & Koufaris 2006; Geissler, Zinkhan & Watson 2006; Goldsmith & Lafferty 2002; Karson & Fisher 2005; Teo, H-H et al. 2003; Wu 2005). Particularly, attitude towards website was suggested as a valid measure of website effectiveness by examining users' intention to return to the website (Chen, Q & Wells 1999; Chen, Q et al. 2002; Gao & Koufaris 2006; Karson & Fisher 2005). For example, Karson and Fisher (2005) found that attitudes towards websites with differing goals and characteristics (digital cameras, watches & a charity) were significantly positively related to users' intentions to return to these websites. Furthermore, attitude towards website has been found to relate positively to users' attitude towards brand and their purchase intentions (Bruner & Kumar 2000; Geissler et al. 2006).

The influence of attitude towards website on users' behaviours can be strengthened by specific website characteristics including information quality, usability, entertainment, credibility and currency (e.g. Chen, Q & Wells 1999; Choi, YK, Miracle & Biocca 2001; Elliot & Speck 2005; Wu 2005). Chen, Q and Wells (1999) pointed out that attitude towards website is significantly influenced by the website's entertainment quality (fun, exciting and flashy), informativeness (informative, resourceful and useful) and organisation (not messy, not confusing and not irritating). Moreover, Choi, YK et al. (2001) found that the presence of an

animated agent improved users' attitudes towards websites. In short, the consensus among this body of research is that certain features of websites are important for creating positive attitudes among their users, who may then perform favourable behaviours.

2.6 Relating themes with the IR website phenomenon

The three major themes discussed in previous sections can be considered together to explain the phenomenon of IR websites and their effects on individual investors. In this context, the review of the literature has indicated that the objectives of IR functions can be better met through leveraging companies' web presences. Moreover, the foregoing review has shed some insights into how an effective IR website can encourage positive behaviours (towards the companies) among individual investors who have been found to exhibit some behavioural biases. These biases are not uncommon because, being human, individual investors are subject to emotion and this emotional effect can be stronger in an online context because the Internet has enabled strategic use of aesthetic attributes including colours, audio, video and flow of web content. Therefore, investors' attitudes towards the online IR tool (IR websites) can be expected to play a significant role alongside cognitive evaluation of the tool in predicting their final behaviours of re-using the tool, and possibly their investment decisions.

IR websites have proved to be important for both companies and individual investors. For the former, they provide a cheaper and possibly more effective approach to deal with investors than the more traditional IR functions. Moreover, by leveraging the corporate website to perform IR activities, a companies' shares will likely be more active and liquid because their IR functions expand beyond maintaining relationships with the current shareholders by attracting new investors (Brennan & Tamarowski 2000). On the other side, individual investors have been relying on companies' own websites to seek information because these websites are considered as cheap information sources and easy to access. Furthermore, many individual investors consider a company's own stories as more credible than those provided by third parties (Loranger & Nielsen 2003).

By understanding the strategic benefits of including aesthetic features of web technologies, companies can benefit from leveraging web presences because their persuasive messages in attracting investors can reach larger numbers of investors than they could by merely relying on traditional IR tools. Moreover, they can expect that the emotional evaluation of investors to be stronger towards online IR functions. For example, it has been argued that through a traditional advertisement, audience attitude formation is normally spontaneous and short-lived, whereas attitudes of web users can last longer and even change after browsing a number of web pages (Sicilia et al. 2006). This is so because web users can control their information-seeking activities, while companies can 'dictate' which information would likely be sought after by investors through designing persuasive content flow and strategic use of hyperlinks. In short, although this literature review can provide a basis for building a conceptual framework to explain and predict behaviours of individual investors, a clear behavioural framework from these three themes suited to achieving this objective would be difficult to form.

2.7 Research gaps

The previous sections in this chapter have discussed the three major themes related to the phenomenon of IR websites and their importance to investors. The review of these themes has also provided some insights into areas which have been lacking in attention. In particular, despite an abundance of research in these themes, very few studies have attempted to describe the use of IR websites by individual investors. Moreover, research that examines individuals' behavioural reactions to using such websites has not, to our knowledge, been documented.

The first identified gap in the related literature is that of how the effectiveness of IR websites as seen by individual investors can be measured. Much literature related to the phenomenon of IR websites has concentrated on the 'supply-side' which regards the quantity of 'IR items' on such websites as a success measure. In addition, although the 'demand-side' research on IR websites has recently received due attention, it has yet to focus on the informational needs of individual investors even though they are the major intended users of such websites.

Clearly, IR websites are designed to serve or to liaise with traditional IR functions via the Internet technology; therefore, successes of meeting this objective should be measured to justify big investments by companies in designing and maintaining their IR websites. Literature in marketing and information systems has utilised 'behavioural intentions' as a surrogate for website effectiveness. As can be seen in the previous review, both 'purchase intention' and 'intention to return to website' have been used to measure the effectiveness of commercial websites, whereas 'user acceptance' has been a common effectiveness measure for a new technology. Therefore, the appropriateness of employing measures similar to these in the context of IR websites needs to be studied.

Second, the process by which individual investors may form a behavioural intention as a result of using IR websites has not yet been studied. This process may include both aspects of cognition and emotion because, being human, individual investors may exhibit similarities in their evaluations of IR websites. Here, the aspects of IR websites which are deemed important to individual investors in providing them with necessary information for investment decisions need to be examined. Although Loranger and Nielsen (2003) have listed a number of items based on their levels of priority, these items are merely individual attributes of IR information on company websites. Research has not yet determined these attributes at group levels – such as those of information quality, credibility and usefulness, all of which can impact on investors' perceptions about websites providing the information.

Having identified these 'perceptual antecedents' of effective IR websites, companies can design their websites in such a way that they encourage positive behavioural intentions among individual investors. These investors may successfully form a behavioural intention after they have gathered sufficient information from the websites to assist them in making investment decisions. This information dissemination relates to investors' cognitive evaluation of the IR websites. In addition, emotional evaluations can better assist them in making decisions because positive feelings can make it easier to access information in the brain, promote creativity and improve problem solving. As the literature review has shown that individual investors tend to follow some behavioural biases, thus the influence of this emotional evaluation of IR websites is well worth studying.

Third, as research into the phenomenon of IR websites as perceived by individual investors is sparse, research that combines the effects of IR website effectiveness on share trading, if it exists, is hard to find. With regard to this, when IR website is regarded as a persuasive tool, its effect on investors' behavioural outcomes may include share trading decisions as a more 'utilitarian' outcome than merely as the intention to re-use the website in future. Since investment decisions have been dominated by investors' careful considerations of the risks and returns on those investments, a question remains of how the effectiveness of IR websites can fit into this investment decision process. In this regard, the effect of effective IR websites can either directly influence a decision to own a share, or indirectly act as a facilitator for investors evaluating a share.

2.8 Chapter summary

The foregoing review of literature has provided a basis for building a conceptual model that can be used to evaluate the effectiveness of IR websites. The review of the three dominant themes suggests that the effectiveness of IR websites should be considered in the context of satisfied investors from using those websites in their investment decision-making processes. Because some limitations of the discussed theories used to predict human behaviours have been identified from the foregoing literature review, and particularly because these theories are seen as less relevant in the context of investors responding to the use of IR websites, a conceptual framework based on a more 'variable-oriented' model has been proposed to meet the objectives of the present study. This conceptual model is discussed in the following chapter, together with the proposed hypotheses that need to be tested to evaluate the model.

CHAPTER 3
RESEARCH MODEL AND HYPOTHESES

3.1 Introduction

As Chapter 2 reviews general literature that relates to the phenomenon of IR on the Internet and its usefulness for companies in attracting individual investors, this chapter provides an overview of research on theories and concepts that are relevant for building a research model to guide the present study. It describes similarities between consumers' evaluations of advertisements and websites, explains the appropriateness of applying a marketing conceptual framework in an Investor Relations context, and introduces the research model and hypotheses to be tested.

3.2 Websites as advertisements

The *Attitude towards Advertisement* construct has been widely tested and found to have an effect on *Attitude towards Brand* in two forms – a direct causal path and a mediated path via *Brand Cognitions*. In any of these instances, the Attitude towards Advertisement only impacts on *Behavioural Intentions* of consumers via a mediating role of Attitude towards Brand. In the event that both of these effects of Attitude towards Advertisement exist, it is called a dual mediation effect. Although there has been some debate over which of these attitudes are first formed by consumers, the existence of a relationship between them is widely accepted, as is the belief that attitudes strongly predict behavioural intentions of consumers including their intention to purchase, intention to try or intention to recommend to peers and family (Balabanis & Reynolds 2001; Brown, SP & Stayman 1992; Chen, Q & Wells 1999; MacKenzie & Lutz 1989; MacKenzie et al. 1986; Petty & Cacioppo 1986).

Due to the strong influence of emotional factors that drive consumer behaviours, many companies are willing to spend millions of dollars to persuade consumers into buying or choosing their products or services over those of rivals. Media advertisements have long dominated this persuasive strategy by which companies seek to induce favourable consumer behaviours. In the last two decades, however, we have seen corporations utilising digital technology to complement their existing persuasive strategies. From initially appearing as merely 'modern', companies

are now leveraging their web presences to attract and build relationships with their consumers.

Scholars generally agree on the idea that an advertisement and a corporate website share an important goal – that is, to attract and retain consumers (Balabanis & Reynolds 2001; Chen, Q & Wells 1999; Hoffman & Novak 1996; Karson & Fisher 2005; Sicilia et al. 2006). As companies can provide personalised content on their websites to meet certain business objectives including market promotion, cross-selling and up-selling, the websites can be considered as persuasive messages (Tam & Ho 2005). As a result of being exposed to these persuasive messages, web users can be expected to form attitudes towards the websites and the message providers. Additionally, website users have more control over their ability to process information than do the viewers of an advertisement (Karson & Fisher 2005), possibly leading to stronger attitudes being formed towards the associated brand. Therefore, this present study adapts an advertising attitude mediation model to form the aims of the study and test the hypotheses presented in sections 3.4 to 3.8.

Internet technology continues to advance primarily through IT capability and pragmatic business needs, while IS and marketing research have focused on analysing technical aspects such as the features and content of website design (e.g. Agarwal & Venkatesh 2002; Aladwani & Palvia 2002; Dailey 2004) and the more general managerial aspects of establishing relationships with customers (Arnott & Bridgewater 2002; Bauer, HH, Grether & Leach 2002; Sultan & Rohm 2004).

Although research on attitudes of e-commerce website users has been well documented (Castaneda, Munoz-Leiva & Luque 2007; Chen, Q et al. 2002; Chen, Q & Wells 1999; Geissler et al. 2006; Karson & Fisher 2005; Lin & Lu 2000; Teo, H-H et al. 2003), there appears to be little published research focused on Internet adoption by specific users – such as investors who possess differing informational needs and are likely to be more involved when acquiring information than general website users (Debreceny et al. 2001; Hodge & Pronk 2006; Loranger & Nielsen 2003). Because of this specific informational need, there are potentially specific antecedents to Attitude towards Websites and Attitude towards Brands that need to be tested empirically.

Understanding the gaps cited above will have implications for both managerial and technical implementations. These could, for example, include measures to establish online dialogue with investors in order to address their needs and to improve website design and content flow for easier navigation.

3.3 The conceptual model

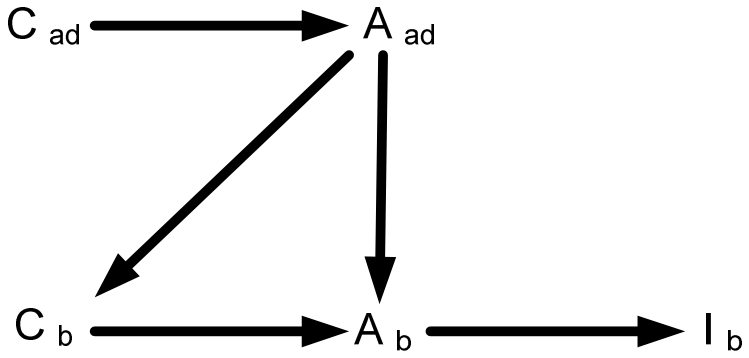
The use of websites as a marketing tool to attract new customers and retain existing ones has been well recognized (Bellman, Johnson, Lohse & Mandel 2006; Bush, Bush and Harris 1998; Canavan, Henchion & O'Reilly 2007; Hoffman & Novak 1996; Rowley 2001; Taylor & England 2006). Companies can use their websites to provide pre-purchase information to customers in a timely manner and at very little cost (Settles 1995). As pointed out earlier, however, website users have more controls over their ability to process information on websites than do audiences of advertisements. These include the ability to return to the website at a later date, skip less relevant or irritating pages and copy or download relevant files. For these reasons, the functions of websites can easily achieve the main objectives of advertisements which provide repeat information and trigger consumers' behaviour (Ducoffe 1996; Nielsen 1999; Teo, H-H et al. 2003; Karson & Fisher 2005).

In an IR context, companies can provide exclusive pages with relevant website designs addressing the specific needs of investors. These pages, referred to as *IR websites*, allow investors to navigate only those pages relevant to acquiring information and making their decisions. Therefore, the present study draws from advertising evaluation literature, showing how user valuations of a website are dependent on their experiences and reactions towards it.

The effectiveness of a company's website can be assessed through favourable attitudes formed towards that website and towards the company's images as result of its users' positive web experiences. Research indicates that the persuasive impact of a communication is determined by evaluative thoughts (cognitive responses) and feelings (affective responses) experienced by the audience as they process the communication (Brown, SP & Stayman 1992; Derbaix 1995; Homer 1990; MacKenzie et al. 1986; Sicilia et al. 2006). These internal responses supporting or contradicting the message are supposed to mediate the effects on beliefs, attitudes and behaviours.

Among a number of attitude mediation models, the Dual Mediation Hypothesis (DMH) model proposed by MacKenzie et al. (1986) has received wide empirical support. The original DMH model is depicted in Figure 3.1 below.

Figure 3.1: The Dual Mediation Hypothesis (DMH) model



Where:

C_{ad}	= advertisement cognition
C_b	= brand cognition
A_{ad}	= attitude towards advertisement
A_b	= attitude towards brand
I_b	= intention to buy

(Source: MacKenzie et al. 1986, p.131.)

The first two links of Mackenzie et al.'s DMH model including $C_{ad} \rightarrow A_{ad}$ and $C_b \rightarrow A_b$ represent how thoughts (cognitions) are believed to influence attitudes as predicted by the Theory of Reasoned Action (TRA). The DMH incorporates the central and peripheral routes to attitude change proposed by Petty and Cacioppo (1984) in their Elaboration Likelihood Model (ELM). The central route to persuasion is represented by the indirect path operating through brand cognitions ($A_{ad} \rightarrow C_b \rightarrow A_b$). In the first step of the central route, exposure to an advertisement is presumed to lead to brand-relevant thoughts. In turn, cognition related to the brand affects attitudes towards that brand. In other words, the effect of attitudes towards advertisements on attitudes towards brands is mediated by brand cognition. In contrast, the direct $A_{ad} \rightarrow A_b$ path represents the peripheral route of persuasion. Petty and Cacioppo (1984) assert that when users' needs for cognition are high (such as occur with investors), attitude is formed via the central route (e.g. the $A_{ad} \rightarrow C_b \rightarrow A_b$ path) and conversely, the attitude of users with low needs for cognition is formed via a shorter route known as the peripheral route (e.g. the $A_{ad} \rightarrow A_b$ path).

Numerous studies in marketing and consumer behaviour have found support for the central and peripheral routes to persuasion contained within the DMH for the prediction of purchase across various media and product categories (Brown, SP & Stayman 1992; Karson & Fisher 2005). Given that the fundamental processes of

attitude formation and change rarely vary between on- and offline contexts, it is expected that the general DMH will hold for the phenomenon of IR websites.

However, previous research has tended only to measure brand cognitive evaluations based on spontaneous thoughts about the brand or awareness of it (e.g. Homer 1990; Karson & Fisher 2005; Karson & Korgaonkar 2001; MacKenzie et al. 1986; Miniard et al. 1990; Sicilia et al. 2006). However, unlike with traditional advertisements, a web audience can always revisit a website to re-evaluate its content, design, usefulness and credibility. With a website, the audience does not have to recall the message or any other interesting aspects that might affect their attitudes towards the object (i.e. the website) because websites allow consumers to control the information that is presented, the order in which it is presented and the duration for which they will consider it (Ariely 2000; Bezjian-Avery, Calder & Iacobucci 1998). Therefore, it is not expected that spontaneous thoughts significantly influence Attitude towards IR website (AT_ST); rather, specific evaluative thoughts such as information credibility and ease of information retrieval do have influence.

To better meet the goals of the present study, several modifications to the original DMH model are proposed. These modifications are in accordance with the idea of *central processing of advertisement* and *brand perceptions* in MacKenzie and Lutz (1989). First, as discussed earlier in this chapter, the context of advertisements is replaced with the context of IR websites. Second, because investors are known to have high needs for cognition (Rose 2001), several evaluative responses including Information Quality (IQ), Credibility (CRD), Usability (USB) and Attractiveness (ATR) are considered as more relevant than spontaneous thoughts as measures for cognitive responses for IR websites.

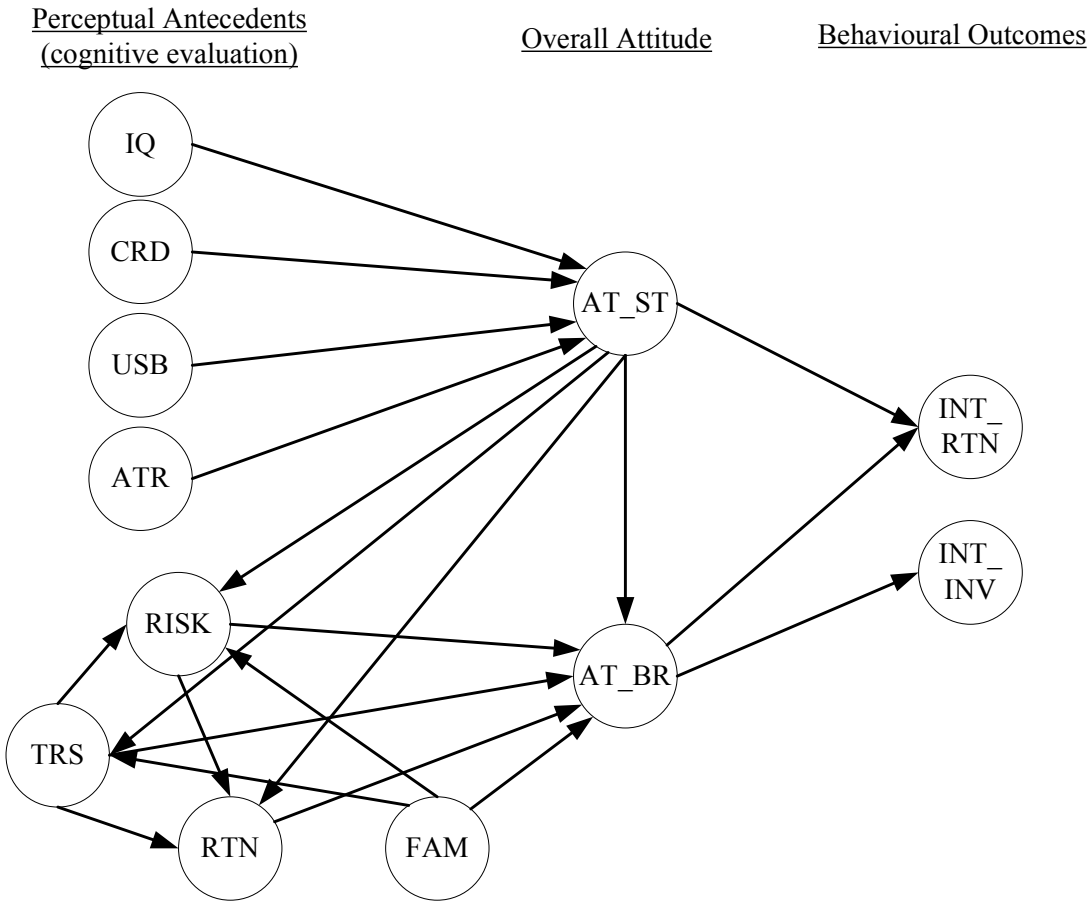
Cacioppo, Petty, Feinstein and Jarvis (1996) assert that individuals with a high need for cognition have a higher motivation for cognitive elaboration because they enjoy thinking, as opposed to cognitive misers who only think when they are in a situation that forces them to do so. In the case of investors evaluating contents or messages in a website, they constantly need to be cautious because their investment decisions will likely have long-term effects on their financial positions. Therefore, it is believed that the suggested evaluative responses are formed when investors search for relevant information on a company's IR website, thus forming Attitude towards IR website (AT_ST).

Although investors' preference towards a particular company may be conditioned by their prior awareness about that company, their primary concern is whether or not their investment choices will yield generous returns relative to the level of risk assumed. Despite their differences in investing technical skills, education backgrounds and level of experience, most individual investors share this common approach towards measuring risks and returns when evaluating an investment choice (Clark-Murphy & Soutar 2004; Teo, TSH et al. 2004; Zhou & Pham 2004). In order to make the DMH more useful for the context of IR websites, the model adopted for the present study also modifies the cognitive evaluations of a company's brand to include specific constructs of Perceived Risk (RISK), Perceived Returns (RTN) and Trust (TRS). In addition, another perceptual antecedent – that of Brand Familiarity (FAM) – has been considered in forming the research model, as is in accordance with Aspara & Tikkanen (2008) and Huberman (2001) who acknowledge a bias of investors towards familiar shares. These perceptual antecedents are proposed to possess significant effects in causing Attitude towards Brand (AT_BR).

Although driven by the DMH model, the research model presented in Figure 3.2 proposes specific perceptual antecedents to attitudes to replace its *cognitive responses*, while retaining its effect paths. The original DMH hypothesises that attitude formed towards a brand will lead to purchase intention, whereas the model used in the present study replaces this behavioural outcome with Intention to Invest (INT_INV).

Additionally, in the context of a website, users' Intention to Return (INT_RTN) at a later date has been proposed as more relevant to website success (Gao & Koufaris 2006; Karson & Fisher 2005; Lin & Lu 2000; Raney, Arpan & Pashupati 2003); therefore, this has also been included in the research model. The validity of the effect paths drawn in the model and its path extensions are tested in this study, and results are provided in Chapter 5.

Figure 3.2: Research model used in this study



3.4 Perceptual antecedents of AT_ST

As the cognitive process of an investor is driven by his/her need to make a careful evaluation of an investment choice, IQ, CRD, USB and ATR constructs have been added into the original DMH model as substitutes to cognitive responses, hence acting as antecedents of AT_ST. This approach of substituting DMH's 'advertisement cognitions' with specific antecedents has been adopted by several studies (e.g. Gao & Koufaris 2006; Haghirian & Inoue 2007; Haghirian & Madlberger 2005; Lafferty & Goldsmith 2004; Lafferty, Goldsmith & Newell 2002).

Understanding user information search is vital to the understanding of users' informational needs. Thus it is not a surprise, even before the proliferation of the Internet, that literature on consumer information search has been rich (e.g. Newman & Lockeman 1975; Newman & Staelin 1972; Kiel & Layton 1981; Beaty & Smith 1987; Srinivasan & Ratchford 1991). More recently, the same trend has continued in research on the behaviour Internet users in using online information, albeit under different

themes including 'Internet adoption', 'e-commerce adoption', 'future behavioural intention', 'attitude towards website', 'interactivity', 'website flow', 'satisfaction', 'trust', 'usability' and 'web quality' (e.g. Agarwal & Venkantesh 2002; Aladwani & Palvia 2002; Banati, Bedi & Grover 2006; Bruce, Jones & Dumais 2004; Cabezudo, Arranz & Cillan 2007; Chen, K & Yen 2004; Constantinides 2004; DeLone & McLean 1992; Hodkinson, Kiel & McColl-Kennedy 2000; Hong, S & Kim 2004; Hung & McQueen 2004; Klein & Ford 2003; Kulviwat, Guo & Engchanil 2004; Schaupp et al. 2006; Wang, RY & Strong 1996; Zhang, X, Keeling & Pavur 2000). The present study derives the suggested evaluative constructs from this literature. These constructs and their respective hypotheses are discussed as follows:

3.4.1 Information Quality

The construct of Information Quality (IQ) has been proposed as one of the success dimensions of websites. In particular, IQ is deemed to be an important factor in gaining the satisfaction of website users. DeLone and McLean (1992) proposed IQ as one of the determinants for information systems effectiveness. As for a website, its design effectiveness may be evaluated from the technical, aesthetic and psychological points of view (Hlynka & Welsh 1996). However, the latter is regarded as more important when a website is used mainly for communication purposes between a company and its intended users, as in the context of IR websites which target investors as their users. Of the many expectations held by website users, information disseminated via companies' websites should at least be easily accessible, relevant and believable. Therefore, users should be the ultimate judge of website IQ.

Instead of IQ, Wang, RY and Strong (1996) define 'data quality' as data that are fit for use by data consumers. In the present study, the data consumers who are investors are likely to be interested in the information that is important to their evaluations of a company's risks and returns. In addition, these investors prefer companies who do not hide important information, including information about boards of directors and executive governance (Loranger & Nielsen 2003). This is further supported by recent actions of relevant authorities including the national stock exchange (ASX) and regulation bodies such as Australian Securities and Investments Commission (ASIC) who have introduced rules and codes including a 'code of corporate governance', a 'corporate disclosure best practice' code and a 'social responsibility disclosure' code. Hence, with numerous advantages, websites are well-

positioned to act as complementary tools to bridge information gaps between companies and their shareholders.

In the extant IQ literature, data quality or IQ comprise many attributes including accuracy, timeliness, precision, completeness, relevancy, reliability, currency, validity, believability, understandability and usability (Cao, Zhang & Seydel 2005; Katerattanakul & Siau 1999; Wang, RY & Strong 1996). These studies used general consumers as subjects; hence, most of these IQ attributes are relevant to general consumers, some being less important to investors than others. In particular, investors place high value on accuracy, relevancy, reliability, completeness and currency because these will determine whether the supplied information can be reliably used in their company evaluations (Loranger & Nielsen 2003). These attributes are reflected in the IQ construct, which is hypothesised to influence users in forming their attitudes towards an IR website. Thus, the first hypothesis is stated as:

H1a: Information Quality is positively related to Attitude towards IR Websites.

3.4.2 Credibility

Although Credibility can be associated with 'believability' to form the IQ construct, it is dealt with exclusively because the former covers wider aspects including information source, feedback opportunity, value-added and audited information. Internet-savvy information seekers such as DIY investors tend to use their knowledge to question the credibility of available information and to provide feedback or request specific information not available on company websites.

As in the case of e-commerce websites, earlier literature suggests that website credibility is established when third-party seals such as *Verisign* and *Webtrust* exist, and when a *privacy policy* is present (Belanger, Hiller & Smith 2002; Cranor 1999; Miyazaki & Krishnamurthy 2002; Palmer, Bailey & Faraj 2000). Nevertheless, this is not applicable to investors who are interested in information rather than products. Since corporate disclosure on the Internet is voluntary, companies may pursue persuasion techniques to select and disclose favourable information, and to hide or make subtle less favourable information. This practice of by management using its judgement to alter financial reports in order to mislead investors is known as *Impression Management* (Healy & Wahlen 1999). In this situation, investors tend to believe audited and value-added information, and when they regard the information

provider to be accountable they will more likely be satisfied with the website. Thus, the present study proposes the following hypothesis:

H1b: Credibility is positively related to Attitude towards IR Websites.

3.4.3 Usability

By improving website usability, companies can benefit from increased business activity. People often avoid a website after an initial visit because they encounter difficulties navigating complex collections of information, or cannot find (or re-find) an item they want. Websites that do not provide positive experiences may cause investors to decide that it is easier to consult an investment broker or read third-party opinions on a company's prospects, rather than analysing that firm's financial performance using information presented on its website.

The present study contends that USB is a technical measure rather than a dimension of IQ. Usability has been conceptually defined and operationally measured in multiple ways. For example, ISO 9241 defines USB as 'extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency and satisfaction in a specified context of use' (ISO 1998, part 11) while Zimmerman and Muraski (1995, p.173) simply define USB as 'how well the intended users can interact with a technology to carry out the assigned activity'. These definitions agree that users should be the judge of website usability.

Apart from numerous suggested definitions of USB, scholars also have different understandings about measuring the USB construct. Some suggested that the dimensions of the construct include ease of use, navigation, flow, message cues, page loading, security and accessibility (Agarwal & Venkantesh 2002; Gehrke & Turban 1999; Katerattanakul & Siau 1999). Nevertheless, Agarwal and Venkatesh (2002) assert that the most critical aspect of USB is contingent upon users' actual use of the system. Their examples include 'ease of use' as a primary criterion for systems used by children, and 'efficiency' as the ultimate goal for banking systems. In the same manner, the present study employs investors' perceptions of the technical aspects of a website that assist them in completing their information-seeking tasks as dimensions for USB, which is then hypothesised to affect their attitudes towards that website. The hypothesis is stated as follows:

H1c: Usability is positively related to Attitude towards IR Websites.

3.4.4 Attractiveness

Attractiveness is an aesthetic measure which is also associated with website *stickiness*. Website users are likely to stay longer on a website when they are highly impressed with good web design, are satisfied with its content and feel engaged visiting it (Cao, et al. 2005; Kierzkowski, McQuade, Waitman & Zeisser 1996; Smith, BA & Merchant 2001). Although the main objective of website design is not to be artistic, companies should be clear about their target audience (Pace 2003). Several studies have found that 'entertainment' and 'playfulness' act as influencing factors on users' perceptions of web quality (Aladwani & Palvia 2002; Cao et al. 2005; Chen, K & Yen 2004). Nonetheless, to be attractive does not necessarily mean that a website must have bright colours, use the latest Internet technology or contain music. On the contrary, numerous studies have shown that elaborate design tends to make users feel irritated and distracted in completing their tasks (Nielsen 1999).

In the context of IR websites, companies should accommodate the requirement for balance between investors' informational needs and the site's aesthetic attributes. When this balance is met, investors will likely find a website to be pleasing and engaging. As a result, they keep returning, with their exposure to companies' persuasive information and messages being doubled. In this situation, they can build long-lasting relationships with their investors.

One can also view ATR as an *affective* construct that may shape users' attitudes towards websites. Affective responses have been tested and found to be antecedents of attitudes (Rose 2001; Rose, Roberts & Rose 2004). Teo, H-H et al. (2003) assert that users of a system cannot form attitudes towards the system until they have some feelings about it. These feelings may be formed as a result of the 'entertainment', 'interactivity' or 'playfulness' features of the system, which are combined to form the construct of ATR in the present study. Cao et al. (2005) found ATR to be an important factor in customers' preference for and intention to revisit a website. However, since investors are categorised as information seekers rather than general web users, and due to the fact that their informational needs are fairly standard (Esrock & Leichty 2000), the effect of being pleased with a website on attitudes can still be questioned. Therefore, this present study is also interested in testing the following hypothesis:

H1d: Attractiveness is positively related to Attitude towards IR Websites.

3.5 Perceptual antecedents of AT_BR

A similar approach to the conceptualisation of perceptual antecedents of AT_ST has been taken for AT_BR. Driven by related literature (see 3.5.1), the present study identifies several variables that are important for investors evaluating a particular common share. These include Perceived Risk (RISK), Perceived Returns (RTN) and Trust (TRS), while Brand Familiarity (FAM) is included based on recent literature that suggests it as instrumental in forming investors' bias in choosing shares (Aspara & Tikannen 2008; Chang, HH & Chen 2008; Frieder & Subrahmanyam 2005; Ganzach 2000; Huberman 2001; Ivkovic & Weisbenner 2005; Morse 1998).

3.5.1 Inter-relationships between RISK, RTN and TRS

Investment risk is a multidimensional concept that includes, among other things, *liquidity*, *credit*, *inflation* and *prepayment* risks. Research by the Investment Company Institute in 1992 found that most individual investors tend to perceive risk as the potential to lose principal (ICI 1993) but this narrow, uni-dimensional investment risk has probably now changed due to the increased education of investors, easy access to information and advanced technology (Ryan & Buchholtz 2001). Regardless of how broadly investors view investment risk, they generally agree on the fundamental principle of finance that investment returns should be commensurate with the risks they bear (Markowitz 1952). Similarly, Zhou and Pham (2004) noted that the investment decisions of investors are based upon their evaluation of the potential to achieve financial gains and prevent financial losses.

The actual causal direction between RISK and RTN can be recursive. This is because both RISK and RTN can be objectively measured, and the causal direction of their relationships depends on the order in which they are viewed and their perceived relative influence over one another. Risks are normally measured by earnings volatility (e.g. standard deviations and *Betas*), whereas returns can be measured by historical earnings (e.g. dividends and capital appreciation). If, on average, investors can reasonably measure a company's risks and returns, and subsequently make their investment decisions, they are called *rational* investors. Accordingly, a rational, risk-averse investor requires an increase in the expected future returns from any more risky investment in order to compensate for any potential volatility. From this viewpoint, the present study tests a uni-directional causal link from RISK to RTN.

Nonetheless, behavioural finance research suggests that emotional elements including cognitive biases and errors play a vital role in investors' decisions (Barber & Odean 2001; Ryan & Buchholtz 2001; Michalopoulos, Thomaidis, Dounias & Zopounidis 2004; Ricciardi 2007). Therefore, the present study adopts the subjective measures of risks and returns rather than their traditional objective measures. In making investment decisions, these subjective measures of risks and returns are commonly used by novice investors who own relatively small investment portfolios as compared to professional investors (Ricciardi 2004). Furthermore, the behavioural finance literature suggests that the relationship between perceived risks and perceived returns is inverse rather than positive (Ricciardi 2007). Hence, the following hypothesis is tested in this study:

H2a: Perceived Risk is negatively related to Perceived Returns.

Investors tend to associate a company's risk with the level of information it provides them (Ryan & Buchholtz 2001). In other words, the more it discloses information, the less risky it is perceived to be by investors. Information asymmetry between companies and investors has now considerably narrowed, thanks to tightened new regulations and codes (Sunder 2002). For instance, companies are now required to demonstrate their corporate governance policy as guided by *Best Practices*. This self-regulation encourages companies to disclose as many relevant policies as possible, including directors' remuneration, environmental policies and social responsibility reports, which were difficult for the public to access in the past. Regardless of the recent trend in legislation that better protect investors in general, investors tend to perceive a company as a low risk investment only when they trust it.

Coleman (1990) asserts that trust entails risk in the sense that one party chooses to be vulnerable to another. Mayer, Davis and Schoorman (1995, p.712) define trust as 'the willingness of a party to be vulnerable to the actions of another party'. In this situation, shareholders as the owners of a company put their trust into the management team who are appointed to run the company. This popular *Agency Theory* states that management, acting as agents to principals (i.e. shareholders), may be inclined to pursue individual goals which are not in the best interest of the principals. Shareholders can overcome this *Agency Problem* by being willing to assume some *Agency Costs*. For instance, they would have to forego some potential earnings to remunerate salaries for the board of directors who are elected to oversee the conduct of

management in achieving shareholders' goals. However, even the existence of boards of directors is subject to conflicting goals, because appointed directors may mistakenly assume shareholders' interests. When this occurs, chances are that investors do not trust the management and board of directors, and perceive investing in that company to be highly risky. This leads to the next hypothesis:

H2b: Trust is negatively related to Perceived Risk.

Because relationships between RISK and RTN, and between RISK and TRS have been established, one can also deduce that relationships between TRS and RTN hold. A company with good historical earnings is definitely a strong choice when compared to one with volatile historical returns. When investors have determined that a company has had satisfactory returns in the past, they will likely perceive that this trend will hold in the future. In other words, one can view this situation as investors having achieved *cognitive* or *evaluative trust*. Cognitive trust is primarily related to perceived competence and reliability of the provider, where perceived competence is easily demonstrated by past performance (Olsen 2008). Based on this argument, the following hypothesis is established:

H2c: Trust is positively related to Perceived Returns.

3.5.2 Individual effects of perceptual antecedents of AT_BR

Apart from the views of analysts and that of the company itself, the risks of a company can also be spread via word of mouth. Peers and family are also known to be the main information sources for investors (ASX 2009; Loranger & Nielsen 2003). The effects of word of mouth are stronger in the event that those who spread such information have had real experience investing in a particular company, both positive and negative. For example, an investor who has had a positive experience investing in a particular company due to consistent capital appreciation and reasonable dividend payments is likely to recommend, or at least talk positively, about that company to friends and family. When combined with positive professional reports by financial analysts or even good 'testimonials' from online social groups, investors will then form a positive attitude towards that company's image.

A company's reputation is also strengthened when investors have a high level of trust in it. Siegrist and Cvetkovich (2000) assert that cognitive trust is normally given greater weight than *affective trust*, when a particular hazard (e.g. financial loss)

being evaluated is familiar to the trustor (e.g. investors). Affective trust is demonstrated when the trusted party (i.e. management and directors) is believed to have demonstrated fairness, compassion and integrity (Clark, MC & Payne 2006). In short, these arguments suggest that RISK, RTN and TRS act as antecedents of attitude towards companies' images; thus, the following hypotheses are formed:

H3a: Perceived Risk is negatively related to Attitude towards Brand.

H3b: Trust is positively related to Attitude towards Brand.

H3c: Perceived Returns is positively related to Attitude towards Brand.

3.6 Brand Familiarity as antecedent of AT_BR

Although a brand has been normally associated with a name and/or symbol-like logo, the trademark and package design that differentiate it from its competitor (Aaker 1991), its name is believed to be the primary brand factor (Berry 2000; Davis, DF, Golicic & Marquardt 2008). In this study, it is contended that a company name is important for investors' evaluations of its brand benefits. A brand is said to have value when it has strong *equity*, which is composed of two dimensions: brand awareness and brand image (Keller 1993). Brand image can be measured through consumers' attitudes towards the brand, while attitudes may be formed as a result of consumers' awareness of it. Therefore, in the present study, Brand Familiarity has been conceptualised as an antecedent of consumers' attitudes towards a brand (Aspara & Tikkanen 2008; Davis, DF et al. 2008). For instance, consumers may have a negative perception of a company with strong brand equity when its website is poorly designed. This is in accordance with *expectation-confirmation theory* (ECT) that predicts users' satisfaction and behaviours from confirmation of their expectations of a technology or brand (Bhattacherjee 2002; Oliver 1980).

In the context of investment, investors have been found to incline towards investing in the companies that they are familiar with (Aspara & Tikkanen 2008; Frieder & Subrahmanyam 2005; Huberman 2001; Ivkovic & Weisbenner 2005; Massa & simonov 2006; Morse 1998). For instance, when given an option to invest in one of many commercial banks, investors would tend to favour the bank with whom they have accounts. In other words, name recognition reflects familiarity gained from past experiences (Chang, HH & Chen 2008). Aspara and Tikkanen (2008) found that individual investors who engage in investment behaviours and trading of shares of

certain companies also engage in other economic behaviour, notably in the area of product consumption. Hence, the first hypothesis related to FAM is stated as:

H4a: Brand Familiarity is positively related to Attitude towards Brand.

Familiarity towards a company can also influence consumers' perceived risk of the company because they use company-specific facts to arrive at their expectation as to risk and returns (Huang, Schrank and Dubinsky 2004; Weber, EU, Siebenmorgen & Weber 2005). Therefore, knowing the name of an investment becomes crucial, as it indicates the type, market and other specific characteristics of that particular share. For example, participants in the study of Kilka and Weber (2000) underestimated the riskiness of domestic shares relative to those of foreign shares. Similarly, Weber, EU et al. (2005) found evidence of strong bias in judging the riskiness of familiar shares. These observations lead to the following hypothesis:

H4b: Brand Familiarity is negatively related to Perceived Risk.

When an investor's familiarity of a company is high, their inclination to trust the company can also be expected. For instance, one may put more trust into a company because of knowing that a director of the company is a well-known national figure. Similarly, should a problem occur after owning a company share, an investor would find access to a familiar organisation in order to lodge a query or complaint relatively easier and more convenient than with an unfamiliar organisation. Furthermore, since the relationship between risk and trust has been hypothesised earlier, this study also tests the following hypothesis:

H4c: Brand Familiarity is positively related to Trust.

3.7 Mediation effects of AT_ST

A company website is considered to be one of the main information sources for investors (ASX 2009; Loranger & Nielsen 2003). In the past, investors needed to rely on annual reports and highly expensive analysts' reports in order to judge a company's risks and returns. Having been exposed to selected information on company websites, the effects of the web attributes of IQ, CRD, USB and ATR on investors' perceived risks, perceived returns and trust may be mediated by their attitudes towards such websites. This is the first mediating effect of AT_ST, which in essence, acts as a facilitator for investors when evaluating the financial position of a company.

Behavioural finance research has shown that many individual investors, especially males, tend to overreact to positive information and become overconfident (Barber & Odean 2001; Ryan & Buchholtz 2001; Uchida 2006). For instance, since reporting on the Internet is voluntary, companies may choose to only report aggregate figures such as 'net profit' instead of providing more detailed information about the figure (referred to as 'segmental reporting'). In this situation, investors may perceive companies to have earned good returns without knowing that these returns may have been made up of several substantial one-off transactions, or come from segments which do not fall into the main businesses of those companies. Previous research has also shown that presentation formats influence investors' judgement (Dull et al.2003; Ghani, Laswad, Tooley & Jusoff 2009; Hodge 2001; Hodge & Pronk 2006). For example, Dull et al. (2003) found that the use of hyperlinks to footnotes affects users' decisions and predictions, as well as the time it takes them to complete intended tasks. This is consistent with Vessey's (1991) *Cognitive Fit Theory,* suggesting that there are different types of problems and solution processes, as well as their representations. According to this theory, when these three variables 'fit', the quality of users' decision should improve.

Being human, affective feelings may play a role in influencing investors' judgements. Although it is not a main goal of website design to look attractive, aesthetic web features may induce investors to feel pleased, entertained, irritated or bored – in the same way an advertisement has aesthetic elements even though its main goal is to trigger purchases. For example, a good information flow enables investors to feel engaged with that information and allows them to navigate easily to complete their tasks when browsing a company IR website. A well-balanced website design enables investors to skip less relevant information cues and locate more important information in minimal time. This affective attitude, referred to as the coating of the 'attitude tablet' by Olsen (2008), will become stronger when users' evaluative responses to that website are mainly positive. Although investors may already hold perceptions of the risks, returns and trust about a company before visiting its website, their attitudes towards that website may reshape their existing perceptions. Therefore, the hypotheses for this first mediating effect of AT_ST are stated as:

H5a: Attitude towards IR Website is negatively related to Perceived Risk.

H5b: Attitude towards IR Website is positively related to Trust.

H5c: Attitude towards IR Website is positively related to Perceived Returns.

The mediating effect of AT_ST on the relationships between IR website attributes of IQ, CRD, USB and ATR, and AT_BR is also conceptualised in the research model, hence the name of *Dual Mediation* in the original MacKenzie et al.'s DMH model. Since the seminal work by MacKenzie et al. (1986), studies on consumer attitudes have found that Attitude towards Advertisement mediates the effects of advertisement cognitions (or evaluative responses) on Attitude towards Brand (e.g. Brown, SP & Stayman 1992; Karson & Fisher 2005; Miniard et al. 1990). In other words, a good advertisement may enhance existing brand attitude. In the same manner, the present study contends that evaluative antecedents of IR websites affect attitude towards companies' brands via the mediating role of AT_ST. Therefore, apart from following a central-route to form their brand attitudes via a carry-over effect of brand cognitions, users can also form such attitudes using only a peripheral-route (a direct effect of AT_ST on AT_BR). This leads to the following hypothesis:

H6: Attitude towards IR Website is positively related to Attitude towards Brand.

All of hypotheses 5a, 5b, 5c and 6 are stated as direct causal effects between RISK, RTN, TRS, and AT_BR, and between AT_ST and AT_BR, respectively. In other words, these are stated according to a 'full-mediation' model. In properly examining these mediating effects, a complete mediation analysis (Baron & Kenny 1986) is considered, while at the same time it may result in a model, better explaining investor behaviour than the initial research model (see 5.8).

3.8 Behavioural outcomes

According to a number of popular behavioural theories including Diffusion of Innovation (Rogers 1962), Theory of Reasoned Action (Fishbein & Ajzen 1975) and the Technology Acceptance Model (Davis, FD 1989), positive user behavioural outcomes are thought to be the ultimate goal of a system's success. These outcomes have been measured as either actual behaviour or behavioural intentions. Actual behaviour is easily determined when the system in question is already used or adopted by users; thus the commonly used measures are 'acceptance', 'adoption' and 'loyalty' (e.g. Agarwal & Prasad 1998; Davis, FD 1989; Seyal, Rahman & Mohammad 2007). Future actual behaviours are normally considered in longitudinal studies, usually in

experimental research settings, wherein the behavioural outcomes of subjects are recorded or observed after a length of time has elapsed. However, they are difficult to measure due to time constraints or problems in inviting similar subjects to participate in further study phases. This commonly leads to intention being used as a surrogate for actual behaviour (e.g. Chang, MK & Cheung 2001; Chen, Q & Wells 1999; Gao & Koufaris 2006; Geissler et al. 2006; Karson & Fisher 2005).

Similar to the above, actual behavioural outcomes are normally translated into 'purchase decision', 'amount of money spent' and 'repeat purchase' in the marketing field (Mackenzie et al. 1986; Miniard et al. 1990; Poddar, Donthu & Wei 2009; Wu, S-I 2004). In view of the difficulties in analysing consumer behaviour over a period of time (e.g. asking consumers to record their monthly purchases), behavioural intentions including 'intention to purchase', 'intention to try' and 'intention to return' are instead adopted in this study. Therefore, since difficulties in measuring actual investors' behaviours are expected in the present study, only the behavioural intentions of investors are analysed. This is in agreement with the TRA and TAM theories, asserting that actual behaviour is predicted by intentions and that, in order for users to use a system, they must first form an intention of using it (Ajzen & Fishbein 1980; Davis, FD et al.1989). In the same vein, the present study contends that behavioural intentions are sufficient to measure the outcomes of AT_ST and AT_BR.

In the context of informational search by investors, the main behavioural outcome is the investment decision. Here, it is in the best interests of every company that their shares are consistently being traded in the market – thus the notion of share liquidity. The more liquid a share is, the more reflective its price is towards its actual worth (Macey & Kanda 1990). Even if a company's share price does not demonstrate its true worth, it can still benefit from such active trading due to increased public confidence. This confidence can provide the company with strategic options less available to others. Such strategies may include easier access to obtaining financial credits, and issuing new shares to finance new businesses.

As presented in the research model in Figure 3.2, AT_BR is proposed as a predictor of behavioural intentions. In a product-purchase context, it has been shown that repurchase rates are higher and consumers are willing to pay premium prices for the products of highly reputable companies (Fombrun & van Riel 1997; Preece, Fleisher & Toccacelli 1995). Similarly, a good reputation may assist a company to attract and retain talented staff, minimise personnel fluctuations, and generate higher

production efficiency (Preece et al. 1995; Schwaiger 2004). Extending these hypothetical effects into the finance-marketing interface, Raithel (2009) found that corporate reputation serves as a risk-reducing signal for investors' expectations about a company's future cash flows. Thus, the present study includes the following hypothesis:

H7: Attitude towards Brand is positively related to Intention to Invest.

It is also apparent that many IR websites are not intended to stimulate immediate investors' trading decisions; rather they focus more towards relationship building. In fact, many commercial websites are not considered failures when little in the way of online sales has been achieved. Therefore, 'likelihood of return', 'frequency of use' and 'user satisfaction' are increasingly used as key measures of website success (Goa & Koufaris 2006; Karson & Fisher 2005; Palmer 2002; Rosen, DE & Purinton 2004). As a result, an extension to include INT_RTN as another behavioural outcome in the research model is proposed. Here, positive brand attitudes can predict investors' likelihood to further visit a company's IR website. In addition, the present study also contends that, even without the mediation effect of brand attitudes as proposed by the DMH, positive attitudes towards IR website are likely to directly motivate investors to revisit it. In other words, regardless of whether or not a positive brand attitude is formed, a positive web experience may encourage a prospective investor to revisit the company's IR website and re-evaluate it. These considerations lead to the final two hypotheses as given below:

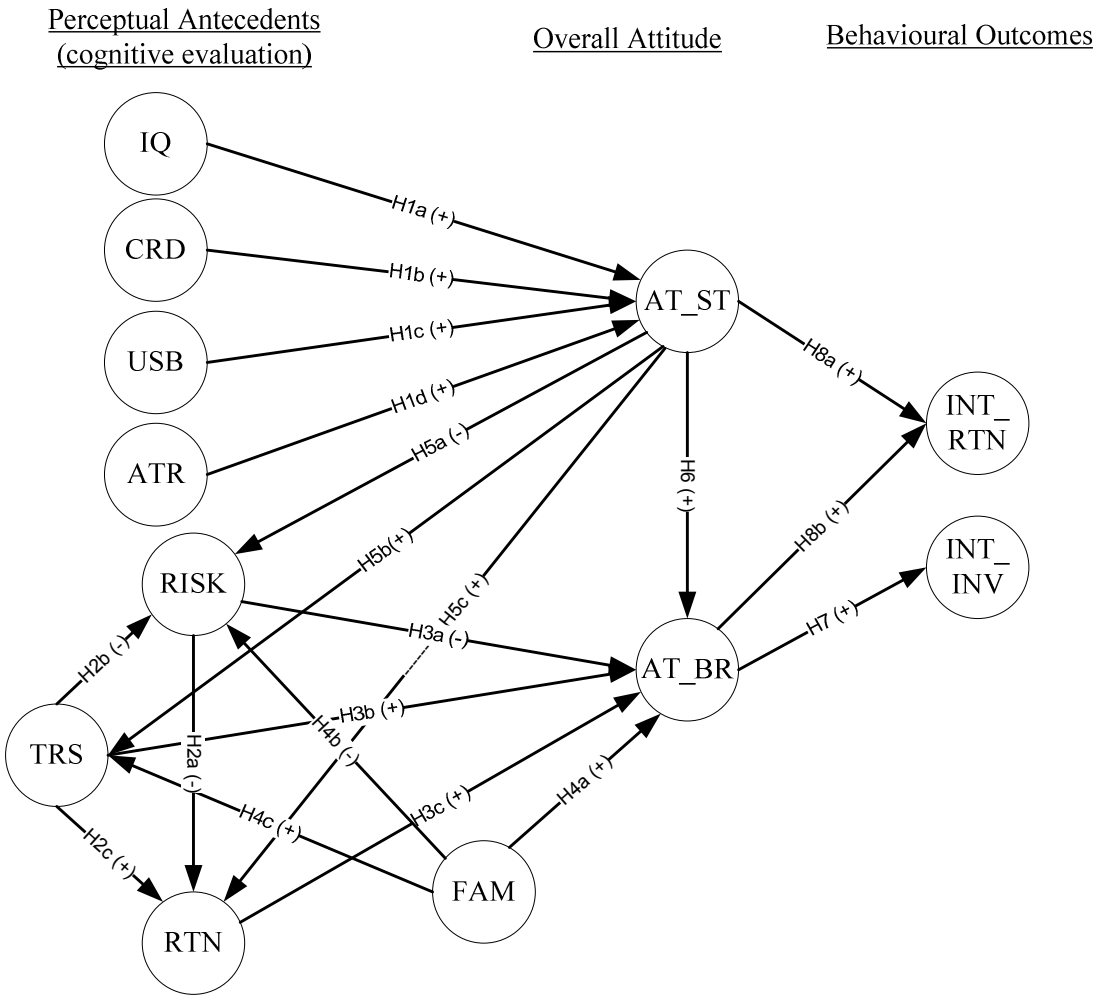
H8a: Attitude towards IR Website is positively related to Intention to Return to IR Website.

H8b: Attitude towards Brand is positively related to Intention to Return to IR Website.

3.9 Chapter Summary

This chapter has discussed literature that is relevant to the adoption of the DMH model as a basis for building the research model driving this study. The DMH model has been repeatedly demonstrated to be able to predict users' behavioural intentions as a result of being exposed to, and evaluating, a persuasive message from an advertisement; therefore, it is expected that the research model can be used to reliably predict investor behaviours. Furthermore, the present study adapts this conceptual model to include constructs which are more relevant in the context of IR websites and investors. This chapter also formulates hypotheses to be tested in validating the research model. The research model which includes the proposed hypotheses is presented in Figure 3.3. The following chapter discusses the methodology used to measure variables in the model and data analysis techniques used to test these hypotheses.

Figure 3.3: Research model with hypotheses



CHAPTER 4
RESEARCH METHODOLOGY

4.1 Introduction

Following the development of the research model and hypotheses presented in Chapter 3, this chapter further discusses the methods used for measuring variables, validating the model and testing the hypotheses. This chapter begins with the justifications of the selected research paradigm and methodology used to address the main research questions introduced earlier in Chapter 1. Next, this chapter provides an overview of the research design, identifies the study population, specifies domains of constructs, addresses the measurement of items and presents the questionnaire survey. It also articulates the instrument development process, a data collection plan and the techniques used in data analysis.

4.2 Research paradigm

According to the *positivist* approach, a single reality exists which is objectively measurable, inherently understandable and outcome oriented (Kuhn 1996). The quantitative approach adopted for the present study reflects the *scientific realism* paradigm, using an online survey to obtain data on the twelve variables proposed in the model (see Figure 3.2). Here, scientific realism contains the assumptions of positivism; however, it seeks approximate truth rather than actual truth (Weston 1992). Thus, scientific realism accepts an imperfect reality that is mostly perceivable and understandable, providing outcomes that are probably true (Hunt 1991).

A research paradigm is defined as 'a set of linked assumptions about the world which is shared by a community of scientists investigating that world' (Deshpande, 1983, p. 101). Most research and articles in the disciplines of marketing and information systems are based on positivistic assumptions but consider reality as a social construct, interpreted by people based on their participation in events (Lincoln & Guba 2000). These assumptions are necessary so that such reality can be objectively measured; however, not all constructs can be empirically observed. In this respect, Hunt (1991) proposes that purely observable concepts do not exist and that all concepts have some elements of theoretical content. Since many concepts in the disciplines of marketing and information systems are unobservable – such as attitude,

intention and satisfaction – it would appear that many studies in these fields contradict the original positivism paradigm.

In the consideration of the IR phenomenon under the present study that includes several unobservable constructs including Attitude towards IR Website, Attitude towards Brand, Brand Familiarity and Behavioural Intentions, following a scientific realism paradigm is deemed suitable. Next, the overview of the research design is presented followed by the discussion of the research methodology.

4.3 Research design overview

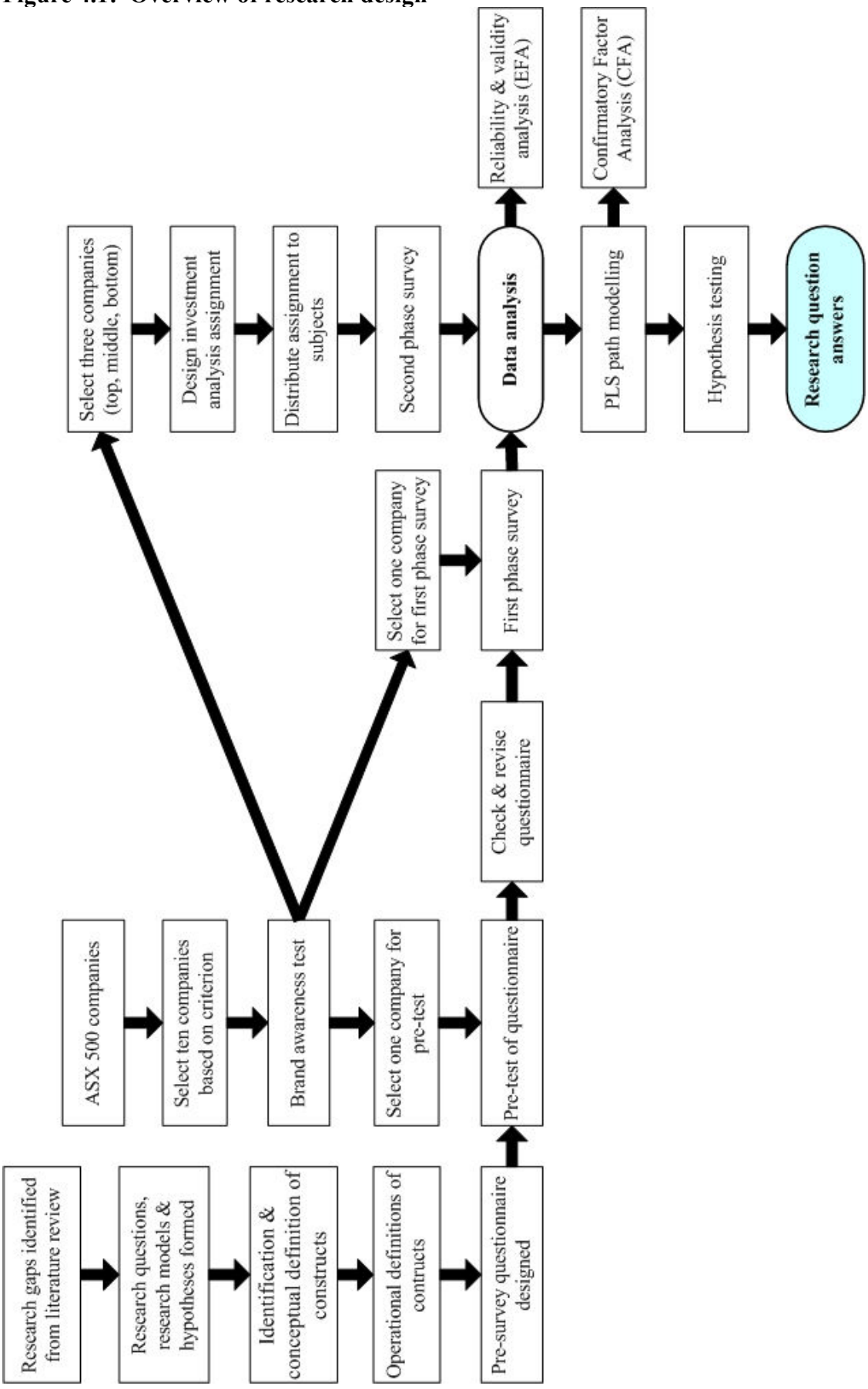
The present study involves analysing the effects of attitudes towards IR websites on investors' behavioural intentions – Intention to Invest (INT_INV) and Intention to Return to Websites (INT_RTN). To ensure that this objective could be met within the duration of the candidature, careful steps have been followed. Figure 4.1 provides an overview of the processes involved in completing the study.

4.4 Survey method

A survey method was used in order to analyse the variables proposed in the research model. The survey method has been widely used in positivist research but less so in *interpretivist* research. Surveys are particularly useful in determining the actual values of variables under study and the strength of relationships among them (Newsted, Huff & Munro 1998). Here, responses from the survey about the proposed variables in the research model can be analysed to validate the model. As outlined by Newsted, Chin, Ngwenyama and Lee (1997), responses from a survey become data on single questions which can be aggregated into numbers or scales. Next, appropriate analysis can be applied to these numbers to test related hypotheses and validate the conceptualised research model.

Following the guidelines set by Benbasat, Goldstein and Mead (1987), the present study contends that the effectiveness of IR websites should be studied in its natural context since IR websites can still be considered as contemporary events. Furthermore, the theoretical background of an attitude formation model in an investor setting has not yet been strongly established or empirically validated. Here, the present study aims to investigate whether or not companies' IR websites (natural context) meet the informational needs of individual investors and, if so, how this translates into their future behaviours.

Figure 4.1: Overview of research design



In this study, an online survey method was employed to collect respondents' answers following a *free simulation experiment* (Fromkin & Streufert 1976; Jenkins 1985). Online surveys are regarded as advantageous since they can overcome place and time constraints (Wang, YD & Emurian 2005), whereas free simulation experiments avoid fictitious study cases. Therefore, the use of an online survey method to gather subjects' actual values of variables used in the research model, following a free simulation experiment to capture a natural context, is justified in this study.

The intended *unit of analysis* in the present study is individual investors. However, since one of the main aims of the study was to validate a proposed model (internal validity), a proxy for individual investors was chosen. Important aspects such as knowledge, skills and involvement were carefully considered when selecting this proxy in order to also meet external validity. Finally, 341 students enrolled in the Investment and Portfolio Management subject at a major university in Victoria, Australia were selected as the study's sample frame. Further details are discussed in section 4.4.4.

4.4.1 Online survey

Online surveys have been regarded as advantageous when compared to traditional mail surveys due to lower costs and faster responses (Ilieva, Baron & Healey 2002). Online surveys have also been found to be convenient and easy to use (Evans & Mathur 2005). Particularly in this study, the online survey used was thought to be easily completed by subjects who were young and Internet-savvy. The chosen online survey tool was provided by www.surveymonkey.com (SurveyMonkey.com 2009) for subscriber-members. For the sake of respondents' convenience and to encourage more 'informed' participations, respondents were asked to complete the survey in their own time and at their desired pace but not in a controlled laboratory setting. Time taken to complete selected experimental tasks (see 4.7) and then participate in the online survey has been expected to be modest because both survey questionnaire and experimental cases (IR websites) were in online forms. In particular, this online survey has been seen to complement the free simulation experiments which asked subjects to complete the survey while or after using three selected corporate websites.

4.4.2 Free simulation experiment

In a free simulation experiment, subjects are placed in a real-world situation and then asked to make decisions and choices as part of the experiment (Gefen, Straub & Boudreau 2000). When using actual IR websites, such an experiment allows the values of the independent variables to range over the natural range of the subject's experience. The course assignment (see 4.7), designed to encourage student subjects in using the selected IR websites as an individual investors seeking information to evaluate a company, has induced subject responses which are then measured via the research instrument (questionnaire).

In order to capture differing designs of IR websites, the present study follows Gefen and Straub (2004), and Lawrence and Lorsch (1986) who pre-selected their experimental cases in order to evaluate the study cases of various characteristics such as sizes, industries and reputation. In the present context, Brand Familiarity (FAM) is conceptualised as an antecedent to Attitude towards Brand (AT_BR); thus, three IR websites offering different levels of brand awareness were selected.

4.4.3 IR websites selected

Most experimental studies tend to use fictitious instead of real cases as experiment subjects in order to prevent prior knowledge of a brand from biasing the final results (e.g. Fang & Holsapple 2007; Karson & Korgaonkar 2001; Lafferty et al. 2002). This approach allows a factorial experiment to mimic real cases where researchers can manipulate conditions such as varying colours, embedding music or changing brand names. Nevertheless, when the aim of a study is to assess the effect of an actual context, manipulation or control of such context may cause some reliability loss in findings. Therefore, three real IR websites were chosen in the present study.

Multiple-case designs allow for cross-case analysis (of differing brand awareness) and the extension of theory (the DMH model in an investment setting). Thus, confirmation of the theory through predictive ability can be achieved (Benbasat et al. 1987; Bonoma 1985). Three units have been common in previous studies because units of more than three may complicate the research design as well as overburden participants (Karson & Fisher 2005; Peng, C-C 2005; Sutcliffe 2002).

In selecting three companies from thousands of public listed companies in Australia, a narrowing technique was followed. Firstly, the sample was narrowed to companies that form the benchmark index for the Australian market, known as the All Ordinaries Index or ASX 500. Commercial banks were initially avoided because survey respondents may possess strong cognitive bias towards banks with which they have accounts. Next, a well-established index for *Best Investor Relations* was followed. This index comes from the 2008 Australasian Investor Relations Awards presented by the Australasian Investor Relations Association (AIRA 2008). The main reason for using this index was to select companies which have been using their websites to disseminate information to investors and have been found useful by expert panels (the AIRA). In this index, companies are ranked from first to twentieth in their respective categories of ASX 20, Mid-cap 50, Mid-cap 100, ASX 201-300 and above ASX 300. Initially, the two best IR companies from each category were randomly selected, making up 10 in total. From these 10 companies, three were chosen following a 'brand awareness' test conducted on 26 postgraduate students at the Faculty of Business and Law of a university in Victoria, Australia. This test, in accordance with Loiacono, Watson and Goodhue (2007) was taken in order to provide a range of website types in the final survey, based on different levels of brand awareness. In this manner, the mediating role of attitudes towards brands on behavioural intentions can be better analysed. From this test, companies ranking second, sixth and ninth were selected as the final cases in the survey so that participants could choose to answer questions regarding more familiar, as well as less familiar, companies. In the pre-test and first phase survey, the company ranking first (BHP Billiton Limited) was chosen for analysis.

To encourage volunteerism, subjects were not required to visit all three websites, so responses favouring a particular website could be expected in the final results. To reduce this effect, the order in which they were presented was randomised in an online survey tool provided by www.surveymonkey.com to registered members. In short, a rigorous selection procedure was followed to choose three company websites out of a possible 500. The websites of the three companies presented in Table 4.1 below were deemed suitable for the cases under study. More specifically, these are IR-related pages within these websites.

Table 4.1: Selected websites

	Name	ASX Listings	Best IR Awards	Brand Rank*
1.	Woolworths Limited	ASX50	20th ASX50	2
2.	Lion-Nathan Limited	ASX100	4th Mid-cap50	6
3.	Super Cheap Auto Group Limited	ASX300	7th ASX201-300	9

* From brand awareness test.

4.4.4 Unit of analysis and sample selection

The unit of analysis in the present study is individual investors. In particular, this study examines the effects of their attitudes towards IR websites and attitudes towards brand on behavioural intentions. As shown in Figure 4.1, the research design involves participants who were expected to have experienced visiting several selected websites, which allowed the possibility of evaluating their attitudes towards those websites and any subsequent effects of this on their behavioural intentions. Using actual individual investors would have been desirable; however, as difficulties were anticipated such as time and cost constraints in seeking participation by actual individual investors, the use of 'proxy' in this study is justified. Therefore, the selection of participants was guided by an aim to choose a sample that sufficiently represented the target population of individual investors. A sample wherein the levels of these participants' knowledge may be similar to those of average individual investors has been assumed to meet the study's objectives. In addition, in order to validate the proposed variables in the research model, homogeneity was deemed more important than having a sample of diverse demographic backgrounds and real experiences (Lynch Jr 1982; McDaniel & Mahan III 2008; Reynolds, Simintiras & Diamantopoulos 2003; Winer 1999). Therefore, a student sample was chosen in which academic backgrounds are near identical and the characteristics of participants resemble those of individual investors in general.

The final sample came from students enrolled in Investment and Portfolio Management subject at Victoria University, Australia. In the first semester of 2009, there were 341 students enrolled in the subject. Most were in their final year and had completed many subjects related to investment, including 'corporate finance', 'personal financial planning' and 'accounting for decision making'. Although many of these students lacked real investing experience, their academic knowledge was believed to be sufficient for them to evaluate share investments. This approach of using students as participants has been common in many previous experimental and field studies, particularly when the main objective is to validate a proposed research model (e.g. Karson & Fisher 2005; Koufaris & Hampton-Sosa 2004; Pavlou 2003; Rose 2001).

In the present study, students were asked to visit several selected IR websites in order to find relevant information for share investments, in two separate phases. The first phase was conducted during the first two weeks of semester 1 in 2009, while the second phase was conducted during the final three weeks of the same semester. This method was followed in order to assess the moderating role of increasing knowledge over a period of time.

4.5 Survey design

In the present study, five *exogenous* and seven *endogenous* latent constructs were proposed as relevant variables of which relationships among them can be analysed to answer the study's research questions. These constructs need to be measured appropriately and validated prior to administering the final survey to the respondents. In addition, a survey was deemed suitable for respondents to provide their self-reported perceptions and behavioural intentions. More specifically in this study, an online survey method was chosen. Online surveys have been regarded as advantageous in that they maintain respondents' anonymity and overcome time and place constraints (Chang, HH & Chen 2008; Wang, YD & Emurian 2005). Next, the procedures of designing and administering the survey are discussed.

4.5.1 Preparation of survey instruments

A careful approach was followed in the preparation of survey instruments. Firstly, construct measurements were developed based on extant literature in marketing, information systems and behavioural finance. These measurement scales were mainly adapted from previously validated scales with a minority being specifically created for the present study. Both the commonly used Likert-type scales and semantic differential scales were used and found to be convenient for the provision of self-reported beliefs and behaviours (Torkzadeh & van Dyke 2001; Al-Hindawe 1996). A seven-point Likert scale was preferred over others because it was seen as having a clear middle point, and between the middle and end points there are just two choices, allowing respondents to easily place their point of view. Using seven-point Likert scales is also in accordance with most research in marketing and information systems fields (e.g. Bart, Shankar, Sultan & Urban 2005; Hausman & Siekpe 2009; Kaplan, Schoder & Haenlein 2007; Li, Browne & Wetherbe 2007; Loiacono et al. 2007). To achieve consistency, semantic differential scales were assigned with seven bipolar points.

4.5.2 Pilot study and pre-test

A pilot study was carried out to validate the instrument developed for this study. Through this pilot study, the following goals were realized: (1) to determine the time taken for filling out the survey to ensure that the length of the instrument was reasonable; (2) to test the reliability and validity of the context and the instrument; and (3) refinement of the instrument. The confidentiality of respondents for the pilot test was ensured. After the pilot test, some modifications were made to the instrument to improve its clarity. For example, on one of the items measuring Attractiveness (ATR), the original wording of "I find that browsing this website to seek for information is enjoyable" was changed to "Finding information on the website is enjoyable".

The pilot study was conducted with a group of 28 postgraduate students at the Faculty of Business and Law of Victoria University in Melbourne, Australia. Time taken for completing the survey was determined to be approximately 45 minutes. This was slightly more than a reasonable length of time, but it was determined that the majority of time spent was on acquiring specific information as *stimuli* tasks. Only a minority of items were dropped for the final survey to shorten the instruments, but this action did not jeopardise the research model since most measurements were made of more than three items. The final survey did not involve stimuli tasks, rather, a specially

designed assignment was chosen (see 4.7). Therefore, it was highly expected that a significantly reduced average time would be spent in completing the survey.

Although the measures were adapted from the literature, it was necessary to conduct the validity and reliability tests since they are used in a different context in the present study. Content validity refers to whether the questionnaire items or measures are representative of the ways that could be used to measure the content of a given construct (Kerlinger 1964). As suggested in Straub (1989), content validity is established through literature reviews and expert judges or panels. An extensive literature survey was conducted to find all possible relevant measures. A pre-test study was carried out with three Business and Law faculty members and two doctoral students, who were asked to review and evaluate the instrument. Based on their suggestions, minor revisions were made to the instrument to clarify questions. For example, the use of words such as 'adds value' and 'returns' were expanded to include explanations in bracket such as 'competitive edge to complete one's task' and 'e.g. dividends & capital gains' respectively. The participants also suggested that some of the original statements − including 'Information provided is biased' and 'The website uses the latest Internet technology' − be reversed in order to minimise the response pattern bias.

Construct validity was established by demonstrating that the operationalisation of the construct is reasonable. The constructs being validated are related to other constructs as suggested by the theory. Further, the constructs do not correlate with other theoretically unrelated constructs and variables. Principal Component Analysis (PCA) was not carried out as the number of responses was too low to be able to yield reasonable results. Similarly, reliability using Cronbach's alpha was not undertaken, since both these analyses will be carried out again in the final data analysis. Based on a suggestion from the expert panel participating in the pre-test, good *face validity* and content validity were sufficient to allow advancement to the final stage of survey administration.

4.6 Measurement development

Most measures for the identified constructs used in the pilot study were derived from existing research into these constructs and only a few measures were specifically proposed for constructs that had not been adequately measured in previous research. As previous research commonly used these measures in the context of advertisements, some modifications were made to the original measures to suit the IR websites phenomenon. These measurements were guided by the aims of ensuring that questions were not ambiguous, did not possess social desirability at the item level, and were easily understood by respondents (Podsakoff, MacKenzie, Lee & Podsakoff 2003).

As discussed in Chapter 3, the 'cognitive response' variable in the original DMH model was replaced with specific 'cognitive evaluation' variables as perceptual antecedents to attitudinal variables. This approach was employed in order to be able to overcome the low reliability problem of the original cognitive response variable as indicated by MacKenzie and Lutz (1989). In this regard, MacKenzie and Lutz (1989) have suggested using scaled *central processing* of an advertisement to measure its perceptions, whereas Mitchell (1986) has used *product attributes* for measuring brand perceptions. In this study, perceptions of IR websites that are deemed relevant for investors forming an attitude towards an IR websites are Information Quality (IQ), Credibility (CRD), Usability (USB) and Attractiveness (ATR). These are common website attributes regarded as determinants of user acceptance as used in related studies (as discussed further in the following subsections).

A cautious approach was taken in the measurement of brand evaluative responses, so that specific constructs explaining such responses that are relevant to the context of share investments, rather than product purchase decisions, can be identified. As introduced in Chapter 3, the present study uses the constructs of Perceived Risk (RISK), Perceived Returns (RTN) and Trust (TRS) for measuring brand evaluative responses and these are conceptualised as the antecedents of brand attitude. Most of the dimensions capturing these constructs were derived from the behavioural finance literature, mainly from Bryne (2005), Ganzach, Ellis, Pazy and Ricci-siag (2008) and Nilsson (2008). In addition, Brand Familiarity (FAM) has been added as an antecedent of brand attitude to capture the emotional aspect of investors forming an attitude towards a brand (Aspara & Tikkanen 2008).

Chapter 3 also contained a discussion of the attitudinal constructs conceptualised in the research model including Attitude towards IR Website (AT_ST) and Attitude towards Brand (AT_BR), while Intention to Invest (INT_INV) and Intention to Return (INT_RTN) make up the variables of behavioural intentions as the outcome variables. The measurements of each variable are discussed next.

4.6.1 Information Quality

Previous research has found many dimensions of IQ, but only eight were included in the study in order to directly address the main aim of assessing investors' behavioural intentions, rather than evaluating a website itself. These dimensions were mainly adapted from the works of Seddon and Kiew (1996) and Cao et al. (2005), and measured using 7-point Likert scales with 1 denoting s*trongly disagree* and 7 denoting *strongly agree*. These specific IQ dimensions have also been tested in the following works: Aladwani and Palvia (2002); Barnes and Vigden (2002); DeLone and McLean (2004); Smith, AG (2001); and Wang, RY and Strong (1996). In addition, a global IQ measure was added in order to assess *collinearity* in this scale since collinearity has an undesired effect on construct validity, especially for constructs in formative mode.

Following the guidelines set by Jarvis, CB, MacKenzie and Podsakoff (2003), the nine IQ measures were modelled as formative dimensions because causality was expected to flow from these measures to the IQ construct, rather than vice versa. In other words, IQ is determined by a combination of these measures; hence, it is best modelled as a combination of its indicators plus a disturbance term, rather than the latent construct reflecting such indicators (Coltman, Devinney, Midgley & Venaik 2008; Diamantopoulos 2006). Furthermore, dimensions making up a formative construct do not necessarily co-vary between each other, a condition which is necessary in a reflective mode. For instance, if information is thought to be complete, it will not necessarily be perceived as accurate. Modelling IQ as a formative construct is also in accordance with Morgan and Hunt (1994) and Yilmaz and Hunt (2001), who conceptualised *communication quality* in a formative mode. The pre-test revealed only one ambiguity in these IQ measures, and this was modified accordingly as given in Table 4.2.

Table 4.2: Information quality measures

	Measures (scale: 1–strongly disagree to 7–strongly agree)
IQ1	Information given on this website is accurate.
IQ2	The website contains relevant information for investors.
IQ3	Information given on this website is reliable.
IQ4	Information given on this website is complete.
IQ5	I can easily interpret the information given on the pages.
IQ6	This website has current information.
IQ7	Information posted on the website is timely.
IQ8	Information on the pages adds value (competitive edge to complete one's task).
IQ9*	Overall, I find that the information provided on this website is of high quality.

* Added for collinearity diagnostic.

4.6.2 Credibility

The second perception of an IR website, CRD, was measured by four specific dimensions and one global statement. CRD can be interpreted as a dimension of IQ but, in order to be relevant within the context of investors evaluating information, the present study adapts the view of Metzger, Flanagin, Eyal, Lemus and McCann (2003), who suggest that website credibility can be measured with perceptions of the source, perceptions of the message, or a combination of the two. Loranger and Nielsen (2003) found that individual investors value a company's own story about its potential as an investment and therefore, by telling investors truthfully about its current position in the industry, the company can encourage more investment. This is consistent with Austin and Dong (1994), Flanagin & Metzger (2000; 2003) and Long and Chiagouris (2006) who consider that message credibility is seen from users' perceived believability in the message.

Regarding information disseminated on IR websites, financial information is considered credible when it is audited by an external auditor. Companies normally include their audited annual reports on their websites in both online-readable (e.g. html & xbrl) and downloadable (e.g. pdf & excel) formats. In some instances, companies also present their unaudited quarterly reports (Hodge 2001), but some investors may not realize they are unaudited. Loranger and Nielsen (2003) also found that individual

investors do not want to be bogged down with too much information. A page summarizing financial highlights is sufficient for certain investors who do not wish to spend too long in analysing detailed financial figures. Lastly, it is important for companies to have feedback forms or other methods of enabling investors to contact companies' representatives for additional information if required.

All these findings were translated into the credibility measures presented in Table 4.3. Like the IQ construct, the credibility construct was modelled formatively. Here, the direction of causality was expected to flow from the indicators to the construct. In addition, covariances between indicators were not expected, leading to the choice of formative mode over reflective mode (Jarvis, CB et al. 2003; Coltman et al. 2008).

Table 4.3: Credibility measures

	Measures (scale: 1–strongly disagree to 7–strongly agree)
CRD1	Information provided on the pages is believable.
CRD2	Information provided is unbiased.
CRD3	Financial information provided on the website is audited.
CRD4	The website contains an appropriate amount of information.
CRD5	I can easily contact responsible persons if I am not happy with certain information given on the website.
CRD6*	Overall, I find that this website has credible information.

* Added for collinearity diagnostic.

4.6.3 Usability

In the construct USB, most measurements were derived from dimensions of *ease of use* in previous website adoption studies. The first six measures of USB in Table 4.4 have been widely used in previous research and found to be reliable in measuring it (Agarwal & Venkatesh 2002; DeLone & McLean 2004; Webb & Webb 2004). The notion of usability is basic in allowing website users to find information easily. Nielsen (1999) asserts that for a website to be easily used by its intended users, its design should be familiar to the users. For instance, from the experience of browsing many websites, investors may expect less than five information cues from the *homepage* to pages containing *financial highlights*. When they find it difficult to locate such pages,

their perceptions about that website are likely to be negative. This degree of ease associated with the use of a system is called *effort expectancy* by Venkatesh, Morris, Davis and Davis (2003). Therefore, dimensions including navigational, flow and design aspects were proposed for USB. Again, a global statement was also added in this construct. All seven items were believed to be a reflection of the USB construct, rather than vice versa.

Table 4.4: Usability measures

	Measures (scale: 1–strongly disagree to 7–strongly agree)
USB1	Navigating pages to find the required information is easy for me.
USB2	I find the information flow on the website is clear.
USB3	I find the design of this website made it easy for me to find the required information.
USB4	I think the information on the website is useless.*
USB5	It was easy for me to skilfully navigate the pages on this website.
USB6	When navigating through the pages, I felt in control.
USB7	Overall, I find that it is easy to perform my tasks on the website.

* Reversed item.

4.6.4 Attractiveness

The perceived attractiveness of an IR website as the final construct of its evaluative perceptions can be seen as a complement to the other previous constructs. It has been argued that aesthetic web features influence web users' impressions (Zhang, P & von Dran 2001). Previous research has found that users' aesthetic impressions of a website are formed even after a brief exposure to the site and are not transient (Lindgaard, Fernandes, Dudek & Brown 2006; Tractinsky, Cokhavi, Kirschenbaum & Sharfi 2006; Zhang, P & Li 2004). Given that investors will not arrive at pages containing relevant financial information before they have passed a website's homepage, companies should ensure that users are impressed immediately. This feeling might then persuade them to explore other pages. Nevertheless, this is not to suggest that a website needs to be unique because users will find it easy to locate their desired information when the website's design is familiar to them (Nielsen 1999). Loranger and Nielsen (2003) assert that the link to IR pages should be visible on the homepage. Another finding

from their study is that individual investors found it useful when new online tools including w*ebcast* of companies' annual general meeting and *page flipping* online annual reports are added. In other words, an IR website is also considered attractive when it is professionally designed and enhanced with the latest Internet technology. All the above views lead to the construction of the attractiveness measures as indicated in Table 4.5. Again, this construct is measured in a reflective mode.

Table 4.5: Attractiveness measures

	Measures (scale: 1–strongly disagree to 7–strongly agree)
ATR1	Navigating this website is fun.
ATR2	Finding information on the website is enjoyable.
ATR3	The website contains a lot of interesting information.
ATR4	The website does not make the full use of the latest Internet technology.*
ATR5	The website design is very professional.
ATR6	Overall, I find that …'s website is attractive.

* Reversed item.

4.6.5 Perceived Risk

For the first antecedent of brand attitude, RISK, Bauer, RA (1960) suggested that consumers employ strategies that involve the minimization of expected loss. Similarly, one could expect investors to evaluate a share investment in terms of minimising risk. Both *choice* and *danger* have been conceptualised as components of RISK (Kogan & Wallach 1964). Based on this, two items reflecting the choice component and another two reflecting the danger component were used in the present study. To retain consistency in the questionnaire, a global measure of RISK was included. Bryne (2005) also included a global statement of overall riskiness in her measurement of perceived risk. Compared to a one-dimensional measure for perceived risk (De Chernatony 1989; Dowling 1986; Farrelly, Ferris & Reichenstein 1985), a five-item reflectively modelled RISK construct was deemed more comprehensive. From the five items given in Table 4.6, one item is reverse-coded in order to minimise the response pattern bias and acquiescence problems (Lindell & Whitney 2001).

Table 4.6: Perceived risk measures

	Measures (scale: 1–strongly disagree to 7–strongly agree)
RISK1	It is a risky decision to invest in ...
RISK2	I am sure that … is a right investment choice.*
RISK3	… has uncertain future.
RISK4	I better invest my fund somewhere else other than in ...
RISK5	I think investing in … is highly risky.

* Reversed item.

4.6.6 Perceived Returns

Perceived Returns (RTN) can be considered as the opposite of Perceived Risk in the context of share investments. Nonetheless, they have been measured independently in previous research (Bryne 2005; Ganzach et al. 2008; Peter & Tarpey 1975) because investors apply different weights to risk and return. For example, investors are generally happier to avoid a $1 loss than make a $1 gain. This situation is called *loss aversion*. In total, five items were used to measure RTN, two of which related to financial returns and two related to expected future growth, as well as one global measure.

Investors tend to believe that companies can sustain past performances, and this will reflect itself in their perceived returns of these companies (Ganzach 2000). Similarly, if a company has been paying dividends generously in the past and its share price has shown more appreciations than depreciations, investors are likely to have more confidence in it than in a share with high price fluctuations. As an investment is generally considered a long-term financial commitment, anticipated future growth of that company also plays a major role. Therefore, this study measures the construct of RTN in a reflective mode by using the five items presented in Table 4.7.

Table 4.7: Perceived returns measures

	Measures (scale: 1–strongly disagree to 7–strongly agree)
RTN1	… is financially sound.
RTN2	Investing in … seems to be able to generate me high returns (e.g. dividends & capital gains).
RTN3	I believe … will perform satisfactorily in the future.
RTN4	… has sufficient resources to grow in the future.
RTN5	I think investing in … is highly rewarding.

4.6.7 Trust

A consumer's trust in a brand is believed to develop through experience and prior interaction (Curran, Rosen & Surprenant 1998; Rempel, Holmes & Zanna 1985; Ravald & Gronroos 1996). This is not confined to one's own experience because trust can also develop when peers or family have experience with the brand, or when an incident affecting the general public is reported. When investors invest in a public listed company, they literally choose to be vulnerable to the actions of the company's management and its directors. As guided by Delgado-Ballester and Munuera-Aleman's (2001) measures, the items measuring the TRS construct in this study were developed to reflect specific behaviours (e.g. promises made & hiding information) and attributes (e.g. competent & reliable). In other words, an investor's trust in a company relies heavily on their expectations of the management, which are driven by emotions (likeability & sentiments) and facts (competence & expertise). A total of six items measuring the trust construct in a reflective mode is presented in Table 4.8.

4.6.8 Brand Familiarity

It has been argued that brand familiarity has a major role in investors' decision. For example, Ganzach (2000) and Ivkovic and Weisbenner (2005) found that investors tend to prefer investing in domestic shares rather than international shares, whereas Aspara & Tikkanen (2008) found that investors also have investment tendency towards companies whose products/services they consume. Brand familiarity is believed to cover many aspects of a particular brand including one's own past experience and peers' recommendations, not just its awareness. The latter (awareness) is defined as the ability of a potential buyer to recognize or recall a specific brand (Chang, HH & Chen

2008). In accordance with the same authors, the present study also differentiates brand awareness from brand image. More specifically, brand image is thought to be an affective outcome, and thus, is measured together with Attitude towards Brand**.**

In the pre-test, FAM was initially measured by twelve 7-point Likert scale items but these were reduced to eight items in the final questionnaire, as the pilot study revealed that the original twelve measures caused respondents some fatigue. The items removed included "I always read about the company in printed media", "I also know that the company does business overseas" and "When I hear the company's name, I easily remember its logo". Eight items measuring a latent construct are more than the generally used three items (e.g. Davis, DF et al. 2008; Chang, HH & Chen 2008). The brand awareness test used to select the three subject companies used in the final survey also depended on these measures.

Most of the FAM measures were adapted from brand awareness measures from Aaker (1996), Arnett, Laverie and Meiers (2003), Davis, DF et al. (2008) and Yoo, B, Donthu and Lee (2000). Since some of the measures were created for the present study, two marketing professors were consulted prior to the pre-test for verification of the reliability of these measures. Consistent with its definition, items measuring the use of media to strengthen a brand were included. Furthermore, since the context of the study was investment in Australia, items measuring awareness of the company having domestic businesses and whether it was listed on the domestic stock exchange were proposed. To summarise, Table 4.9 presents all of the FAM measures.

Table 4.8: Trust measures

	Measures (scale: 1–strongly disagree to 7–strongly agree)
TRS1	… is unreliable.*
TRS2	I can rely on the promises made by …
TRS3	… management is competent to run its business.
TRS4	I believe that … will not hide important information from its investors' knowledge.
TRS5	… has reliable members of board of directors.
TRS6	In my opinion, … is trustworthy.

* Reversed item.

Table 4.9: Brand familiarity measures

	Measures (scale: 1–strongly disagree to 7–strongly agree)
FAM1	I am very familiar with the company's name.
FAM2	I know a lot about the company's main nature of business.
FAM3	The company is highly recognised.
FAM4	I always hear the company's name mentioned in the media.
FAM5	I often see the company's advertisements in the media.
FAM6	I know that the company does business in Australia.
FAM7	I know that the company is listed on the Australian Securities Exchange.
FAM8	When I hear the company's name, I immediately recall a particular product.

4.6.9 Attitude towards IR Websites

In the marketing field, attitudes have been commonly measured using a semantic differential scale following a global question (Ajzen 2001; Berger & Mitchell 1989; Karson & Fisher 2005; MacKenzie et al. 1986; Miniard et al. 1990). The main advantage of using this scale is that in a lengthy questionnaire, it can minimise respondents' fatigue (Al-Hindawe 1996). In addition, when mixed scales (e.g. Likert and semantic) are used together in a questionnaire, respondents can have more focus in sharing their views. The main drawback of this scale is that respondents may only answer the first word-pair and ignore the remaining word-pairs (perhaps because they think that is what is required, or they get bored answering 'similar' adjective-pairs). In measuring affective responses such as attitudes and feeling, it was thought to be sufficient to use the semantic differential scale (MacKenzie et al. 1986).

The first three semantic differential measures of AT_ST given in Table 4.10 below were similar to the original measures used in MacKenzie et al.'s (1986) seminal work, but the global question was slightly adapted to suit the context of IR websites (Karson & Fisher 2005). The remaining six measures were added in order to capture fully affective and cognitive attitudes (Lavine, Thomsen, Zanna & Borgidda 1998). In particular, measures 4, 5 and 6 represent emotions whereas measures 7, 8 and 9 represent perceived effectiveness. The global question used in the present study was 'what was your overall reaction to …'s Investor Relations website? (i.e. all the web pages containing important information for investors including the homepage)'. This was then followed by the adjective-pairs shown below.

Table 4.10: Measures of attitude towards IR website

COG_AT_ST1	**Unfavourable**	1	2	3	4	5	6	7	**Favourable**
COG_AT_ST2	**Bad**	1	2	3	4	5	6	7	**Good**
COG_AT_ST3	**Negative**	1	2	3	4	5	6	7	**Positive**
AFT_AT_ST1	**Boring**	1	2	3	4	5	6	7	**Interesting**
AFT_AT_ST2	**Dull**	1	2	3	4	5	6	7	**Exciting**
AFT_AT_ST3	**Unenjoyable**	1	2	3	4	5	6	7	**Enjoyable**
COG_AT_ST4	**Difficult**	1	2	3	4	5	6	7	**Easy**
COG_AT_ST5	**Ineffective**	1	2	3	4	5	6	7	**Effective**
COG_AT_ST6	**Unhelpful**	1	2	3	4	5	6	7	**Helpful**

4.6.10 Attitude towards Brands

Following Karson and Fisher (2005), this study adapts Miniard et al.'s (1990) three items of AT_BR. To be more comprehensive, one additional measure (*weak/strong*) was included. Items using semantic differential scale such as these have been regarded as able to measure attitudes adequately and more easily answered than Likert-scale and open-ended questions, thus reducing the fatigue respondents might experience in completing the overall survey. The final four items given in Table 4.11 were preceded by the question 'What is your overall evaluation of …'s brand/name?'

Table 4.11: Measures of attitudes towards brand

AT_ST1	**Unfavourable**	1	2	3	4	5	6	7	**Favourable**
AT_ST2	**Bad**	1	2	3	4	5	6	7	**Good**
AT_ST3	**Negative**	1	2	3	4	5	6	7	**Positive**
AT_ST4	**Weak**	1	2	3	4	5	6	7	**Strong**

4.6.11 Intention to Invest

Behavioural intentions were conceptualised in two distinct variables: Intention to Invest (INT_INV) and Intention to Return to Website (INT_RTN). The first intention is an adaptation of *intention to purchase* as conceptualised in the original work of MacKenzie et al. (1986), whereas the second intention follows a suggestion made by Karson and Fisher (2005) for measuring website success.

The final measures used in this study were adapted from *technology acceptance* studies, which have been widely validated (Gefen, Karahanna & Straub 2003; Hausman & Siekpe 2009; Kaplan et al. 2007). To be realistic regarding the current situation of respondents (most of whom were not yet earning income), the present study used statements such as 'If I actually had the money to invest …' and 'If I actually thought of investing' followed by six items given in Table 4.12.

Table 4.12: Measures of intention to invest

	Very Low						**Very High**
If I actually had the money to invest;							
(INT_INV1) the likelihood of me investing in WL is …	1	2	3	4	5	6	7
(INT_INV2) the probability that I would buy WL's share is …	1	2	3	4	5	6	7
(INT_INV3) my willingness to buy WL's share is …	1	2	3	4	5	6	7
	Strongly Disagree						**Strongly Agree**
If I actually thought of investing;							
(INT_INV4) WL is definitely one of my choices.	1	2	3	4	5	6	7
(INT_INV5) I would refer WL's shares to others.	1	2	3	4	5	6	7
(INT_INV6) I would talk positively about WL to others.	1	2	3	4	5	6	7

4.6.12 Intention to Return to IR Website

For measuring INT_RTN, the present study adapts the scale anchors proposed by Mackenzie et al.: *unlikely/likely*, *improbable/probable*, and *impossible/possible* with an additional *uncertain/certain* anchor preceded by the question 'If you thought of investing in a specific company in the future, how likely are you to return to WL's website at a later date to search for information?' Table 4.13 lists these measures.

Table 4.13: Measures of intention to return to IR websites

INT_RTN1	**Unlikely**	1	2	3	4	5	6	7	**Likely**
INT_RTN2	**Improbable**	1	2	3	4	5	6	7	**Probable**
INT_RTN3	**Uncertain**	1	2	3	4	5	6	7	**Certain**
INT_RTN4	**Impossible**	1	2	3	4	5	6	7	**Possible**

In summary, IR website evaluative responses were measured by four latent constructs, each with five or more dimensions. These responses were conceptualised as antecedents of AT_ST. Most of the measurements were adapted from previous works in website acceptance. On the other hand, three constructs of brand evaluative responses which have been regarded important to investors in their share evaluations were conceptualised as the antecedents of AT_BR. Most of their measurements have been validated in previous studies but adapted to suit the phenomenon of interest in the present study. In addition, Brand Familiarity, as a more aesthetic brand perception than the other three brand evaluative responses, has also been included. As for the attitudinal constructs, this study merely replaces the attitudinal constructs in the original DMH model with AT_ST and AT_BR. Finally, this study conceptualises two behavioural intention constructs including INT_INV and INT_RTN.

Once the measurements had been developed and refined, two surveys were administered in two separate phases to students enrolled in Investment and Portfolio Management at Victoria University in semester one of 2009. The first survey was distributed early in the semester and the second survey was administered during the three final weeks of the semester. In order to be relevant in the context of actually evaluating the worth of companies, the present study adopted an approach aimed at encouraging involvement of participants. Petty and Cacioppo (1986) argue that highly-involved consumers use the central route of processing to evaluate a persuasive message such as an advertisement. The approaches taken to induce involvement are discussed next.

4.7 Involvement

Although the use of students in marketing experimental studies is common practice, the present study considers the *involvement* aspect so that students' responses can be reliably used in the context of share investments. Most general marketing studies assume students to be consumers, which is acceptable as students do consume products. However, not many students actually invest in shares as a part time activity. Therefore this study followed two steps to ensure that the students were involved prior to answering the survey.

In the first survey, respondents were asked to carry out several *information acquiring* tasks prior to answering the questionnaire. Examples of the tasks include locating downloadable annual reports, reading the chairman's statements and searching for the next *annual general meeting* date (see Appendix B). For the survey administered in the second phase, the students were given a group assignment as detailed in Appendix H to carry out share valuations of three selected companies. This assignment – which was worth 10 marks in the final evaluation of their Investment and Portfolio Analysis studies – has been a requirement of the subject since its introduction within the faculty. However, the assignment for semester 1, 2009 was specially designed to engage students in acquiring information on the Internet when conducting share valuations. They were also asked to visit the companies' websites to seek additional information about these companies including corporate governance, previous financial results and future outlook. This tactic aimed to encourage the students to use the companies' websites in a practical way. These companies were the same companies used in the final survey.

The assignment was distributed in week six of the semester and the students were expected to submit it in week 11. A *URL* link to the online survey was given in the assignment instructions and was also included in an announcement on the subject's *e-learning* page. To maximise the number of responses, the subject instructor made additional announcements in two final lectures and tutorial sessions.

The second approach to ensure respondents' involvement was to ask them to state the extent of their belief in the importance and personal relevance of investment in their lives, as well as using company websites to acquire importance information to aid an investment decision. A section for measuring self-reported involvement was included in the final survey. This study adapts Barki and Hartwick's (1994) measures of the involvement construct and the measures were chosen because they capture

importance, *personal relevance* and *attitude* subscales, as compared to Zaichkowski's (1985) measures which were argued to measure only attitudes. The two statements used were 'Finding information on company's website is …' and 'My opinion on investment in my life is …', followed by the anchors shown below.

Table 4.14: Involvement measures

Unimportant	1	2	3	4	5	6	7	**Important**
Irrelevant	1	2	3	4	5	6	7	**Relevant**
Boring	1	2	3	4	5	6	7	**Interesting**
Unappealing	1	2	3	4	5	6	7	**Appealing**
Worthless	1	2	3	4	5	6	7	**Valuable**
Not needed	1	2	3	4	5	6	7	**Needed**

4.8 Analysis

The model introduced earlier in Chapter 3 contains altogether 12 latent variables in total which need to be analysed in an appropriate method. Regression analysis was avoided since it generally treats all latent variables as the combined scales of their respective dimensions, thus losing any information about the possible differential performance of some dimensions of a given construct over others (Savalei & Bentler 2007). On the other hand, *structural equation modelling* (SEM) has been considered as a powerful second-generation multivariate technique for analysing results of constructs, especially latent constructs that have multiple dimensions, allowing the assessment of measurement properties and theoretical (structural) relationship (Hoyle 1995; Kline 2005; Maruyama 1997). Structural equation models go beyond ordinary regression models to incorporate multiple independent and dependent variables as well as hypothetical latent constructs that clusters of observed variables might represent (Savalei & Bentler 2007).

SEM has been increasingly used in a number of disciplines, including marketing and information systems (Gefen et al. 2000). The seminal work by MacKenzie et al. (1986) which, in part, underpins the present study also used SEM for analysing their latent constructs of attitudes and purchase intentions. Latent constructs are unobservable, and can only be measured by multiple dimensions that represent or are reflected by them. A division of SEM which is increasingly employed in

information systems and marketing research and adopted in the present study is Partial Least Squares (PLS) path modelling.

4.8.1 Partial Least Squares (PLS) path modelling

Although covariance-based SEM (CBSEM) has been commonly used in previous studies, PLS path modelling was chosen because it handles formative constructs in the model relatively easier than CBSEM. Although tools used in CBSEM such as AMOS and LISREL are able to handle formative constructs in a research model (Temme & Hildebrandt 2007), the fact that very few studies are applying such a model indicates difficulty is expected when using those tools. In the present study, it was proposed that the IQ construct was caused by its dimensions rather than reflecting them. In addition, PLS path modelling is considered more appropriate for predictive and exploratory research, as in the present study, while CBSEM is more appropriate for theory testing (Fornell & Bookstein 1982). Finally, PLS path modelling does not place major restrictive assumptions on the data, such as adequate sample size and multivariate normality; thus, PLS is sometimes known as a 'soft-modelling' method. The responses obtained in the present study numbered less than 200, thus leading the researcher to opt for PLS path modelling. Goodhue, Lewis and Thompson (2006) has argued that PLS is not inferior to CBSEM, especially when a situation of small sample size and non-normal data distribution is expected from a study.

The PLS method estimates the weights and loadings used to create latent variable scores, relationships between latent variables and their associated observed or manifest variables, and regression coefficients for the indicators and latent variables (Chin & Newsted 1999). This is similar to the approach used in CBSEM analysis, with the exception of *goodness of fit* statistics. This drawback is overcome by using a *blindfolding* method that generates t statistics for each effect path. The specific PLS tool used in the present study is a freeware application, SmartPLS, developed by Ringle, Wende and Will (SmartPLS 2.0 2005).

4.8.2 Common method bias

In their guide to specifying both reflective and formative measurement models, Coltman et al. (2008) stress the importance of addressing common method bias. This bias is a consequence of correlations that have been altered (inflated) due to a 'method' effect (Meade, Watson & Kroustalis 2007). When this bias exists, one may expect the degree of measurement error to be large, and this may threaten the validity of the research model. However, note that recently some organizational research methodologists have argued that the threat of common method variance may not be as big a problem as once assumed (Spector 2006).

Procedural remedies taken in this study to minimize the potential common method bias were: ensuring respondents answered anonymously, assuring them that there were no right and wrong answers, and using concise and simple terms in questionnaire. In addition, measuring an item with mixed-scale of Likert and semantic differential can reduce the threat of method bias (Podsakoff et al. 2003). In order to detect the existence of common method bias, two tests were conducted and the results are given in Chapter 5. These tests are Harman's single-factor analysis and a latent variable approach of adding a first-order factor to each measure in the theoretical model as an indicator (Podsakoff et al. 2003). For the first test, all items used to measure both independent and dependent variables were loaded into a single *exploratory factor analysis*. In the second test, a common method factor was added to the research model (Liang, H, Saraf, Hu & Xue 2007). In combination, these tests address the common method bias issue.

4.9 Ethical considerations

The collection of data from human subjects raises important ethical considerations. The current study addresses the key issues of concern; physical and psychological harm, deception, informed consent and privacy (Neuman 1997). For example, in this study the students who were the target participants of the survey may have thought that their participations in the survey would contribute to their overall assessments in the Investment and Portfolio Management subject. Conversely, they may also have thought that their non-participation would jeopardise their evaluation in the subject. Besides this psychological harm, no other forms of damage (legal or physical) were expected. To address this problem, explicit statements were provided in the *information sheet*, *informed consent form* and in the announcements made on the

subject e-learning page. Subject instructor also gave verbal reminders in classes that students' participation in the survey was voluntary.

The use of online survey in this research removed the possibility of physical harm occurring. Psychological harm other than discussed above was expected to be low because the topic under consideration did not involve asking participants to provide personal information; it involved willing participants who could complete the survey at times convenient to them. Non-respondents, while being encouraged to complete the survey through reminders in lectures and tutorial sessions were not coerced in any way.

In order to avoid perceived deception in the survey, the purpose of the research, the identity of the researchers and voluntary nature of participation were made explicit in writing. The introductory page of the online survey clearly stated the purpose of the research and how the data will be kept and used. This was repeated on the informed consent form. Confidentiality was guaranteed to each respondent and the identities of respondents were not disclosed. Finally, a formal procedure according to the university's ethics clearance was followed prior to administering the final survey.

4.10 Chapter summary

This chapter has discussed and justified the research design approach employed in this study. A quantitative approach using an online survey was used to confirm a theoretical model and test the proposed hypotheses. The survey was administered to undergraduate students in two separate phases. Therefore, the unit of analysis in this study is individuals answering questions about their attitudes towards three selected companies and their respective IR websites.

This chapter has also outlined the procedures followed in collecting the data, with consideration given to maximising its reliability and validity. Instrument development utilised existing scales and measures wherever possible. However, since measures did not exist for some constructs, scales were developed and tested specifically for this study. Table 4.15 summarizes the measurements used.

Structural equation modelling (SEM) and other data analysis techniques were discussed. Due to the complexity of the research model with latent variables, a small sample size and non-normal data distributions, partial least squares (PLS) path modelling was selected to test the research model and study hypotheses. Results of data analysis employing these procedures are presented in the following chapter.

Table 4.15: Summary of constructs

Constructs	Operational Definition	No. of items	Mode	Relevant works
IQ	How well, provided information meets investors' expectations.	9	Formative	Aladwani & Palvia (2002); Barnes & Vigden (2002); Cao et al. (2005); DeLone & McLean (2003); Seddon & Kiew (1996); Smith, AG (2001); Wang, RY & Strong (1996)
CRD	Perceived believability in information and its source.	6	Formative	Flanagin & Metzger (2000, 2003); Long & Chiagouris (2006); Loranger & Nielsen (2003)
USB	Perceived ease of use in using and locating relevant information on website.	7	Reflective	Agarwal & Venkantesh (2002); Davis, FD et al. (1989); DeLone & McLean (2004); Green & Pearson (2004); Palmer (2002); Venkatesh et al. (2003); Webb & Webb (2004)
ATR	The degree of IR website is pleasing to users.	6	Reflective	Aladwani & Palvia (2002) ; Zhang, P & Li (2004); Zhang, P & von Dran (2001)
RISK	Perceived financial losses from investing in a company.	5	Reflective	Bryne (2005); Kogan & Wallach (1964)
RTN	Perceived financial gains from investing in a company.	5	Reflective	Bryne (2005); Ganzach (2000); Ganzach et al. (2008); Peter & Tarpey (1975)
TRS	The degree of believability in management of a company.	7	Reflective	Curran et al. (1998); Delgado-Ballester & Munuera-Aleman (2001); Ganzach et al. (2008)

Table 4.15: Summary of constructs (continued)

Constructs	Operational Definition	No. of items	Mode	Relevant works
FAM	The ability to recognize and/or recall a name/brand.	8	Reflective	Aspara (2009) ; Aspara & Tikkanen (2008); Aaker (1996); Arnett et al. (2003) Davis, DF et al. (2008); Yoo, B et al. (2000)
AT_BR	Predisposition to respond in a favourable or unfavourable manner to a particular brand.	4	Reflective	Karson & Fisher (2005); MacKenzie et al. (1986); MacKenzie & Lutz (1989); Miniard et al. (1990)
AT_ST	Predisposition to respond in a favourable or unfavourable manner to a particular IR website.	9	Reflective	Chen, Q & Wells (1998); Karson & Fisher (2005); Lavine et al. (1998)
INT_INV	Psychological inclination to invest in a particular share.	6	Reflective	Adapted from purchase intention research [e.g. Karson & Fisher (2005); Mackenzie et al.(1986) MacKenzie & Lutz (1989)]
INT_RTN	Psychological inclination to return to a particular IR website.	4	Reflective	Chen, Q & Wells (1998); Karson & Fisher (2005)

CHAPTER 5
DATA ANALYSIS AND RESULTS

5.1 Introduction

Following the conceptualisation of the research model presented in Chapter 3, and the measurement of variables given in Chapter 4, a data analysis of survey responses to verify and validate the model was conducted. Therefore, the purpose of this chapter is to provide a full analysis of the data collected from the two questionnaire surveys. Results from data refinement, multivariate analysis and hypotheses testing are presented. Towards the end of the chapter, the results of an alternative model that better explains the mediation effect of Attitude towards IR Website are given.

5.2 Survey responses analysis

Responses to the first survey were collected between week two and week four of the first semester in 2009, whereas responses from the second survey were collected during the final six weeks of the semester and extended for another two weeks prior to the final examination date. These responses were then downloaded from the online survey tool and transformed into workable documents in *Excel* spreadsheets. These were then analysed accordingly to determine reliability and validity of the data, as well as to test the stipulated hypotheses.

5.2.1 Response rate

Records at the Faculty of Business and Law showed that there were 341 students registered in the Investment and Portfolio Management subject for semester one in 2009. These students were invited to participate in both surveys through announcements made on the subject's e-learning page and in their lectures. For the first survey, only 38 responses were successfully gathered, thus further analysis was not deemed to be very fruitful[5]. For the second survey, more proactive steps were taken in order to encourage participation including extra reminders in tutorial sessions, using *pop-up* reminders on the subject's e-learning page and extending the participation period. These resulted in a total of 153 responses from 124 individuals. From this total, sixteen responses were discarded due to large proportions of the

[5] Of the total, 14 responses contained many outliers. The results of the remaining usable responses are available upon request.

questions not being answered; thus 137 responses from 109 individuals (32% response rate) were deemed usable. From the 109 participants, twenty managed to complete the questionnaire survey on two companies, and four participants generously completed the survey on three companies. Although this number of responses is not very large, data analysis was still permissible because the main aim of the present study has been to validate a proposed model, not to verify an existing model (Huang, Schrank & Dubinsky 2004; Keen 1999; Oh 2000).

5.2.2 Respondents and demographic profiles

Because respondents came from only one group of students, there were not many differences in their demographics. From the sample frame of 341 students enrolled in the subject, 179 were male and 162 were female, 96% being in the age range of 18 – 29 years. From the 113 respondents, 54 were female, 53 were male, with six not revealing their gender. The degree programmes that most of them were completing included 56% in Banking and Finance 15% in Financial Risk Management and 10% in Accounting. Table 5.1 provides a summary of these.

Table 5.1: Respondent demographics

	Gender		**Years in university**			
	Male	Female	Year 1	Year 2	Year 3	> 3 years
Sample	53	54	17	35	41	16
percent	48	50	15	32	38	15
Sample frame	179	162	80	127	83	51
percent	53	47	23	38	24	15

5.2.3 Non-response and response bias

As non-respondents could share common characteristics and differ from respondents, failure to obtain their answers could affect the study results. For this reason, non-response bias was tested through t-tests by treating late respondents as non-respondents. Because late respondents had completed the survey only after a series of extensive reminders, they could well be representative of non-respondents. This is in accordance with the *extrapolation* method suggested by Armstrong and Overton (1977). Thus, answers and characteristics of 48 late respondents who completed the survey during the extended two weeks were compared with early respondents.

Results from the t-tests revealed that there were no significant differences between early and late respondents in respect of 'Internet frequency' ($t = 1.391$, $p<.17$), 'Internet expertise' ($t = .626$, $p<.53$), 'years in university' ($t = .751$, $p<.45$) and 'gender' (male early respondents = 46.2%, male late respondents = 60%). To compare their personality and behaviour, t-tests were then conducted on *involvement* and *behavioural intention* constructs (based on the constructs' factor scores). These tests found no significant differences in 'importance of investment' ($t = .995$, $p < .322$), INT_INV ($t = -.410$, $p < .682$), and INT_RTN ($t = -.584$, $p < .560$). Only the construct of 'relevance of using IR websites' was found to be significantly different between early and late respondents ($t = 2.136$, $p < .035$). However, this difference was considered trivial because the importance and relevance of share investment itself is regarded as having a dominant role in the involvement constructs. Furthermore, because the late respondents were extensively encouraged to participate in the survey, they might have received less satisfaction from browsing the selected IR websites, whereas early respondents most likely had more motivation to complete the survey while finishing their assignment. In short, the overall results indicate no significant concerns regarding non-response bias in the present study.

5.3 Data screening and preliminary analysis

In order to justify the appropriateness of using PLS path modelling in the present study, the extent to which the data obtained meets psychometric assumptions was first assessed. This included treatment of missing data, normality of data distribution, and common method bias which all may have a direct influence on employing the relevant data analysis techniques.

5.3.1 Missing data and outliers

As mentioned earlier, sixteen responses were discarded as too many answers were missing from them. The remaining usable 137 responses had 147 missing data points from 12,604 possible ones. However, 55 missing data points were not relevant in model measurement since these were made up from involvement items as well as demographic measures. Therefore, there were only 88 missing data points from 10,275 that needed to be handled prior to the model measurement. This represented 0.86% of the total, which is insignificant. Three responses had missing data in all items of behavioural intentions and involvement constructs, whereas two responses had missing

data in some semantic differential scales. Concerning the latter, it was argued that in answering a semantic differential scale, respondents tend to only state their views on the first adjective-pair (Al-Hindawe 1996). The remaining missing data could be seen as happening at random, due to fatigue or failing to click the mouse properly when answering an item. According to Tabachnick and Fidell (2001), any variable having less than five percent of missing values can be ignored. None of the variables in this dataset has missing values of more than five percent.

With regard to data related to the attitudes and behavioural intentions of each company, missing data were handled with Maximum Likelihood (ML) imputation (Schafer & Graham 2002). Similarly, missing data on involvement items were substituted using ML imputation. To be relevant to the answers provided on different companies, all missing data imputations were made on responses for each company.

For a large sample size of 80 and above, a standardized score value +/- 3 can be used as a benchmark to identify outliers (Hair, Anderson, Tatham & Black 1998). Based on this benchmark, 15 responses were found to include one outlier or more. Nine of them had only one outlier, while three responses had two outliers. However, these were retained for further analyses. One case had nine outliers and was therefore discarded in further analysis. The final two responses identified as having outliers had five and six outliers respectively. These were considered as genuine and seemed to offer important variation to the data. For example, both had outliers in items measuring 'affective' Attitude towards IR Websites which included semantic differential scales of 'boring-interesting', 'dull-exciting' and 'unenjoyable-enjoyable'. These were, as expected, different from the remaining 'cognitive' attitudinal items. Therefore, this outlier analysis resulted in one response being discarded, yielding a final sample of 136 responses.

5.3.2 Normality and power size

Examination of normality of the data is a necessary check prior to using certain multivariate data analysis techniques including regression analysis and *structural equation modelling* (SEM). In this regard, when a normality assumption is violated, an alternative technique should be employed (Henseler, Ringle & Sinkovics 2009). Here, *kurtosis* scores outside of +/- 2 times its standard error and *skewness* rating outside +/- 1 times its standard error have the potential to restrict the data analysis and subsequent interpretation of results (Kline 2005). In the present study, the skewed data on items

measuring constructs of attitudes, brand familiarity and behavioural intentions had been anticipated. The complete data distribution survey on individual items is given in Appendix C. As evident in Appendix C, many measures of latent constructs exhibited a non-normality concern. This deviation from normality assumption was a strong reason for using PLS path modelling in this study (Henseler et al. 2009), in addition to the sample size of less than a generally acceptable benchmark of 200 (Garver & Mentzer 1999; Hoelter 1983).

With regard to sample size and its relevant power level, Cohen's (1992) guideline was followed. Here, for a sample size of 136, a factor loading of 0.55 or greater is considered significant, assuming a 0.05 significant level for Type I error and a power level of 80%. However, in this study the more conservative 0.60 level was used as the minimum criterion for assessing factor loadings (Hair, Black, Babin, Anderson & Tatham 2006).

5.3.3 Common method bias

Common method bias has been considered as a major source of measurement error and thus a threat to the model validity, particularly in self-report studies (Podsakoff & Organ 1986). In this study, Harman's one-factor test was used to assess the impact of this bias (Podsakoff, Todor, Grover & Huber 1984; Podsakoff et al. 2003). An *exploratory factor analysis* (EFA) using principal axis factoring with factors extracted based on *eigenvalues* greater than one, was conducted on all items measuring latent constructs. The test revealed rotated solutions of twelve factors with one factor explaining approximately 30% of the variance and all others less than 10% (see Appendix D). The unrotated solutions did not generate a general factor, suggesting that common-method variance does not appear to be a serious threat.

To further assess common method variance, an additional analysis was conducted by adding a method factor in the model (Liang, H et al. 2007; Podsakoff et al. 2003). This analysis resulted in an average substantively explained variance of indicators of 0.781, while average method-based variance was 0.026 (see Appendix E). Therefore, the ratio of substantive variance to method variance is about 32:1, maintaining that method variance is not a major concern for the present study.

5.4 Measurement refinement and initial analysis

A two-step model building was followed in order to test validity and reliability of the research model (Anderson & Gerbing 1988; Hair et al. 2006; Schumaker & Lomax 2004). The first step involved purifying and validating the measures through EFA for untested new scales (including adapted and modified scales from existing studies) and *confirmatory factor analysis* (CFA) for pre-existing validated scales and scales suggested by the earlier EFA. Following these steps, a PLS path modelling application software was used to build and test the structural model.

5.4.1 Validity and reliability of measures

To validate the latent constructs proposed in the model, new untested and adapted items from existing studies were reduced in number through performing the EFA. These constructs included two reflective IR websites evaluative constructs (USB and ATR), all brand evaluative constructs (RISK, TRS and RTN), AT_ST, FAM, and behavioural intentions constructs (INT_RTN and INT_INV). SPSS 17.0 software was used to perform this analysis.

Table 5.2: Reliability of reflective IR website evaluative factors

	Factors	
	USB α = 0.946	**ATR α = 0.927**
Navigating pages to find the required information is easy for me. (USB1)	0.856[a]	
I find the information flow on the website is clear. (USB2)	0.838	
I find the design of this website made it easy for me to find the required information. (USB3)	0.847	
It was easy for me to skilfully navigate the pages on this website. (USB5)	0.827	
When navigating through the pages, I felt in control. (USB6[b])		0.663
Overall, I find that it is easy to perform my tasks on the website. (USB7)	0.774	
Navigating this website is fun. (ATR1)		0.907
Finding information on the website is enjoyable. (ATR2)		0.877
The website contains a lot of interesting information. (ATR3)		0.720
The website design is very professional. (ATR5)	0.670	
Overall, I find that …'s website is attractive. (ATR6)		0.702

[a] Loadings less than 0.50 were suppressed.
[b] USB6 was renamed into ATR5 and vice versa.

The test on the two reflective IR websites evaluative constructs yielded the expected two factors (see Table 5.2). Retained items were based on the commonly accepted loading of 0.60 for EFA (Hair et al. 2006). Here, all loadings were acceptable, except for the two reversed items USB4 and ATR4 which were discarded due to cross loadings. Interestingly, two items (USB6 and ATR5) loaded into the opposite constructs and were treated accordingly. This refinement yielded two factors being extracted with highly reliable alpha statistics, and communality statistics greater than 0.50.

A similar test conducted on all brand evaluative constructs found three items did not load well in their respective constructs, so these were dropped from further analysis. Of these three, two items were reversed statements (RISK2 & TRS1) and another item, RTN4, was perhaps less clear (i.e. association between future growth and perceived returns). Table 5.3 presents the results of the EFA. Again, the alpha and communality statistics were all acceptable after applying this refinement method.

Table 5.3: Reliability of brand evaluative factors

	Factors		
	RISK α = 0.866	**RTN α = 0.896**	**TRS α = 0.886**
It is a risky decision to invest in ... (RISK1)	0.861*		
… has uncertain future. (RISK3)	0.847		
I better invest my fund somewhere else other than in ... (RISK4)	0.600		
I think investing in … is highly risky. (RISK5)	0.877		
… is financially sound. (RTN1)		0.610	
Investing in … seems to be able to generate me high returns. (RTN2)		0.851	
I believe … will perform satisfactorily in the future. (RTN3)		0.608	
I think investing in … is highly rewarding. (RTN5)		0.816	
I can rely on the promises made by … (TRS2)			0.665
… management is competent to run its business. (TRS3)			0.799
I believe that … will not hide important information from its investors' knowledge. (TRS4)			0.795
… has reliable members of board of directors. (TRS5)			0.848
In my opinion, … is trustworthy. (TRS6)			0.652

* Loadings less than 0.50 were suppressed.

Although some of the semantic differential scales measuring AT_ST have been validated in previous research, EFA was conducted for this construct because it was expected that this attitudinal construct consists of cognitive and affective attitudes. The results shown in Table 5.4 confirm these as two distinct factors, with items having high loadings and acceptable communalities above 0.50. Both extracted factors exhibiting high reliability with Cronbach's alpha, well above 0.70 (Nunnally 1978).

Table 5.4: Reliability of attitude towards IR website factors

	Factors	
	COG_AT_ST α = 0.947	**AFT_AT_ST α = 0.910**
Unfavourable – Favourable. (COG_AT_ST1)	0.834*	
Bad – Good. (COG_AT_ST2)	0.822	
Negative – Positive. (COG_AT_ST3)	0.852	
Boring – Interesting. (AFT_AT_ST1)		0.811
Dull – Exciting. (AFT_AT_ST2)		0.924
Unenjoyable – Enjoyable. (AFT_AT_ST3)		0.843
Difficult – Easy. (COG_AT_ST4)	0.812	
Ineffective – Effective. (COG_AT_ST5)	0.820	
Unhelpful – Helpful. (COG_AT_ST6)	0.860	

* Loadings less than 0.50 were suppressed.

Table 5.5 presents the results of EFA on brand familiarity items. As expected, all the items measuring brand familiarity constructs loaded into a single factor with factor reliability alpha of 0.957.

Finally, the EFA was run on items measuring behavioural intentions. As can be seen in Table 5.6, item loadings were all significant and all items loaded into their expected constructs. Reliability alpha for the two constructs of behavioural intentions were all significant at 0.969 and 0.931 respectively.

Table 5.5: Reliability of brand familiarity factor

	Factor
	FAM α = 0.957
I am very familiar with the company's name. (FAM1)	0.885
I know a lot about the company's main nature of business. (FAM2)	0.890
The company is highly recognised. (FAM3)	0.889
I always hear the company's name mentioned in the media. (FAM4)	0.867
I often see the company's advertisements in the media. (FAM5)	0.889
I know that the company does business in Australia. (FAM6)	0.822
I know that the company is listed on the Australian Securities Exchange. (FAM7)	0.901
When I hear the company's name, I immediately recall a particular product. (FAM8)	0.889

Table 5.6: Reliability of behavioural intention factors

	Factors	
	INT_INV α = 0.969	**INT_RTN α = 0.931**
The likelihood of me investing in … is … (INT_INV1)	0.851*	
The probability that I would buy …'s share is … (INT_INV2)	0.876	
My willingness to buy …'s share is … (INT_INV3)	0.881	
… is definitely one of my choices. (INT_INV4)	0.868	
I would refer …'s shares to others. (INT_INV5)	0.816	
I would talk positively about … to others. (INT_INV6)	0.799	
Unlikely – Likely. (INT_RTN1)		0.850
Improbable – Probable. (INT_RTN2)		0.781
Uncertain – Certain. (INT_RTN3)		0.872
Impossible – Possible. (INT_RTN4)		0.818

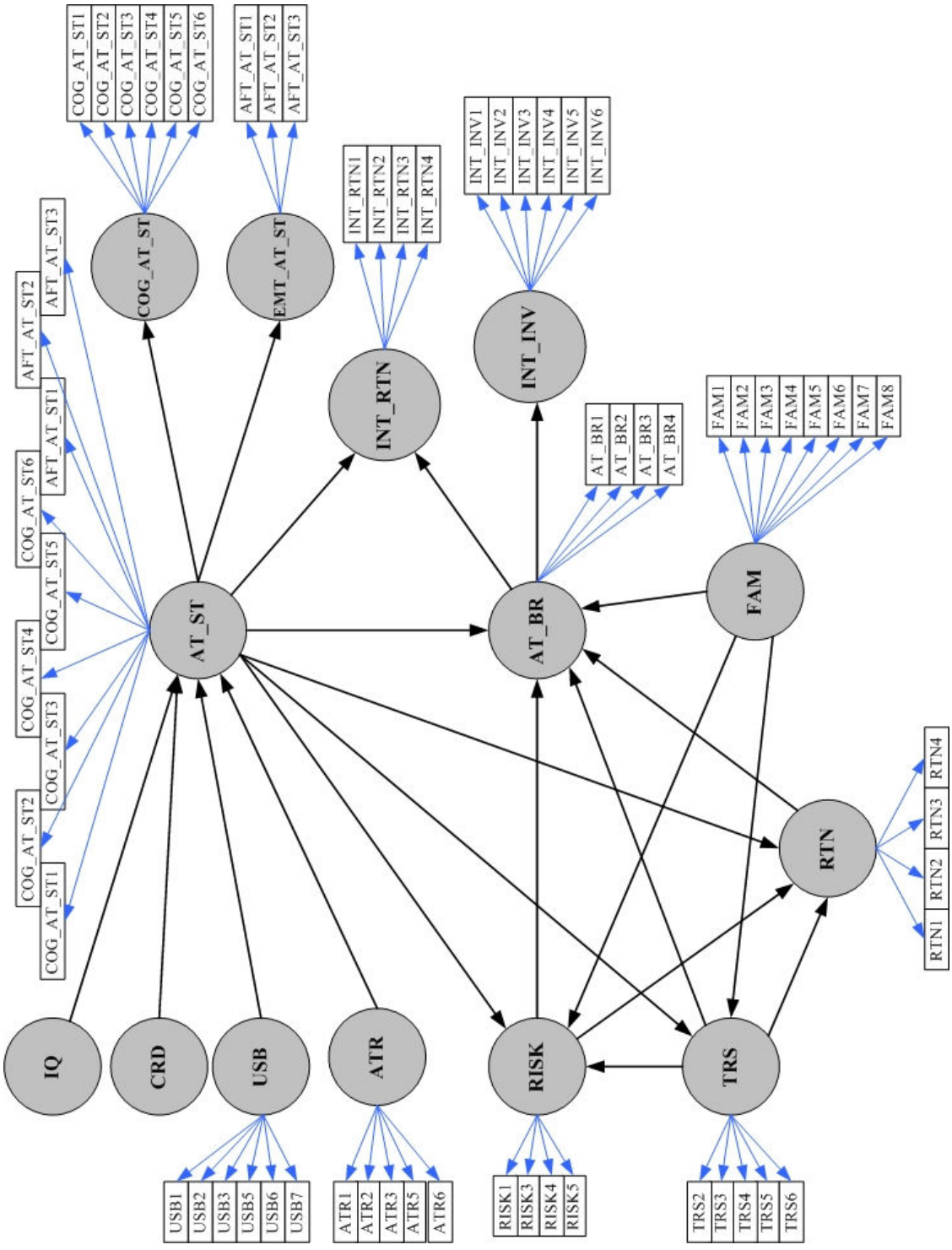
* Loadings less than 0.50 were suppressed.

5.4.2 Confirmatory factor analysis

To be consistent with the choice of multivariate analysis used in this study, CFA for all reflective constructs was performed using SmartPLS software (Ringle et al. 2005). CFA was conducted on pre-validated scales of the previous studies, as well as on scales extracted from the EFA above. Using the same software, weights for formative items measuring the IQ and CRD constructs were also estimated. Through CFA, the reliability of all reflective scales was examined, followed by an assessment of their convergent and discriminant validities. SmartPLS software has made it easy to perform

CFA and properly build the model into the application. The model with all latent constructs (shaded circles) and respective measurement items (rectangles) is shown in Figure 5.1. Note that the construct of AT_ST was operationalised as a second-order latent construct, following Wetzels, Odekerken-Schröder & van Oppen's (2009) recommended hierarchical latent variable technique.

Figure 5.1: Measurement model used for CFA



After the model had been properly built in the SmartPLS software, essential statistics were estimated by running a PLS algorithm (300 maximum iteration, standardized values and centroid weighting scheme). This process is commonly called *measurement (outer) model*. The algorithm resulted in loadings all above 0.70, except for ATR5 and COG_AT_ST5. ATR5 was an item originally measuring USB, but reclassified into ATR from the EFA. Due its low loading, ATR5 was dropped from the ATR construct in further analysis. However, COG_AT_ST5 was retained as it was believed to be fairly high and adding an important variation to the data (see Table 5.7).

Table 5.7: Outer loadings of indicators

	Loadings		Loadings
Usability		**Brand Familiarity**	
USB1	0.864005	FAM1	0.887093
USB2	0.905230	FAM2	0.895135
USB3	0.937818	FAM3	0.894534
USB5	0.884431	FAM4	0.868626
USB6	0.839965	FAM5	0.882896
USB7	0.897202	FAM6	0.821852
Attractiveness		FAM7	0.896585
ATR1	0.893916	FAM8	0.884919
ATR2	0.923181	**Attitude Towards IR Site**	
ATR3	0.884036	COG_AT_ST1	0.863281
ATR5*	0.105803	COG_AT_ST2	0.895687
ATR6	0.903005	COG_AT_ST3	0.859421
Perceived Risk		COG_AT_ST4	0.806751
RISK1	0.917602	COG_AT_ST5	0.680582
RISK3	0.806214	COG_AT_ST6	0.776996
RISK4	0.757755	AFT_AT_ST1	0.869597
RISK5	0.897517	AFT_AT_ST2	0.836387
Perceived Returns		AFT_AT_ST3	0.843053
RTN1	0.890546	**Intention to Invest**	
RTN2	0.843961	INT_INV1	0.945260
RTN3	0.870527	INT_INV2	0.953422
RTN5	0.888313	INT_INV3	0.941341
Trust		INT_INV4	0.952010
TRS2	0.763218	INT_INV5	0.880541
TRS3	0.842889	INT_INV6	0.909347
TRS4	0.823905	**Intention to Return to Site**	
TRS5	0.859399	INT_RTN1	0.922731
TRS6	0.856653	INT_RTN2	0.901001
Attitude Towards Brand		INT_RTN3	0.932694
AT_BR1	0.906388	INT_RTN4	0.882920
AT_BR2	0.937167		
AT_BR3	0.895688		
AT_BR4	0.875312		

* Deleted for further analysis.

5.5 Model validation

Before a proposed model can be used in hypothesis testing, the validity of its measurement model must first be checked. However, for a formative construct, the commonly used validity analysis is not suitable. Therefore, following Diamantopoulos and Winklhofer's (2001) suggestion, IQ's collinearity problem was first assessed. Formative measures exhibiting high collinearity indicate that a latent construct caused by multi-items has some redundant items. This problem can be detected when some items' weights are negative or have high *variance* in*f*lation *factors* (VIF). Weight estimation was conducted using SmartPLS, while SPSS 17.0 was used to check for collinearity problems by operationalising IQ9 as the dependent variable and the eight remaining items as independent variables. From the eight items, none had VIF greater than four, but two items had negative weights (IQ2 and IQ6) and one item (IQ5) had very low weight. As a result, IQ2, IQ5 and IQ6 were deleted.

In estimating their weights in the model, the global measure of IQ (IQ9) was added since it was believed to explain important variations in the construct. The global measure was also thought to have important theoretical validity in causing IQ, as theoretical consideration is more important in supporting a formative scale (Rositter 2002). A PLS algorithm was run to estimate items' weights and found only one item (IQ7) to be significant in causing the IQ construct (see Table 5.8). Chin (1998) asserts that a significant weight of a formative scale is an indication of it showing a direct causal effect on the latent construct. In the model, only the IQ global measure and IQ7 were found to be significant.

Table 5.8 also presents the VIF diagnostic and estimated PLS weights for the indicators of CRD. None of the original indicators had VIF greater than four, but CRD1 and CRD3 were discarded due to their negative weights. In this construct, only the path of CRD2 was not significant. This reliability analysis for the two formative constructs resulted in three IQ items and two CRD items being dropped. For the remaining reflective scales, measurement validity was assessed based on convergent validity and discriminant validity.

Table 5.8: Reliability of formative constructs

	Weight	Significance	VIF
Information given on this website is accurate. (IQ1)	0.092	t – 1.227 p < 0.220	2.86
Information given on this website is reliable. (IQ3)	0.071	t – 0.836 p < 0.404	3.80
Information given on this website is complete. (IQ4)	0.078	t – 0.789 p < 0.430	3.80
Information posted on the website is timely. (IQ7)	0.228	t – 2.004 p < 0.046	3.17
Information on the pages adds value. (IQ8)	0.020	t – 0.319 p < 0.750	2.51
Overall, I find that the information provided on this website is of high quality. (IQ9)	0.638	t – 6.240 p < 0.001	N/A
Information provided is unbiased. (CRD2)	0.016	t – 0.435 p < 0.664	1.501
The website contains an appropriate amount of information. (CRD4)	0.317	t – 3.579 p < 0.001	2.84
I can easily contact responsible persons if I am not happy with certain information given on the website. (CRD5)	0.174	t – 2.166 p < 0.031	1.69
Overall, I find that this website has credible information. (CRD6)	0.614	t – 6.327 p < 0.001	N/A

5.5.1 Convergent validity

Convergent validity was assessed using *composite reliability* (CR) and *average variance extracted* (AVE) scores (Fornell & Larcker 1981). Here, CR is considered the more appropriate measure of internal consistency compared to Cronbach's alpha, since it considers the actual loadings while calculating indicators (Ma & Agarwal 2007). A CR value of at least 0.70 is considered a good indicator of internal consistency (Hair et al. 1998). In addition, AVE scores above 0.50 indicate strong convergent validity, as this means that more than 50 percent variation in a particular construct is explained by the stipulated indicators (Chin & Newsted 1999). As shown in Table 5.9, all constructs exhibited acceptable internal consistency and convergent validity.

Table 5.9: Convergent validity of constructs

	No. of items	CR	AVE	Communality
USB	6	0.957452	0.789697	0.789697
ATR	4	0.945366	0.812278	0.812278
RISK	4	0.910071	0.717926	0.717926
RTN	4	0.927935	0.763065	0.763065
TRS	5	0.917005	0.688841	0.688841
FAM	8	0.964588	0.773100	0.773100
AT_ST*	9	0.951264	0.685595	0.685595
AT_BR	4	0.946962	0.817062	0.817062
INT_INV	6	0.974883	0.866207	0.866207
INT_RTN	4	0.950668	0.828175	0.828175

* If AT_ST was measured as a first-order construct, its AVE and CR would be 0.951117 and 0.685162 respectively, which is slightly less than it being a second order construct. Therefore, this supports the operationalisation of AT_ST as a second-order latent construct.

5.5.2 Discriminant validity

Discriminant validity is achieved if the square root of the AVE of each construct is greater than its bi-variate correlations with other constructs, and if the indicators load higher on their respective constructs when compared to other indicators (Chin 1998; Compeau, Higgins & Huff 1999). As can be seen in Table 5.10, the square roots of the AVE on the diagonal elements are greater than the bi-variate construct correlations on the off-diagonal elements except for the AT_BR – FAM correlation. However, in order to maintain conformity in the model and with its theoretical considerations, these constructs were considered separately.

For the examination of cross loadings, all indicators loaded highest in their expected factors (see Appendix F). Although there were some cases of cross-loading, these were not considered significant. In short, the research model exhibits acceptable discriminant validity.

Table 5.10: Construct correlation

	USB	ATR	RISK	RTN	TRS	FAM	AT_ ST	AT_ BR	INT_ INV	INT_ RTN
USB	**.889***									
ATR	.778	**.901**								
RISK	-.567	-.439	**.847**							
RTN	.736	.685	-.550	**.874**						
TRS	.748	.616	-.448	.752	**.830**					
FAM	.216	.133	-.306	.230	.345	**.879**				
AT_ST	.848	.792	-.561	.809	.727	.229	**.828**			
AT_BR	.270	.258	-.292	.372	.408	.889	.363	**.904**		
INT_INV	.758	.681	-.564	.867	.777	.321	.828	.441	**.931**	
INT_RTN	.661	.539	-.436	.684	.667	.258	.639	.335	.748	**.910**

* Diagonal elements are square roots of AVE.

5.6 Structural model evaluation

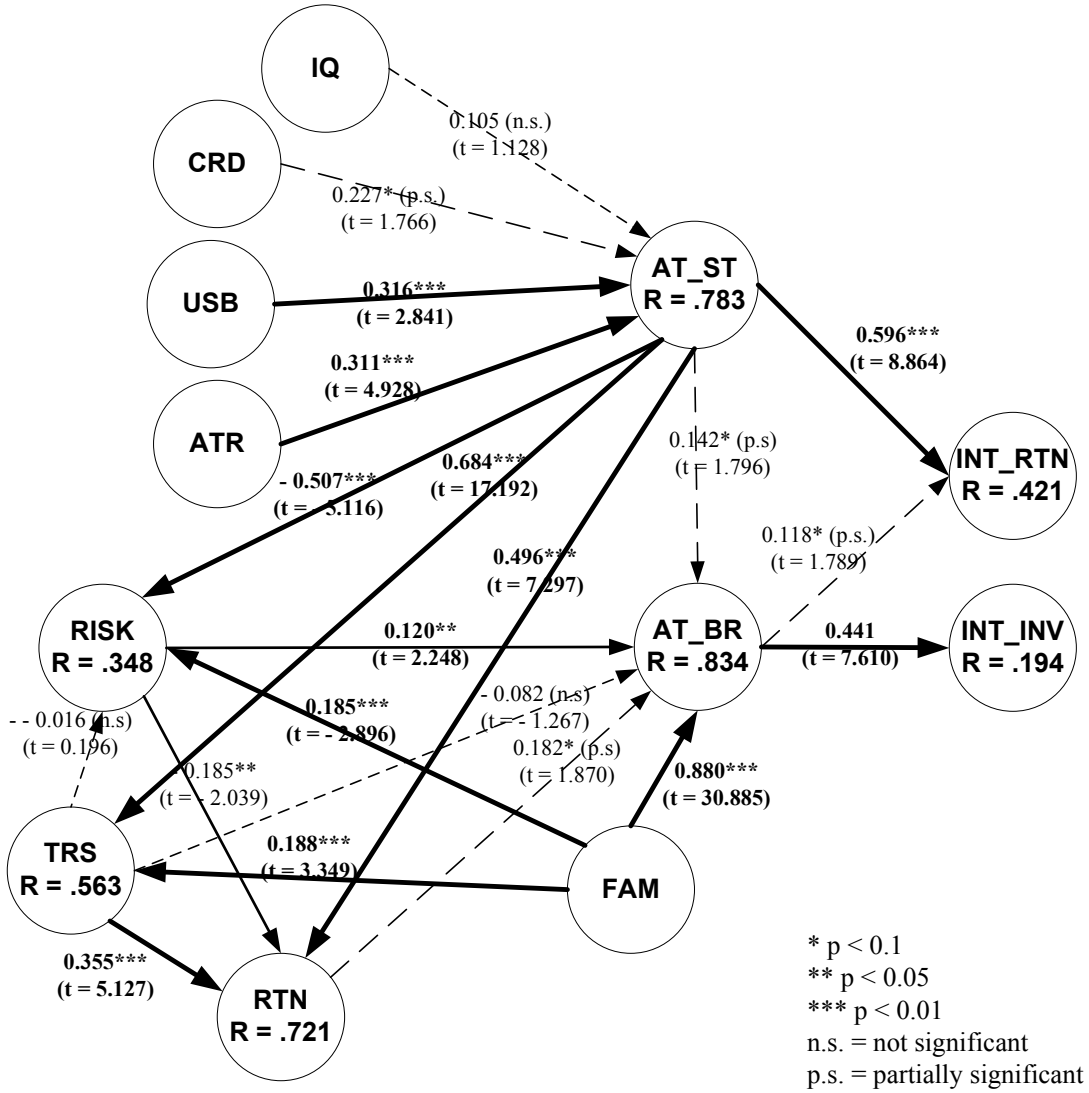
The research model used in this study contains twelve latent variables which need to be analysed using an appropriate method that captures estimation of their scores. Therefore, a PLS algorithm was first performed on the model to estimate loadings of the indicators (as reported in Table 5.7) and their weights (path coefficients). The strength of the structural model was then evaluated using a bootstrapping procedure with 500 re-samples (Chin 1998). The results are discussed in the following sub-sections.

5.6.1 Structural (inner) model

Using a bootstrapping method with 500 re-samples yielded the results given in Figure 5.2. According to t-value estimates from this bootstrapping process, there are three paths which are not statistically significant including the paths of IQ → AT_ST, TRS → RISK and TRS → AT_BR, whereas the paths of CRD → AT_ST, RTN → AT_BR, AT-ST → AT_BR and AT_BR → INT_RTN can be considered as 'partially significant' at the 10 percent level of significance. As for the remaining significant paths, their directions are in accordance with the stipulated hypotheses, except for RISK → AT_BR path which turns out to be positive instead of negative. Furthermore, variances shown in circles are deemed either 'substantial' or 'moderate', except for INT_INV. Although the variance of 19.4% for INT_INV is considered weak (Chin

1998), it has been seen as satisfactory in the present study due to the endogenous variable only having one exogenous variable (AT_BR).

Figure 5.2: Results of the structural model



As shown in Figure 5.2, the research model of this study significantly explains 42.1% variation in the INT_RTN construct, with AT_ST playing a far more dominant role than AT_BR. Further, the model explains 19.4% variation on the INT_INV construct, which is also significant at 5% level of confidence. As for the AT_BR construct, FAM explains the majority of its variation ($\beta = 0.880$), followed by RISK and RTN. FAM was also found to be an antecedent of RISK and TRS. At a five percent level of significance, the results show that the direct effect of AT_ST on AT_BR is not significant and fails to carry over through the mediation effect of the

three brand evaluative constructs. In addition, the 19.3% variation in INT_INV explained by the AT_BR construct seems moderate. These cast a doubt onto the mediation role of AT_BR in predicting investors' intention to invest, which in effect supports the need to carry out a complete mediation analysis on the model (see 5.8).

5.6.2 Model fit

In PLS path modelling, variance explained (R^2) has been used to assess the fit of a research model. More recently, some researchers have also included predictive relevance (Stone-Geisser's Q^2) and *goodness of fit* (GoF, cf. Tenenhaus, Vinzi, Chatelin & Lauro 2005) as additional model fit assessment measures. As clearly seen in Table 5.11, the model satisfactorily explains the variance of INT_RTN (42.1%), whereas the variance explained for INT_INV appears reasonable (19.4%). Furthermore, the remaining endogenous latent variables explained by the model were all found to be substantial (AT_ST = 78.3%, AT_BR = 83.4%, RISK = 34.8%, TRS = 56.3% and RTN = 72.1%). In addition, based on the categorisation by Cohen (1988), and using 0.50 as cut-off point for AVE (Fornell & Larcker 1981), GoF criteria for small, medium and large sizes would be 0.1, 0.25 and 0.36. Therefore, for the current model, GoF of 0.7677 is considered as good. Here, Ringle, Wende and Will (2009) assert that GoF around 0.50 can be considered as 'moderate'.

To obtain the cv-redundancy (Q^2), a blindfolding procedure was run in SmartPLS (see Table 5.12). As indicated by Chin (1998), a Q^2 value of greater than zero has predictive relevance, so Q^2 of 0.4642 is considered far greater than this heuristic. The blindfolding procedure also provided the results for cv-communality (H^2), which can be used to indicate the fit of the measurement model (Guenzi, Georges & Pardo 2009). The results in Table 5.12 show the research model having better a measurement model (H^2 = 0.757978) than the structural model (Q^2 = 0.464246). Overall, the research model exhibits acceptable fit and high predictive relevance.

Table 5.11: Model fit statistics

Construct	Structural Model		
INT_INV	0.194332[a]	(0.866207)[b]	0.167612[c]
INT_RTN	0.420577	(0.828175)	0.054178
AT_ST	0.783306	(0.685595)	0.271884
AT_BR	0.833511	(0.817062)	0.067743
RISK	0.348020	(0.717926)	0.219297
TRS	0.562530	(0.688841)	0.358966
RTN	0.721425	(0.763065)	0.423909
COG_AT_ST	0.938850	(0.790545)	0.741989
AFT_AT_ST	0.678662	(0.847454)	0.570050
IQ	-	(0.667425)	-
CRD	-	(0.565701)	-
USB	-	(0.789697)	-
ATR	-	(0.812278)	-
FAM	-	(0.773100)	-
Average	0.781662	0.753997[d]	0.319514
GoF[e]	**0.767705**		

a = variance explained, b = communality, c = redundancy, d = computed as a weighted average of the different communalities with the weights being the number of manifest variables per construct (Guenzi, Georges & Pardo 2009, p.306; Tenenhaus et al. 2005, p.180).
e = GoF equals √ [(average communality) x (average R^2)].

Table 5.12: Additional model fit statistics

Construct	Model Quality	
INT_INV	0.866059[a]	(0.164356)[b]
INT_RTN	0.828262	(0.345104)
AT_ST	0.685621	(0.531548)
AT_BR	0.817056	(0.663847)
RISK	0.717857	(0.248576)
TRS	0.688704	(0.379256)
RTN	0.762930	(0.542735)
COG_AT_ST	0.790583	(0.737077)
AFT_AT_ST	0.847509	(0.565719)
IQ	0.665246	(-)
CRD	0.566870	(-)
USB	0.789623	(-)
ATR	0.812219	(-)
FAM	0.773151	(-)
Average	0.757978	(0.464246)

a = cv-communality, b = cv-redundancy

5.6.3 Path effects

The results of the structural model show that most of the causal paths are statistically significant. These so-called *direct* effects were then added to *indirect* effects in order to obtain the *total* effects. Particularly, this study was concerned with examining the total effects of AT_ST on INT_RTN, FAM on AT_BR, and brand evaluative constructs on AT_BR. These results are presented in Table 5.13 below.

Table 5.13: Total effects

	Correlation	Direct	Indirect	Total	Spurious
AT_ST → INT_RTN	0.639	0.596**	0.02	0.616**	0.043
FAM → AT_BR	0.889	0.880**	- 0.022	0.858**	0.031
RISK → AT_BR	-0.292	0.120*	- 0.022	0.098	- 0.390
TRS → AT_BR	0.408	- 0.082	0.060	-0.022	0.430

* significant at $p < 0.05$, ** significant at $p < 0.01$

Except for the relationship between RISK and AT_BR, the total effects of between-constructs paths do not alter their relationships in terms of statistical significance, as indicated from the earlier structural model assessment (see 5.6.1). The effect of RISK on AT_BR became insignificant after considering the total effect. In other words, even though in the structural model assessment, the direction of the RISK → AT_BR path was not as hypothesised, their relationship was found to be insignificant after taking into account the indirect effect through RTN. As for the relationship between TRS and AT_BR, it remains insignificant even after considering indirect effects. Lastly, the significant correlation between TRS and AT_BR was found to be largely caused by spurious effects.

5.7 Hypothesis testing

The results from the structural model affirm that the two attitudinal constructs (AT_ST and AT_BR) have significant effects on behavioural intentions. Particularly, it was found that AT_ST was significantly positively related to INT_RTN, and AT_BR was positively related to INT_INV. For IR Website evaluative constructs, both formative constructs of IQ and CRD were not found to be significant antecedents of AT_ST, whereas for brand evaluative constructs, none of them is significantly related to AT_BR. Furthermore, the proposed hypotheses of brand familiarity relationships were

all supported except for the FAM – RTN relationship. The summary of hypothesis testing in this study is given in Table 5.14.

Table 5.14: Results of hypothesis testing

	Hypothesis	**Results** (Significant at $p < 0.05$)
H1a	Information Quality is positively related to Attitude towards IR Websites.	Not supported
H1b	Credibility is positively related to Attitude towards IR Websites.	Not supported
H1c	Usability is positively related to Attitude towards IR Websites.	Supported
H1d	Attractiveness is positively related to Attitude towards IR Websites.	Supported
H2a	Perceived Risk is negatively related to Perceived Returns.	Supported
H2b	Trust is negatively related to Perceived Risk.	Not supported
H2c	Trust is positively related to Perceived Returns.	Supported
H3a	Perceived Risk is negatively related to Attitude towards Brand.	Not supported
H3b	Trust is positively related to Attitude towards Brand.	Not supported
H3c	Perceived Returns is positively related to Attitude towards Brand.	Not supported
H4a	Brand Familiarity is positively related to Attitude towards Brand.	Supported
H4b	Brand Familiarity is negatively related to Perceived Risk.	Supported
H4c	Brand Familiarity is positively related to Trust.	Supported
H5a	Attitude towards IR Website is negatively related to Perceived Risk.	Supported
H5b	Attitude towards IR Website is positively related to Trust.	Supported
H5c	Attitude towards IR Website is positively related to Perceived Returns.	Supported

Table 5.14: Results of hypothesis testing (continued)

	Hypothesis	Results (Significant at $p < 0.05$)
H6	Attitude towards IR Website is positively related to Attitude towards Brand.	Not supported
H7	Attitude towards Brand is positively related to Intention to Invest.	Supported
H8a	Attitude towards IR Website is positively related to Intention to Return to IR Website.	Supported
H8b	Attitude towards Brand is positively related to Intention to Return to IR Website.	Not supported

5.8 Mediation analysis and competing model

As introduced in Chapter 3, the original research model was based on the DMH model which assumes a full mediation effect of attitudinal constructs. In order to test this assumption, a mediation analysis was conducted. The results from this analysis were expected to provide the basis for a 'competing' model which might better explain the effectiveness of the IR website phenomenon (as perceived by individual investors) than the initial research model.

5.8.1 Mediation analysis

As conceptualised in the initial research model (Figure 3.2), the effects of evaluative constructs on behavioural intentions are mediated by attitudes. To test this mediation effect, four rules of mediation were followed (Baron & Kenny 1986). For instance, in order for AT_ST to mediate the effect of IQ on INT_RTN, the following four conditions must hold true: (1) the IQ → INT_RTN path should be significant; (2) the IQ → AT_ST path should be significant; (3) the AT_ST → INT_RTN path should be significant after controlling IQ and; (4) the IQ → INT_RTN path should become insignificant after controlling AT_ST. In other words, the original research model with full mediation effects of attitudes needed to be compared with a partial mediation model and a no-mediation model in order to test the mediation effect. For example, in the partial mediation model, an additional path from IQ to INT_RTN has been included, whereas in a no-mediation model an additional IQ → INT_RTN path was included while omitting the originally assumed AT_ST → INT_RTN path. The results of this analysis are shown in Table 5.15.

Table 5.15: Structural models of alternative models

		Full Mediation R^2 and β	Partial Mediation R^2 and β	No Mediation R^2 and β
IQ, CRD, USB & ATR on INT_RTN	INT_RTN ($\mathbf{R^2}$)	0.421	0.497	0.491
	AT_ST ($\mathbf{R^2}$)	0.784	0.782	0.782
	AT_ST→INT_RTN	0.596*	0.159	N/A
	IQ→AT_ST	0.105	0.084	0.083
	CRD→AT_ST	0.227	0.236	0.237
	USB→AT_ST	0.316*	0.321*	0.318*
	ATR→AT_ST	0.311*	0.317*	0.321*
	AT_BR→INT_RTN	0.118	0.085	0.098
	IQ→INT_RTN	N/A	0.048	0.059
	CRD→INT_RTN	N/A	0.300	0.329*
	USB→INT_RTN	N/A	0.219	0.277
	ATR→INT_RTN	N/A	- 0.023	0.026
RISK, TRS, RTN & FAM on INT_INV	INT_INV ($\mathbf{R^2}$)	0.194	0.807	0.804
	AT_BR ($\mathbf{R^2}$)	0.834	0.833	0.838
	AT_BR→INT_INV	0.441*	0.137*	N/A
	RISK→AT_BR	0.120*	0.119*	0.117*
	TRS→AT_BR	- 0.082	- 0.083	- 0.084
	RTN→AT_BR	0.182*	0.181	0.178*
	FAM→AT_BR	0.880*	0.881*	0.887*
	AT_ST→AT_BR	0.143	0.142	0.137
	RISK→INT_INV	N/A	- 0.112*	- 0.099
	TRS→INT_INV	N/A	0.258*	0.252*
	RTN→INT_INV	N/A	0.575*	0.610*
	FAM→INT_INV	N/A	- 0.053	0.067

* Significant at $p < 0.05$.

As indicated in Table 5.15, the mediation analysis performed on the first behavioural intention variable, INT_RTN, revealed support for the original full mediation effect. Although both partial mediation and no-mediation models have explained more variation in INT_RTN than the full mediation model, the direct effects of independent variables on INT_RTN were not significant, except for the CRD→INT_RTN path. Furthermore, although the effect of AT_ST became insignificant in the partial mediation model, none of the direct effects from the evaluative constructs towards INT_RTN were significant. This suggests that the

original full mediation effect of AT_ST on INT_RTN should be kept. However, one main concern about these results is that in any models, IQ did not play a significant role in causing the endogenous variables.

For the second behavioural intention variable, INT_INV, the mediation analysis suggested that both partial mediation and no-mediation models were better than a full mediation model (R^2 of 0.807 and 0.804 respectively). Since the path between AT_BR and INT_INV remained significant, albeit lower than in the original model, while the direct paths from brand evaluative constructs (except FAM) became significant, this suggested a partial mediation (Baron & Kenny 1986). At f^2 of 0.7605, its effect size is considered as significantly high[6] (Chin 1998; Konradt, Christophersen & Schaeffer-Kuelz 2006) with a Pseudo F value[7] of 97.35.

5.8.2 The competing model

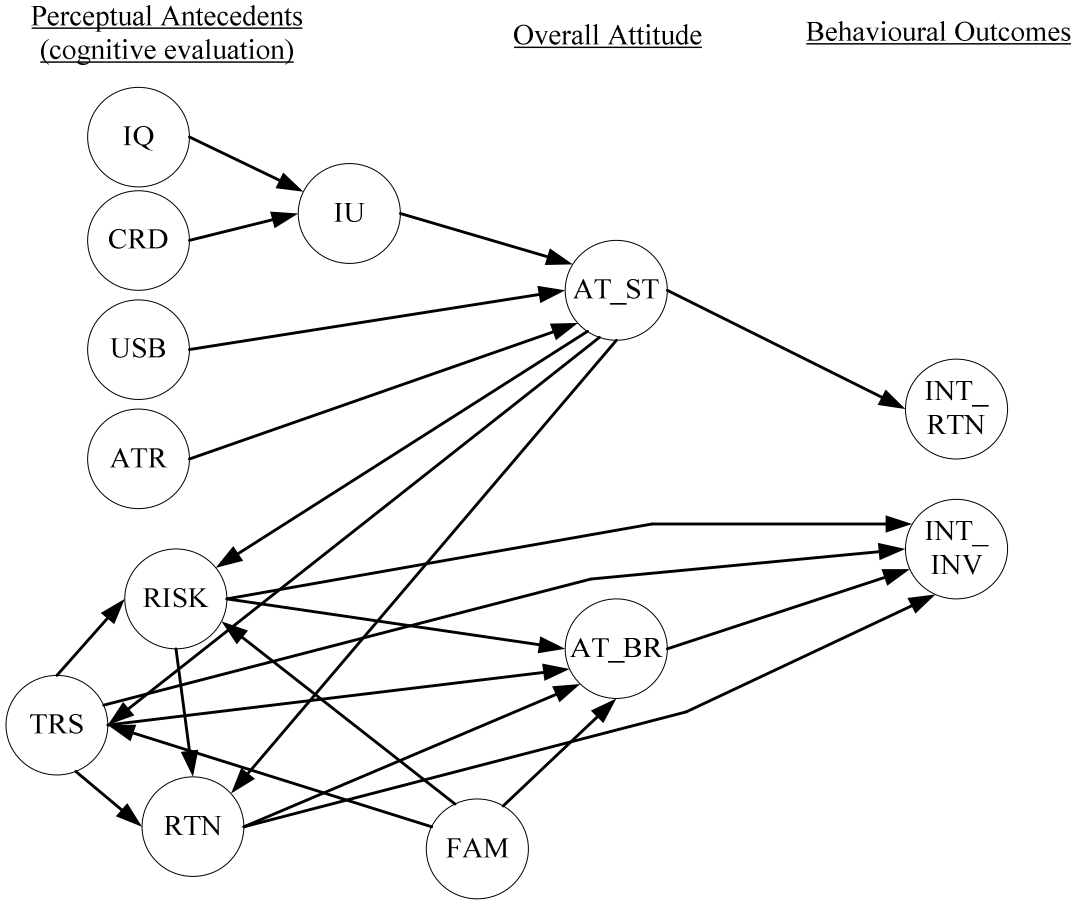
Through the mediation analysis 5.8.2, the original model was revised to include partial mediation effect of attitude between brand evaluative constructs and Intention to Invest, with the path from FAM to INT_INV omitted. The direct path from AT_BR to INT_RTN was also omitted, since it was not significant in any of the three models.

Prior to the formation of the competing model, a higher-order conceptualisation for the IQ and CRD constructs was proposed. This was thought appropriate because losing information related to these constructs seemed to contradict the theoretical concepts which are deemed more important than path significance in formative constructs (Rositter 2002). In the original research model, these constructs were treated as individual antecedents of AT_ST. Here, a hierarchical higher order approach was applied to them, similar to the operationalisation of the AT_ST construct; only this time, the causal direction was formative. The second order construct formed by IQ and CRD was named *information usefulness* (IU) which is analogous to the concept of *perceived usefulness* in the *technology acceptance model* (TAM, cf. Davis, FD 1989). The competing model is shown in Figure 5.3.

[6] f^2 is calculated as $(R^2_{Revised} - R^2_{Original}) / (1 - R^2_{Original})$. See Gefen et al. (2000).
[7] Pseudo F = f^2 (n – k – 1) where n is the sample size and k is the number of exogenous variables (Mathieson, Peacock & Chin 2001). Pseudo F is significant at 0.01 when F-value > 6.83.

Note that this approach of having a composite latent variable such as IU is consistent in many TAM studies that predict website use, which have operationalised IQ as an antecedent of perceived usefulness, but not as a separate dependent variable of attitude (e.g. Ahn, Ryu & Han 2007; Gefen et al. 2003; Lederer, Maupin, Sena & Zhuang 2000; Shih 2004).

Figure 5.3: The competing model



Structural model results of the competing model are presented in Table 5.16. This model is able to explain 40.9 percent variation in INT_RTN and 80.7 percent variation in INT_INV. As the only independent variable causing INT_RTN, AT_ST has a path coefficient of 0.640. As for exogenous variables of INT_INV, the most dominant variable is RTN (β = 0.590) which is followed by TRS (β = 0.252) and RISK (β = - 0.105). This competing model has a high GoF of 0.6723, high measurement fit of 0.7502, and moderate structural fit of 0.5222 (see Appendix G for details of fit analysis). In addition, this model is more reliable than the proposed research model, with f^2 = 0.7605 for INT_INV and f^2 = - 0.0207 for INT_RTN. Although there is a

reduction in variance explained in INT_RTN due to omitting the AT_BR→INT_RTN path, its effect size of 0.0207 is very small (Cohen 1988).

Table 5.16: Model of fit of competing model

Path	**coefficient**	**t – value** (500 re-samples)
IU → AT_ST	0.341*	2.865
USB → AT_ST	0.297*	2.425
ATR → AT_ST	0.311*	5.030
AT_ST → INT_RTN	0.640*	8.873
RISK → AT_BR	0.095	1.956
TRS → AT_BR	- 0.045	- 0.825
RTN → AT_BR	0.253*	2.956
FAM → AT_BR	0.879*	32.605
RISK → INT_INV	- 0.105*	- 1.987
TRS → INT_INV	0.252*	3.623
RTN → INT_INV	0.590*	7.461
AT_BR → INT_INV	0.088*	2.163
$\mathbf{R^2}$: INT_RTN = 0.409, INT_INV = 0.807 **GoF** = 0.6453 , $\mathbf{H^2}$ = 0.7502 , $\mathbf{Q^2}$ = 0.5222		

* significant at $p < 0.05$.

5.9 Chapter Summary

This chapter has described the collection of survey responses, the process of data refinement, established measurement reliability and validity, and presented the results from EFA, PLS path modelling and hypothesis testing. The initial findings provide support for the research model used in the present study through adequate measurement reliability and model validity. The majority of the stipulated hypotheses were also supported. Nevertheless, due to moderate variances in behavioural intention variables being explained by the model, a mediation analysis was run to examine possibilities of alternative models that better explain the investors' behaviours. The dual mediation effect which was originally assumed to hold in the IR phenomenon actually lacked fit when compared to the new competing model. By omitting several insignificant paths and conceptualizing a full mediation effect of AT_ST with a partial mediation effect for AT_BR, this alternative model has shown an improved model fit with more reliable predictive ability. Discussions and implications of the findings presented in this chapter are covered in the next chapter.

CHAPTER 6
DISCUSSION OF RESULTS AND CONCLUSIONS

6.1 Introduction

The primary objective of this study has been to examine the applicability of an attitude mediation model in a share investment context, through investigating the mediating effects of attitudes towards IR websites and attitudes towards brands on investors' behavioural intentions. In doing so, this study has identified and tested several perceptual antecedents of these two types of attitudes. The study has drawn upon the Dual Mediation Hypothesis (DMH) model which has been extensively validated in a marketing context, where a consumer's intention to purchase a product is believed to be affected by his/her cognitive evaluation of the product's brand and its persuasive messages via the mediating effects of attitudes. This led to the conceptualisation of the research model used in this study.

A self-report survey approach was chosen to gather individual investors' perceptions about companies' IR Websites and brand images. These perceptions were then analysed to address the main research questions and validate the proposed research model. As real retail investors would have been difficult to access and encourage to participate in the survey, the unit of analysis has been derived from students with relevant knowledge in investment. Careful steps were followed to increase external reliability of responses given by these students, which included the administration of a share evaluation assignment to encourage more informed involvement in their simulation of actual investors, and the measurement of the extent of their involvement in the simulation. A PLS path modelling analysis was then used to validate the proposed model and test the stipulated hypotheses. In this context, the purpose of this chapter is to discuss and draw conclusions from the study results. Theoretical and practical implications of these findings are also suggested, and limitations of the study considered.

6.2 Overview of the findings

In analysing the 136 responses from student volunteers, the key findings from this research reveal that the dual mediation role of Attitude towards IR Websites (AT_ST) is moderately present in the context of share investment, and that Attitude towards Brand (AT_BR) moderately affects investors' intention to invest in a particular share. These, in effect, answer the first research question of applying the DMH model in a share investment context. Next, details of study results and discussions of results pertaining to the remaining research questions are structured into individual sub-sections. Here, it is worth recapitulating the six research questions addressed in this study as:

1. Can the Dual Mediation Hypothesis (DMH) model be used to predict investors' behavioural intentions in the context of Investor Relations (IR) websites?
2. Can Information Quality (IQ), Credibility (CRD), Usability (USB) and Attractiveness (ATR) be conceptualised as perceptual antecedents of Attitude towards IR Websites (AT_ST)?
3. Can Perceived Risk (RISK), Perceived Returns (RTN) and Trust (TRS) be conceptualised as perceptual antecedents of Attitude towards Brand (AT_BR)?
4. To what extent does Brand Familiarity (FAM) relate to Attitude towards Brand and its perceptual antecedents?
5. Does Attitude towards IR Website mediate the effect of its perceptual antecedents on Intention to Return (INT_RTN) to the site?
6. Does Attitude towards Brand mediate the effect of its perceptual antecedents on Intention to Invest (INT_INV)?

6.2.1 The research model (answer to research question 1)

The original research model (Figure 3.2) explains 19.4% and 42.1% variations of INT_INV and INT_RTN, respectively. This suggests that an attitude mediation model, which has been extensively used in the marketing context when assessing the effectiveness of persuasive messages, can also be applied in the IR website phenomenon as a persuasive tool in courting investors. However, the results of the original research model reveal an insignificant effect of AT_ST on AT_BR, suggesting that in the IR website context, the mediation effect that predict INT_INV only comes from brand attitude. This points to the persuasive role of an IR website only affecting the evaluation of a brand, but not directly influencing brand attitude when an investor

considers a brand for investment purposes. This also intimates that none of the remaining three attitude mediation models of MacKenzie et al. (1986), including the Affect Transfer Hypothesis (AFT), Reciprocal Mediation Hypothesis (RMH) and Independent Influences Hypothesis (IIH) is any better than the DMH itself. However, since the mediation role of AT_ST is present in influencing the cognitive evaluation of a brand, this still supports the use of an attitude mediation model in the share investment context.

The results of this study indicate that the peripheral route of persuasion is not followed by investors. This is consistent with Haugtvedt, Petty and Cacioppo (1992), who noted that highly involved consumers prefer the central route to the peripheral route when evaluating a brand. Here, investors can be regarded as highly involved consumers, because evaluation of a brand as an investment choice depends on careful considerations of the future financial implications that might befall them. Furthermore, the results of further mediation analysis reveal a partial mediation effect of AT_BR, suggesting that investors are users with a high need for cognition.

With regard to the predictive power of the research model, both attitudinal constructs moderately predict the behavioural intentions of investors. Note that the research model replaced 'purchase intention' in the original DMH model with two intentions: Intention to Invest (INT_INV) and Intention to Return to IR Website (INT_RTN). One can view INT_INV as more 'utilitarian' in nature than INT_RTN. Brand attitude, as the sole determinant of INT_INV explains only 19.4% variation in the dependent variable. It also fails to significantly predict INT_RTN. On the other hand, INT_RTN is significantly predicted by AT_ST as hypothesised. The results suggest that the original DMH model can be extended to include an additional effect path from the attitude towards a persuasive message (e.g. website) to the outcome of behavioural intention, which is a similar independent effect path to that conceptualised in the IIH model. This is consistent with the approach adopted by Karson and Fisher (2005) in their examination of the effectiveness of e-commerce websites as measured by consumers' intentions to return to these websites by extending the original DMH model. In the present study, when the dependent variable was divided into two forms, brand attitude was found to only predict the more utilitarian behavioural intention, whereas AT_ST significantly predicts INT_RTN, as expected.

This study contends that specific investors' behavioural intention should be considered when assessing the effectiveness of an IR website. This is because, it would be too optimistic for companies to expect increased investment in their shares as a result of investors' first visits to their IR websites. In this situation, this study found that attitudes towards IR website can predict investors' intention to reuse the website in the future. This is consistent with earlier findings examining the effectiveness of a particular website according to users' intention to return to that website (Cabezudo et al. 2007; Chen, Q & Wells 1999; Coyle & Thorson 2001; Karson & Fisher 2005; Li et al. 2006).

In short, the DMH model partially explains the phenomenon of IR website effectiveness. It was found that the effect of attitude towards IR website only influences brand cognitive evaluation, but the effect does not carry over to brand attitude. This is consistent with MacKenzie and Lutz (1989) who found the strong effect of attitude towards advertisement on brand perceptions does not continue to AT_BR. Mediocre results are also seen in the predictive power of the model when only small variations in the behavioural intentions are observed from using the model. These findings then led the study to further analyse the mediation effects of attitudinal constructs and to come up with a rival model, while at the same time answering research questions 5 and 6 (see 6.2.3).

6.2.2 Effects of antecedent variables (answers to research questions 2, 3 & 4)

In accommodating the fairly standardised informational needs of investors, the original DMH model of MacKenzie et al. (1986) has been modified to include specific antecedents of attitudinal constructs. In this respect, this study followed the idea of *central processing of advertisement* and *brand perceptions* in MacKenzie and Lutz (1989). Based on extant literature, Information Quality (IQ), Credibility (CRD), Usability (USB) and Attractiveness (ATR) have been conceptualised as the antecedents of AT_ST, whereas Perceived Risk (RISK), Trust (TRS) and Perceived Returns (RTN) have been conceptualised as the antecedents of AT_BR. In addition, due to the increasing importance of brand awareness in predicting consumers' behaviours (Aspara & Tikkanen 2008; Engstrom & Westerberg 2003; Huberman 2001), Brand Familiarity (FAM) has been added to the research model.

In answering research question 2, it was found that USB and ATR are significant antecedents of AT_ST but IQ and CRD are not. With respect to USB and ATR, the results here are consistent with many previous studies that found usability (or ease of use) and attractiveness (or playfulness) as significant antecedents of attitudes (Ahn et al. 2007; Cao et al. 2005; Chen, K & Yen 2004; Chen, Q et al. 2002). However, failing to support the importance of the websites' substance (information) seemed to contradict many studies in related areas (Aladwani & Palvia 2002; Agarwal & Venkatesh 2002; Banati et al. 2006; Schaupp et al. 2006; Wang, RY & Strong 1996). Here, the results suggest that the quality and credibility of information available on companies' IR websites do not affect users' attitudes towards the sites, but rather it is both the ease of using such information and how well it is presented that directly affect their attitudes.

At a glance, these results seem to be inconsistent with the extant literature on website acceptance. For instance, Ahn et al. (2007) found that IQ, despite being an antecedent of usefulness, also had a significant direct effect on attitude, whereas Lafferty et al. (2002) found source credibility to be a significant determinant of attitude towards advertisement. Conversely, Grantham and Vieira Jr (2008) found no evidence to support perceived message credibility as having a direct effect on attitude towards ecotourism. Similarly, Yoo, C and MacInnis (2005) found the direct effect of credibility on attitude towards informational advertisement not significant. These findings would appear to support the contention that, in specific contexts like ecotourism, informational persuasive messages and IR websites, message credibility alone may not be strong enough for users to form a positive attitude towards the context. Therefore, in this study, a combination effect of credibility and information quality has been taken into consideration when proposing a competing model (Figure 5.3). Here, when a higher order latent variable of *Information Usefulness* manifested by IQ and CRD was conceptualised in the model, the effect of this combined latent variable was significant in forming AT_ST (see 5.8.3 for details). Note that this approach is consistent with many TAM studies that predict website use, which have operationalised IQ as an antecedent of perceived usefulness, but not as a separate dependent variable of attitude (Ahn et al. 2007; Gefen et al. 2003; Lederer et al. 2000; Shih 2004).

In answering research question 3 regarding investors evaluating a brand for making their investment decisions, several antecedents have also been proposed for AT_BR. The study findings have revealed that only the effect of RISK has a significant positive effect on brand attitudes. Nevertheless, when total effect was taken into consideration, this positive effect of RISK diminished and became insignificant. As a result, none of the hypotheses tested on the relationships between the three brand evaluative variables (RISK, RTN & TRS) and AT_BR were supported. These findings seemed to contradict existing literature. For example, in a study of business process outsourcing, Gewald, Wullenweber and Weitzel (2006) found that perceived risk is negatively related to the attitudinal construct, whereas Delgado-Ballester and Munuera-Aleman (2001) and Flavian, Guinaliu and Gurrea (2006) found that brand trust is positively related to brand loyalty, rather than brand attitude. However, although failing to support the hypotheses of research question 3, these findings are relevant for analysing the mediating effect of brand attitude on predicting investors' intention to invest in addressing research question 6.

When addressing research question 4, Brand Familiarity was found to be the sole antecedent of Attitude towards Brand, as well as a determinant of RISK and TRS. This result indicates that, in the context of share investment, brand evaluative constructs are not the determinants of attitude towards brand whereas brand familiarity is. Attitude, as an emotional construct, is better predicted by affective constructs such as brand familiarity than cognitive constructs including RISK, TRS and RTN. The results also suggest that investors' perceived risk and perceived trust on certain brands are subject to their familiarity with those brands. This is consistent with Park and Stoel (2005), who found support for a significant positive effect of brand familiarity on perceived risk. However, it challenges results from Ha and Perks (2005) who found no significant effect of brand familiarity on trust. Results on the effects of these brand perceptual antecedents also advocate that their effects on INT_INV may not be mediated by attitudes. Therefore, a mediation analysis was also conducted, which was required in order to address research questions 5 and 6.

6.2.3 Mediation effects of attitudes (answers to research questions 5 & 6)

The mediation analysis performed on the research model revealed two key findings:

1. INT_RTN is predicted by a full mediation model as proposed in the original research model; and
2. INT_INV can be better predicted in a partial mediation model than a full mediation one.

In other words, the full mediation effect of attitude only presents in the 'soft' dependent variable, INT_RTN, whereas the 'hard' dependent variable, INT_INV, can be predicted by direct paths from brand evaluative constructs as well as by a mediated-path via brand attitude.

IR website evaluative perceptions, namely Information Quality, Credibility, Usability and Attractiveness, are regarded as important for investors to form positive attitudes towards an IR website before they are convinced to reuse that website in the future. This finding is consistent with Karson and Fisher (2005), who observed that cognitive responses towards e-commerce websites affect intention to return to those websites at a later date via the mediating role of website attitude. On the other hand, the mediating role of brand attitude, although significant (t = 2.163), is substantially weaker than the direct effects of brand perceptions on investment intention, which support the standard finance theory that suggests the trade-off between expected risks and returns as determinants of an investment decision (Markowitz 1952; Zhou & Pham 2004). Note however that the direct effect of brand familiarity on investment decision in this study is almost non-existent and remained the dominant determinant of brand attitude. As a result of this complete mediation analysis, a competing model that better explains the phenomenon of IR websites in respect to investors' behavioural intentions has been produced.

6.2.4 The competing model

Following the mediation analysis, this study has produced a competing model to better explain investors' behavioural intentions. The competing model shown in Figure 5.3 explains 80.7% and 40.9% variations in INT_INV and INT_RTN respectively. Overall, this model is far superior to the original research model, especially with regard to its predictive ability in investment intention, which resulted in a large effect size, f^2 of 0.7605.

This competing model has omitted two original paths including AT_ST → AT_BR and AT_BR → INT_RTN, as well as conceptualising a second-order latent variable of perceived information usefulness, which is made up of IQ and CRD. By doing so, this model assumes only the single mediation role of Attitude towards IR website on brand attitude, which carries through the brand evaluative perceptions. However, these carry-over effects of AT_ST via brand evaluative perceptions remain insignificant in affecting AT_BR, which has been predominantly influenced by brand familiarity. In other words, even though this model shows that brand attitude can predict investment intention, the effect comes mostly from brand familiarity, but not from brand evaluative constructs. This finding supports the influential nature of brand familiarity in a share investment context, but only through the mediation effect of brand attitude.

Interestingly, among the three brand evaluative constructs, Perceived Returns has the most dominant influence on investment intention, with a t-value of 7.461, which is followed by trust (t = 3.623) and perceived risk (t = -1.987). In extant finance literature, investors are recognised as decision makers who are mainly loss-averse and subject to 'negativity bias' (Kahneman & Tversky 1984; Weber, EU 1994; Weber, EU & Milliman 1997). To them, losses loom larger than gains and negative cues weigh more heavily than positive cues. However, the dominant influence of expected returns over perceived risks in specific investment settings has also been noted in literature. For example, Cianci and Falsetta (2008) assert that in non-retirement accounts, such as those where investors evaluate individual shares, the investors focus on promotion rather than prevention, which drives them to be more sensitive to potential gains than to potential losses.

In short, the original DMH model used to predict behavioural intentions of individual investors casts some doubt on its validity, due to both its moderate predictive ability and to not allowing sufficiently for the effect of attitude towards persuasive message (IR website) on brand attitude. Therefore, a competing model has been proposed. Due to its high predictive ability and good model fit, the new model still supports the idea of predicting investors' behaviours using an attitude mediation model. The implications of the overall findings of this study, especially the results of the competing model, are discussed next.

6.3 Findings implications

As the use of Internet for corporate communication is constantly evolving and the number of individuals owning shares in most established economies is substantial (abt SRBI 2008; ASX 2007, 2009; Bucks et al. 2009; FESE 2008; Guiso et al. 2003), any research into the area should be valuable to both theory and practice. Here, this study has utilised an attitude mediation model in assessing the effect of IR websites on individual investors' behavioural intentions. However, the appropriateness of using such a model, which commonly suits the context of general marketing, must be evaluated in order to expand the existing body of knowledge in related fields. Similarly, the effectiveness of using corporate websites should be properly assessed in order to justify companies' large investments into designing an ideal IR website.

6.3.1 Theoretical implications

From a theoretical perspective, the implications of this study are manifold. First, this study has employed a marketing model in an investment context. Based on the idea that companies favour their shares to be highly liquid (Macey & Kanda 1990), marketing concepts should be applicable in investor relations. This is because certain strategies are able to court new investors, particularly in the attraction of individual investors who are known to be psychologically affected in their decisions to own and trade common shares (Kyle 1985; Kaniel, Saar & Titman 2008). Similarly, when it comes to finding and using new information, most individual investors tend to overreact and be overconfident in their evaluations of such information (Barber & Odean 2001). Therefore, companies can employ certain strategies when disseminating relevant information on their IR websites and embed certain aesthetics elements in their Website designs which may make the most of these characteristics of individual investors. Clearly, this study has taken a significant leap in its effort to examine the effect of attitudinal constructs on individual investors making informed investment decisions. By applying the DMH model, this study has integrated the concepts of marketing, use of information technology and investor behaviour.

Second, by replacing the commonly used *cognitive responses* with *evaluative perceptions*, this study has identified several specific antecedents related to the two attitudinal constructs. These are Information Quality, Credibility, Usability and Attractiveness as antecedents of Attitude towards IR Websites, and Perceived Risk, Perceived Returns, Trust and Brand Familiarity as antecedents of Attitude towards

Brand. This approach is in tandem with MacKenzie and Lutz (1989) who suggested using scaled indices instead of cognitive responses to mitigate lower reliability problems in later measures. This has, in effect, supported the use of variables normally employed in information systems and behavioural finance fields in marketing attitudinal research. Having identified these specific antecedent variables, these study findings will be of value in assisting future research in related areas, to re-test these variables and identify new ones. In addition, by having two outcome variables, the research model has advanced the use of the DMH model by not relying upon one ultimate outcome – *purchase intention* – alone.

Third, this study has introduced a new competing model which is a modification of the original research model, while retaining the overall idea of attitudinal effects. This new model suggests that Attitude towards IR Website acts as a facilitator of brand evaluation, rather than having a direct effect on brand attitude. This revised model can be regarded as the most important theoretical implication for research in related fields, because it suggests that investors' investment intentions are still strongly determined by the proper financial evaluation of a company, rather than attitude. Furthermore, the effect of brand attitude is mainly the result of brand familiarity, but not the three brand evaluative perceptions. This model also conceptualises both attitudinal constructs to have separate outcome variables. The results show that attitude towards an IR website adequately predicts users' intention to return to the website, whereas attitude towards brand moderately predicts their intention to invest. Therefore, specific outcome variables related to a particular type of persuasive message should first be identified prior to adopting an attitude mediation model.

Finally, this study also has contributed towards important theoretical advancements in respect to data analysis and variable measurements. The original research model has shown that Information Quality and Credibility play weak roles when considered separately; but when they are conceptualised as a higher-order composite variable, together they become a strong determinant of Attitude towards IR Website. Similarly, attitude towards a website is shown to have been made up of two distinct attitudes, affective and cognitive – which also need to be conceptualised as a higher-order combined variable. Lastly, since this study has not been able to make use of any items that were reverse-coded or negatively worded, using such negative questions when measuring perceptual antecedents needs to be carefully considered in

future self-reporting studies. This may be necessary so as not to lose valuable information from respondents' answers.

6.3.2 Practical implications

From a pragmatic perspective, the results of this study have many implications for companies utilising their corporate websites as a tool for not only satisfying the need of their general users, but also courting individual investors. It is no longer relevant to assume that users of IR websites are only expert users such as financial analysts and fund managers. Recent statistics have shown that an increasing number of household investors engage in do-it-yourself (DIY) investment (ASX 2007, 2009). Due to their limited financial resources, these DIY investors tend to use companies' own websites to find information (abt SRBI 2008; Loranger & Nielsen 2003). Therefore, the effectiveness of such IR websites should also be evaluated in terms of how they are perceived by individual investors.

First, prior to designing or redesigning their IR websites, companies should carefully select information that meets the highly-prioritised needs of investors. This can easily be achieved through obtaining feedback from current IR website users, examining uses of specific pages (e.g. via hit counts and web server logs) and from reading related research. From this study, it was found that richness in web content is only appreciated by investors when such content comes from the companies themselves. In other words, content is viewed by its usefulness, and it becomes useful when the source credibility of that content is established. For instance, a strong positive comment made by expert analyst or in a press release posted on a company's website may not necessarily be believed by investors because they may see it as being exaggerated. However, views from the management themselves may, on the other hand, induce high confidence among investors.

Second, once certain information has been selected to be posted on their IR websites, companies should ensure that information can easily be accessed and used by investors. In satisfying the informational needs of different types of investors, companies should balance the information presented for professional industry users with that of individual investors. As for the latter, certain information should be presented in an easily understandable form, with clear information flow and in downloadable formats so that less expert investors can fully digest and comprehend it by being able to read it offline. In addition, individual investors also react positively

towards the aesthetic aspects of IR websites. They appreciate IR websites that are professionally designed by utilising the latest technology. Companies can achieve this by 'benchmarking' their IR websites against those of industry leaders or those that have been recognised by professional bodies such as the ASX and AIRA. Benchmarking does not necessarily mean that investors become bored with typical designs; rather, they find such websites easy to use because they have become familiar with them (Loranger & Nielsen 2003).

Third, even though this study could not find support for a mediating role of attitude towards IR website on brand attitude, it has established the role of website attitude as a facilitator for investors evaluating a brand. This evaluation can then assist in making informed investment decisions. As such decisions are highly dependent on financial considerations, so companies should provide sufficient information on their IR websites to assist investors in making their decisions. Without this information, investors would not be able to form positive intentions towards owning or trading the companies' shares, and would tend to consider alternative venues for seeking information, which eventually diminishes returns to the companies' IR websites.

Fourth, it should be clear to companies that even though the Internet provides some opportunity to select favourable information to appear on their IR websites, individual investors still consider brand evaluative factors as determinants of investment decisions. As found in this study, of the three brand evaluative perceptions, investors' perceived returns is the most important, followed by their perceived trust in the management and directors, and their perceived risk in investing in the companies. These effects on investors' investment decisions are substantially more significant than the effect of brand attitude, which is predominantly made up of brand familiarity. As investors are developing an increasing understanding of the importance of managing a sound investment portfolio, so companies should go back to the basics of strengthening their financial fundamentals.

Fifth, the effectiveness of IR websites should be evaluated by considering the numbers of repeat visits to those websites. This study has shown that positive brand attitudes do not necessarily encourage investors to return to websites in the future, but positive attitudes towards such websites do. This justifies the need to have reliable IR websites, and website designers should also consider that such attitudes are made up of two components: cognitive and affective. The cognitive part of attitude represents investors' evaluation of the website's effectiveness in fulfilling the role that it is

supposed to, whereas the affective part describes investors' overall emotional satisfaction from using that website. Therefore, in designing a good IR website, companies should consider aspects of both information usefulness and aesthetic attributes to encourage investors in forming positive attitudes towards their websites.

6.4 Limitations and future research directions

There are a few limitations to this study. First, the research setting for the study was an educational institution and respondents were limited to undergraduates enrolled in the Investment and Portfolio Management unit of the Faculty of Business and Law at Victoria University. As such, the study may limit the extent to which behaviours can be generalised to individual investors. Typically, the criticism directed at the use of students as subjects for research centres around the argument that students differ from the general population with regard to their perceptions about the phenomenon of interest. Accordingly, in this study various actions have been considered carefully in order to minimise this drawback. Students with specific knowledge in share investment are believed to be interested in the real investment arena in their career lives. This is supported by the majority of respondents positively answering items related to the importance of investment in their lives. A share evaluation assignment was also carried out together with the administration of the survey in order to increase the reliability of their simulation of actual investors evaluating companies for investment purposes. Therefore, they were in a distinct and clear position to provide perceptions about the phenomenon of IR websites.

Note again that the aim of having a high internal validity achieved from using a homogenous group of research subjects is more important than external validity when the main motive of that research is to test a proposed theoretical model (Lynch Jr 1982; McDaniel & Mahan III 2008; Reynolds et al. 2003; Winer 1999), as in the case of this study. However, to further increase the generalisability of the findings, future research could replicate the study's design in testing the perceptions of IR website effectiveness using actual household investors, and in countries other than Australia.

Second, since the research setting used in this study relied upon perceptual measures through the use of a self-reported survey, the study findings may to some degree have been tainted with response bias. Additionally, since the outcome variables assessed in this study were two behavioural intentions of individual investors, a question remained as to whether or not these intentional behaviours will materialise

into actual behaviours. However, for individuals to perform an action, they must first form intentions of performing it, in accordance with the Theory of Planned Behaviour (Ajzen 1985, 1991). Furthermore, in the context of this study, it was expected that obtaining actual behaviours of investors would be practically difficult, as their behaviours involved considerations of using substantial amounts of money. Nevertheless, future research may look for more objective outcome measures of investors' behaviours and this can be achieved through a longitudinal examination of investors' behaviours.

Third, the research model used in this study may not be as comprehensive as it could have been. Among other things, it relied on a number of pre-identified antecedent variables of attitudinal constructs. As such, these antecedents explain only a portion of the variances in the attitudinal constructs and in the outcome variables. There may be other factors which, although not part of this study, may have significant influence on respective attitudes and investors' behaviours. Some examples include information flow, security and past financial performance. Furthermore, the research model did not consider the moderating effects of certain variables such as investors' personality traits about their risk attitudes, expertise and past experience. Therefore, future research may include these suggested variables in order to increase the robustness of the findings.

Fourth, the present study has some weaknesses with respect to the measurements employed in the survey. For instance, even after using scaled indices to measure brand perceptions as suggested by Mackenzie and Lutz (1989), the effects of RISK, RTN and TRS on brand attitude are not significant. This could be an indication that the items used to measure the constructs were not comprehensive and specific. Future research can re-test the study measures and identify new ones. For measuring attitude towards a specific context, this study suggests the use of specific questions such as 'what is your overall opinion on WOW as an investment choice?' In addition, this study only used domestic companies as research targets. As such, investors' awareness within the survey sample may not be too disparate. Future studies may examine the effect of brand familiarity by comparing domestic and foreign companies.

Fifth, the study's findings are based on a modest sample size of 136 responses. Although PLS path modelling adequately handles small sample sizes and generates valid results, it is not as reliable as covariance-based structural equation modelling (SEM) in testing relationships of multiple latent variables. Future research may verify

the findings of this study by employing a larger sample that will permit the use of covariance-based SEM.

Sixth, conclusions drawn in this study are based on a single method – a self-reporting survey using a single set of respondents. Therefore, it leaves open the possibility for common method bias. The test on this bias taken in this study is only one method among many alternatives. Future research should employ additional, more-elaborate measures and multiple methodologies to triangulate the findings of this study.

6.5 Conclusions

Maintaining 'good' market capitalisation has been identified as a major determinant of the survival of publicly traded companies. This is achieved when a company's shares are being actively traded by all types of investors. Since share trading by individual investors is generally more unpredictable than that by professional investors, companies should focus their attention on attracting and retaining them. Individual investors are also known to be psychologically biased and overconfident, tending to overreact to new information. By understanding these characteristics, companies should exploit their IR websites by implementing effective design to encourage repeat use of their IR websites.

While having IR websites is important for any company, practical implementations have shown that mere web presence does not guarantee that these websites will be used and appreciated by the users. Citing the growing significance of effective IR websites in meeting the informational needs of investors and the companies' goals of maintaining highly liquid shares, both academicians and practitioners have called for the identification of the factors that promote desirable investors' behaviours that result from using such websites.

This exploratory research has attempted to fill the void in extant research on website acceptance and investors' behaviours by investigating the role of attitudes in influencing investors' behavioural intentions and the factors affecting those attitudes. Drawing from multiple streams of research including website usability, attitudinal marketing and investor psychology, this study has conceptualised a research model based on the Dual Mediation Hypothesis (DMH) model that has been empirically validated in many marketing studies.

The DMH model is based on the notion that evaluative responses or perceptual antecedents of attitudes only have influence on behavioural intentions through the mediation effect of attitudes. Using 136 responses obtained from an online survey completed by 'relevant' students simulating actual individual investors, this study has validated the research model. However, the initial results revealed partial support for a dual mediation effect in share investment as a result of investors using IR websites. Following this, a revised model has been tested and has produced significantly better results than the original research model. About 80% variance in investment intention and 40% variance in investors' intention to return to the IR websites can be explained by the new model. Here, the most important finding is that attitude towards IR websites does not influence brand attitude, and that brand attitude weakly predicts intention to invest. The large variance in investment intention has been caused by direct effects of brand evaluative perceptions, which include perceived risk, perceived returns and trust. This finding indicates that investors are web users with a high need for cognition, who use IR websites to facilitate their overall investment valuation of particular companies.

With regard to the use of company websites in disseminating investor-related information, results of this study show that when investors perceive an IR website as useful, usable and attractive, positive attitudes towards the site are likely to be formed. As a result, companies can expect increased returns on their IR websites. This provides support for the need to have effective IR websites as facilitators for investors in evaluating a company's financial strengths, which in turn might encourage them to revisit the same websites in future.

Based on these findings, this study has then discussed theoretical and practical implications for the context of IR websites in light of anticipated investors' behaviours from using such websites. Overall, the study results advance existing research in the area of acceptance of specific website type, by shedding light on the perceptual antecedents of attitudes and the effect of these attitudes on particular users of that website. Thus, the research model adopted deepens our collective understanding of the relatively weaker strength of emotional attitudes in inducing investors' behaviours. In addition to contributing to theory, the study findings also yield insights for practice. These insights can be used by companies in designing effective IR websites to encourage repeat uses of such websites by investors who would then form positive attitudes towards the companies as good investment choices.

List of publications

Ali, A & McGrath, MG 2008, 'Extending the dual mediation hypothesis into investor relations websites', paper presented to 2008 ANZAM conference, Auckland, NZ.

Ali, A & McGrath, MG 2010, 'The mediating role of attitudes in re-using investor relations websites', paper presented to 2010 ANZAM conference, Adelaide, Australia.

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APPENDICES

CONSENT FORM FOR PARTICIPANTS INVOLVED IN RESEARCH

INFORMATION TO PARTICIPANTS:

You have been referred to this page in order to participate in the research project entitled 'The Effects of Investor Relations Websites on Investors' Intents'[8]. This project is being conducted by a student researcher, Azwadi Ali as part of his PhD study at Victoria University under the supervision of Professor Michael McGrath from the Faculty of Business and Law, Victoria University.

Two main objectives of the study are to investigate *how effective Australian companies are, in utilizing their web presences to court individual investors* and *whether or not their website designs meet the informational needs of individual investors*.

In order to meet these objectives, you are invited to visit a pre-selected website in order to seek for information deemed to be important in making your investment decision. You are then invited to answer survey questions in the following pages related to your experience from visiting the website.

Your answer to this survey will be kept confidential and will only be used in the writing of the Ph.D. thesis and related academic papers. The data collected from this survey will be kept in a secure location and disposed of in five years time.

Participation in the survey is entirely voluntary and there are no known or anticipated risks to your participation in this study. You may decline to answer any of the questions you do not wish to answer, by selecting 'next' button. Further, you may decide to withdraw from this study at any time, without any negative consequences, simply by selecting the 'exit this survey' option located at the top right corner of each page.

Any queries about your participation in this project may be directed to the researcher Professor Michael McGrath by phone (03) 9919 4627, or email michael.mcgrath@vu.edu.au. If you have any queries or complaints about the way you have been treated during this research, you may contact the Secretary, Victoria University Human Research Ethics Committee, Victoria University, PO Box 14428, Melbourne, VIC, 8001, phone (03) 9919 478.

Thank you in advance for your interest and assistance with this research.

Yours truly

Professor Michael McGrath, Victoria University &

Azwadi Ali, Ph.D. Candidate, Victoria University

[8] This original title was renamed to reflect more concisely with the objectives of the study.

CERTIFICATION BY SUBJECT

If you agree to the following statements, please select the 'yes' button at the bottom of the page.

I certify that I am at least 18 years old and that I am voluntarily giving my consent to participate in the study 'The Effects of Investor Relations Websites on Investors' Intents' being conducted at Victoria University by Professor Michael McGrath.

I certify that the objectives of this study, together with any risks and safeguards associated with the procedures listed hereunder to be carried out in the research, have been fully explained to me by Professor Michael McGrath on the previous page, and that I freely consent to participation involving the below mentioned procedures:

1. Use a computer and access the Internet to perform several information acquiring tasks.

2. Answer survey questions regarding one's experience of navigating a website, and respective attitudes formed towards the website and its organisation.

I have been informed that my participation in the survey does not contribute towards my BAO3403 evaluation, and that my withdrawal or even non-participation in the study will not jeopardise me in any way or affect my marks in this unit. I have also been informed that I have ready access to the unit co-ordinator to ask any questions about my participation, withdrawal or non-participation in this study.

I certify that I have had the opportunity to have any questions answered and that I fully understand that I can withdraw from this study at any time, and that this withdrawal will not jeopardise me in any way.

I have been informed that the information I provide will be kept confidential.

Do you agree to the consent information listed on this page?

THE EFFECTS OF INVESTOR RELATIONS WEBSITES ON INVESTORS' INTENTS

1. Choosing a company

You are invited to visit one of the following websites. While browsing the website, please act as if you are seeking important information to evaluate whether or not the company is being viewed as a good investment choice.

You are most welcome to answer all questions about the three companies. Should you choose only one company, the maximum number of pages to be answered will be ten pages.

Please select one of the following companies:[9]

- Woolworths
- Lion Nathan
- Super Cheap Auto

2. Woolworths Limited[10]

You have chosen to visit the website of Woolworths Limited (WL) at www.woolworthslimited.com.au. Please browse the necessary pages on the website in order to assist you complete the tasks presented on the next page. You can answer the survey concurrently while browsing the website. Please click the company url link in order to visit its website. The website will open in a new window, so when you are ready, please return to this page to finish the survey.

* In the second phase of the survey, the instructions were stated as:

You have chosen to answer the questions related to Woolworths Limited (WL) and its websites. Please recall your experience from visiting WL's website when completing your BAO3403 group assignment in order to answer the remaining survey questions. Should you need to visit the website again, choose the following link www.woolworthslimited.com.au.

3. Information Seeking tasks (WL)[11]

Please provide your answer to the following information seeking tasks. If you think you are taking too long to complete any of these tasks, please proceed to the next task.

1. Could you find the information regarding WL's main nature of business?

Yes ☐ No ☐

[9] The order is randomized in the actual survey page and skip logic is applied, i.e., respondents were directed to the survey pages relevant to the company they have chosen.
[10] Similar survey questions were asked on the pages of the other two companies.
[11] Pages containing these questions were only administered in the first survey.

2. Could you find the information about the current CEO of the company?

   Yes ☐ No ☐

   Who is the CEO of the company? (leave the textbox blank if you are not sure)

   _____

3. Could you find the information about WL's board of directors?

   Yes ☐ No ☐

   How many 'non-executive' directors sit on the board?

   _____

4. Could you read the financial highlights of WL on its website?

   Yes ☐ No ☐

   In the latest financial year, did WL make a profit or loss?

   _____

5. Does WL allow you to download any annual reports from its website?

   Yes ☐ No ☐

   What is the year of the latest annual report provided on the website?

   _____

6. Could you find WL's current share price on its website?

   Yes ☐ No ☐

7. When is the next Annual General Meeting (AGM) for the shareholders to be held?

   _____

8. Could you find Frequently Asked Questions (FAQ) related to the needs of a typical investor on the website?

   Yes ☐ No ☐

9. Does the website provide information on how to contact WL's Investor Relations officer?

   Yes ☐ No ☐ Not Sure ☐

10. If you were to complain or provide feedback, would you be able to use an online feedback form?

    Yes ☐ No ☐ Not Sure ☐

4. About the company (WL)

Please rate your opinion on the following statements about WL (1 – strongly disagree and 7 – strongly agree).

	Strongly Disagree						**Strongly Agree**
I am very familiar with the company's name.	1	2	3	4	5	6	7
I know a lot about the company's main nature of business.	1	2	3	4	5	6	7
The company is highly recognised.	1	2	3	4	5	6	7
I always hear the company's name mentioned in the media.	1	2	3	4	5	6	7
I often see the company's advertisements in the media.	1	2	3	4	5	6	7
I know that the company does business in Australia.	1	2	3	4	5	6	7
I know that the company is listed on the Australian Securities Exchange.	1	2	3	4	5	6	7
When I hear the company's name, I immediately recall a particular product.	1	2	3	4	5	6	7

What is your overall evaluation of WL's brand name? (Please circle your answers).

Unfavourable	1	2	3	4	5	6	7	**Favourable**
Bad	1	2	3	4	5	6	7	**Good**
Negative	1	2	3	4	5	6	7	**Positive**
Weak	1	2	3	4	5	6	7	**Strong**

5. Website evaluation (WL)

Thinking back to the tasks completed earlier, please rate your agreement to the following statements (1 – strongly disagree and 7 – strongly agree):

* In the second phase survey, the instruction was stated as:

By recalling your experience in using WL's website when completing your course assignment, please rate your agreement to the following statements (1 – strongly disagree and 7 – strongly agree):

	Strongly Disagree						**Strongly Agree**
Information given on this website is accurate.	1	2	3	4	5	6	7
The website contains relevant information for investors.	1	2	3	4	5	6	7
Information given on this website is reliable.	1	2	3	4	5	6	7
Information given on this website is complete.	1	2	3	4	5	6	7
I can easily interpret the information given on the pages.	1	2	3	4	5	6	7
This website has current information.	1	2	3	4	5	6	7
Information posted on the website is timely.	1	2	3	4	5	6	7
Information on the pages adds value (competitive edge to complete one's task).	1	2	3	4	5	6	7
Information provided on the pages is believable.	1	2	3	4	5	6	7
Information provided is unbiased.	1	2	3	4	5	6	7
Financial information provided on the website is audited.	1	2	3	4	5	6	7
The website contains an appropriate amount of information.	1	2	3	4	5	6	7
I can easily contact responsible persons if I am not happy with certain information given on the website.	1	2	3	4	5	6	7
Navigating pages to find the required information is easy for me.	1	2	3	4	5	6	7
I find the information flow on the website is clear.	1	2	3	4	5	6	7
I find the design of this website made it easy for me to find the required information.	1	2	3	4	5	6	7
I think the information on the website is useless.	1	2	3	4	5	6	7
It was easy for me to skilfully navigate the pages on this website.	1	2	3	4	5	6	7
When navigating through the pages, I felt in control.	1	2	3	4	5	6	7
Navigating this website is fun.	1	2	3	4	5	6	7
Finding information on the website is enjoyable.	1	2	3	4	5	6	7

	Strongly Disagree						**Strongly Agree**
The website contains a lot of interesting information.	1	2	3	4	5	6	7
The website does not make the full use of the latest Internet technology.	1	2	3	4	5	6	7
The website design is very professional.	1	2	3	4	5	6	7
Overall, I find that the information provided on this website is of high quality.	1	2	3	4	5	6	7
Overall, I find that this website has credible information.	1	2	3	4	5	6	7
Overall, I find that it is easy to perform my tasks on the website.	1	2	3	4	5	6	7
Overall, I find that …'s website is attractive.	1	2	3	4	5	6	7

What was your overall reaction to the WL's Investor Relations website? (i.e. all the web pages containing important information for investors including the homepage).

Unfavourable	1	2	3	4	5	6	7	**Favourable**
Bad	1	2	3	4	5	6	7	**Good**
Negative	1	2	3	4	5	6	7	**Positive**
Boring	1	2	3	4	5	6	7	**Interesting**
Dull	1	2	3	4	5	6	7	**Exciting**
Unenjoyable	1	2	3	4	5	6	7	**Enjoyable**
Difficult	1	2	3	4	5	6	7	**Easy**
Ineffective	1	2	3	4	5	6	7	**Effective**
Unhelpful	1	2	3	4	5	6	7	**Helpful**

6. Perceptions of investing in WL

If you were an active investor, please indicate your opinion about the following statements (1 – strongly disagree and 7 – strongly agree).

	Strongly Disagree						**Strongly Agree**
It is a risky decision to invest in WL.	1	2	3	4	5	6	7
I am sure that WL is a right investment choice.	1	2	3	4	5	6	7
WL has uncertain future.	1	2	3	4	5	6	7
I better invest my fund somewhere else other than in WL.	1	2	3	4	5	6	7

	Strongly Disagree						**Strongly Agree**
WL is financially sound.	1	2	3	4	5	6	7
Investing in WL seems to be able to generate me high returns (e.g. dividends & capital gains).	1	2	3	4	5	6	7
I believe WL will perform satisfactorily in the future.	1	2	3	4	5	6	7
WL has sufficient resource to grow in the future.	1	2	3	4	5	6	7
WL is unreliable.	1	2	3	4	5	6	7
I can rely on the promises made by WL.	1	2	3	4	5	6	7
WL management is competent to run its business.	1	2	3	4	5	6	7
I believe that WL will not hide important information from its investors' knowledge.	1	2	3	4	5	6	7
WL has reliable members of board of directors.	1	2	3	4	5	6	7
I think investing in WL is highly risky.	1	2	3	4	5	6	7
I think investing WL is highly rewarding.	1	2	3	4	5	6	7
In my opinion, WL is trustworthy.	1	2	3	4	5	6	7

7. Investment and site re-visitation decisions (WL)

Please rate your opinion on the following statements:

	Very Low						**Very High**
If I actually had the money to invest;							
the likelihood of me investing in WL is …	1	2	3	4	5	6	7
the probability that I would buy WL's share is …	1	2	3	4	5	6	7
my willingness to buy WL's share is …	1	2	3	4	5	6	7

	Strongly Disagree						**Strongly Agree**
If I actually thought of investing;							
WL is definitely one of my choices.	1	2	3	4	5	6	7
I would refer WL's shares to others.	1	2	3	4	5	6	7
I would talk positively about WL to others.	1	2	3	4	5	6	7

If you thought of investing in a specific company in the future, how likely are you to return to WL's website at a later date to search for information?

Unlikely	1	2	3	4	5	6	7	**Likely**
Improbable	1	2	3	4	5	6	7	**Probable**
Uncertain	1	2	3	4	5	6	7	**Certain**
Impossible	1	2	3	4	5	6	7	**Possible**

At this point, you are nearing the end of this survey. If you wish to finish here, please select the 'no, thanks' button, and you will be directed to some general questions. However, if you opt to continue your assessments further, please select either the button of Lion Nathan or Super Cheap Auto.

- Lion Nathan
- Super Cheap Auto
- No Thanks

* Skip logic was applied again, and when respondents declined to answer the questions about the other two companies, they were directed to final questions of the survey.

8. Perceptions of information seeking tasks[12]

To me, performing the tasks on page 3 of this survey as a part of evaluating an investment choice was:

Unimportant	1	2	3	4	5	6	7	**Important**
Irrelevant	1	2	3	4	5	6	7	**Relevant**
Boring	1	2	3	4	5	6	7	**Interesting**
Unappealing	1	2	3	4	5	6	7	**Appealing**
Worthless	1	2	3	4	5	6	7	**Valuable**
Not needed	1	2	3	4	5	6	7	**Needed**

9. Perceptions of share investment

My opinion on investment in my life is:

Unimportant	1	2	3	4	5	6	7	**Important**
Irrelevant	1	2	3	4	5	6	7	**Relevant**
Boring	1	2	3	4	5	6	7	**Interesting**
Unappealing	1	2	3	4	5	6	7	**Appealing**
Worthless	1	2	3	4	5	6	7	**Valuable**
Not needed	1	2	3	4	5	6	7	**Needed**

[12] This page was discarded in the second phase survey.

10. Internet familiarity and general survey

How often do you use the Internet?

Rarely	1 2 3 4 5 6 7	**Very Often**

As an Internet user, I regard myself as…

Beginner	1 2 3 4 5 6 7	**Expert**

Please answer the following classification questions to complete the survey:

Gender

Male ☐ Female ☐

Year in university

Year 1 ☐ Year 2 ☐ Year 3 ☐ > 3 years ☐

Please indicate your degree programme (e.g. Bachelor of Accounting, etc.)

_____

END OF SURVEY.

THANK YOU VERY MUCH FOR YOUR TIME.

	Mean		Std. Dev.	Skewness		Kurtosis	
	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
FAM1	5.272	.129	1.503	**-0.608**	0.208	-0.558	0.413
FAM2	4.926	.127	1.479	-0.151	0.208	**-1.081**	0.413
FAM3	4.582	.137	1.593	-0.178	0.208	**-0.895**	0.413
FAM4	4.868	.148	1.721	**-0.483**	0.208	**-0.888**	0.413
FAM5	5.471	.127	1.480	**-1.019**	0.208	0.276	0.413
FAM6	5.000	.140	1.633	**-0.425**	0.208	**-0.912**	0.413
FAM7	5.074	.131	1.528	**-0.669**	0.208	-0.235	0.413
FAM8	4.765	.138	1.604	**-0.420**	0.208	-0.682	0.413
AT_BR1	5.255	.126	1.466	**-0.580**	0.208	-0.472	0.413
AT_BR2	4.935	.125	1.454	**-0.213**	0.208	-0.625	0.413
AT_BR3	4.867	.094	1.099	0.162	0.208	-0.353	0.413
AT_BR4	5.073	.097	1.134	-0.025	0.208	0.083	0.413
IQ1	5.228	.081	.950	-0.105	0.208	-0.167	0.413
IQ2	5.434	.090	1.052	**-0.830**	0.208	0.704	0.413
IQ3	5.154	.089	1.039	**-0.235**	0.208	-0.479	0.413
IQ4	4.966	.100	1.164	**-0.334**	0.208	-0.622	0.413
IQ5	5.176	.102	1.186	**-0.863**	0.208	0.104	0.413
IQ6	5.480	.091	1.059	**-0.990**	0.208	1.**080**	0.413
IQ7	5.180	.092	1.074	**-0.586**	0.208	-0.096	0.413
IQ8	5.029	.089	1.040	-0.059	0.208	-0.029	0.413
IQ9	4.949	.098	1.137	**-0.542**	0.208	-0.095	0.413
IQ10	5.257	.096	1.122	**-0.844**	0.208	0.146	0.413
CRED1	4.515	.101	1.174	**-0.315**	0.208	0.394	0.413
CRED2	4.791	.087	1.012	**0.478**	0.208	-0.179	0.413
CRED3	5.044	.103	1.204	**-0.499**	0.208	-0.245	0.413
CRED4	4.632	.109	1.275	**-0.301**	0.208	-0.202	0.413
CRED5	5.044	.097	1.134	**-0.489**	0.208	-0.334	0.413
USAB1	5.335	.097	1.129	**-1.007**	0.208	0.**898**	0.413
USAB2	5.346	.104	1.207	**-0.874**	0.208	0.012	0.413
USAB3	5.221	.102	1.189	**-.898**	.208	-.023	.413
USAB4	4.718	.126	1.464	**-.706**	.208	.247	.413
USAB5	4.949	.092	1.070	**-.595**	.208	-.090	.413
USAB6	4.684	.104	1.215	**-.602**	.208	.320	.413
USAB7	5.243	.107	1.244	**-.941**	.208	.321	.413
ATR1	4.404	.094	1.098	**-.519**	.208	.393	.413
ATR2	4.639	.105	1.227	**-.450**	.208	-.294	.413

ATR3	4.861	.103	1.206	**-.604**	.208	-.250	.413
ATR4	4.248	.127	1.480	**-.268**	.208	-.710	.413
ATR5	5.096	.109	1.270	**-.886**	.208	.252	.413
ATR6	4.985	.108	1.265	**-.752**	.208	-.236	.413
AT_ST1	5.077	.094	1.093	**-.467**	.208	-.460	.413
AT_ST2	5.151	.099	1.152	**-.568**	.208	-.645	.413
AT_ST3	5.069	.089	1.042	**-.461**	.208	-.425	.413
AT_ST4	4.702	.093	1.080	**-.613**	.208	**1.251**	.413
AT_ST5	4.428	.089	1.036	**-.535**	.208	**1.758**	.413
AT_ST6	4.570	.087	1.015	**-.733**	.208	**1.212**	.413
AT_ST7	5.133	.096	1.119	**-.789**	.208	.332	.413
AT_ST8	4.966	.094	1.092	**-.593**	.208	.802	.413
AT_ST9	5.028	.095	1.113	**-.419**	.208	-.548	.413
RISK1	3.647	.129	1.503	**.463**	.208	-.**843**	.413
RISK2	3.471	.124	1.450	.**510**	.208	-.615	.413
RISK3	3.706	.111	1.295	.191	.208	-.442	.413
RISK4	3.979	.129	1.507	.103	.208	-1.**037**	.413
RISK5	3.581	.131	1.533	**.384**	.208	-.678	.413
RTN1	4.772	.105	1.223	**-.638**	.208	-.396	.413
RTN2	4.662	.110	1.284	**-.601**	.208	-.504	.413
RTN3	4.853	.096	1.119	**-.349**	.208	-.620	.413
RTN4	4.900	.091	1.064	**-.288**	.208	-.201	.413
RTN5	4.610	.110	1.278	**-.596**	.208	-.465	.413
TRS1	4.639	.103	1.197	**-.454**	.208	.711	.413
TRS2	4.353	.083	.970	**.375**	.208	.033	.413
TRS3	4.831	.081	.947	-.025	.208	.340	.413
TRS4	4.490	.094	1.101	-.161	.208	-.436	.413
TRS5	4.852	.083	.962	**.303**	.208	.298	.413
TRS6	4.801	.088	1.032	.162	.208	-.184	.413
INT_INV1	4.544	.129	1.505	-.**588**	.208	-.732	.413
INT_INV2	4.445	.131	1.529	**-.381**	.208	**-.930**	.413
INT_INV3	4.551	.127	1.480	**-.412**	.208	**-.941**	.413
INT_INV4	4.503	.133	1.554	**-.666**	.208	-.678	.413
INT_INV5	4.070	.135	1.579	**-.473**	.208	-.645	.413
INT_INV6	4.463	.120	1.402	**-.413**	.208	-.591	.413
INT_RTN1	5.040	.084	.985	**-.367**	.208	.041	.413
INT_RTN2	4.980	.083	.970	**-.308**	.208	.431	.413
INT_RTN3	4.785	.091	1.064	-.156	.208	-.463	.413
INT_RTN4	4.911	.084	.977	-.206	.208	-.058	.413

	Total Variance Explained					
	Initial Eigenvalues		Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
Factor	Total	% variance	Total	% variance	Total	% variance
1	36.203	41.613	35.977	41.353	26.528	30.492
2	8.546	9.824	8.355	9.604	9.828	11.297
3	5.824	6.694	5.559	6.390	4.647	5.341
4	3.877	4.456	3.592	4.128	4.417	5.077
5	2.838	3.262	2.595	2.983	4.313	4.958
6	2.669	3.067	2.425	2.787	4.037	4.640
7	2.156	2.478	1.897	2.180	3.741	4.299
8	1.908	2.193	1.665	1.913	2.928	3.366
9	1.521	1.748	1.273	1.463	1.867	2.145
10	1.303	1.498	1.046	1.202	1.608	1.848
11	1.138	1.308	.854	.982	1.227	1.411
12	1.057	1.214	.815	.936	.910	1.046
Extraction Method: Principal Axis Factoring.						

Construct	Indicator	Substantive factor loading (R1)	$R1^2$	Method factor loading (R2)	$R2^2$
IQ	IQ1	0.853515	0.728488	-0.027325*	0.000747
	IQ3	0.931966	0.868561	-0.060532	0.003664
	IQ4	1.046856	1.095907	-0.183257	0.033583
	IQ7	0.960185	0.921955	-0.124454	0.015489
	IQ8	0.806219	0.649989	0.020390	0.000416
	IQ9	0.649033	0.421244	**0.239400**	0.057312
CRD	CRD2	0.131260	0.017229	-0.084340	0.007113
	CRD4	0.884403	0.782169	0.026315	0.000692
	CRD5	1.052307	1.107350	**-0.288124**	0.083015
	CRD6	0.793954	0.630363	**0.146581**	0.021486
USB	USB1	1.192241	1.421439	**-0.357557**	0.127847
	USB2	0.847720	0.718629	0.064619	0.004176
	USB3	0.865226	0.748616	0.080353	0.006457
	USB5	0.929077	0.863184	-0.046788	0.002189
	USB6	0.682420	0.465697	0.169423	0.028704
	USB7	0.826353	0.682859	0.074696	0.005579
ATR	ATR1	1.005192	1.010411	-0.136147	0.018536
	ATR2	1.055544	1.114173	**-0.161053**	0.025938
	ATR3	0.816211	0.666200	0.084141	0.007080
	ATR6	0.732147	0.536039	**0.208066**	0.043291
RISK	RISK1	0.889402	0.791036	-0.044051	0.001940
	RISK3	0.901957	0.813526	**0.117348**	0.013771
	RISK4	0.669335	0.448009	-0.098049	0.009614
	RISK5	0.918908	0.844392	0.023129	0.000535
TRS	TRS2	0.652596	0.425882	0.126057	0.015890
	TRS3	0.879010	0.772659	-0.037732	0.001424
	TRS4	0.938873	0.881483	-0.129620	0.016801
	TRS5	1.037808	1.077045	**-0.202750**	0.041108
	TRS6	0.641215	0.411157	**0.241708**	0.058423
RTN	RTN1	0.682826	0.466251	0.230254	0.053017
	RTN2	1.107213	1.225921	**-0.287266**	0.082522
	RTN3	0.760277	0.578021	0.113863	0.012965
	RTN5	0.959476	0.920594	-0.073170	0.005354
FAM	FAM1	0.903161	0.815700	-0.042502	0.001806
	FAM2	0.827088	0.684075	**0.152198**	0.023164
	FAM3	0.875147	0.765882	0.035966	0.001294
	FAM4	0.899962	0.809932	**-0.078370**	0.006142
	FAM5	0.942211	0.887762	**-0.129735**	0.016831
	FAM6	0.770341	0.593425	**0.124624**	0.015531
	FAM7	0.923412	0.852690	-0.055639	0.003096
	FAM8	0.891993	0.795652	-0.007947	0.000063

Construct	Indicator	Substantive factor loading (R1)	$R1^2$	Method factor loading (R2)	$R2^2$
AT_ST	COG_AT_ST1	0.529238	0.280093	**0.363854**	0.132390
	COG_AT_ST2	0.694073	0.481737	**0.219535**	0.048196
	COG_AT_ST3	0.717510	0.514821	0.154995	0.024023
	COG_AT_ST4	0.983600	0.967469	-0.123837	0.015336
	COG_AT_ST5	0.878415	0.771613	-0.045076	0.002032
	COG_AT_ST6	0.617658	0.381501	**0.246179**	0.060604
	AFT_AT_ST1	1.085697	1.178738	-0.304818	0.092914
	AFT_AT_ST2	1.014707	1.029630	**-0.364747**	0.133040
	AFT_AT_ST3	1.068790	1.142312	**-0.318406**	0.101382
AT_BR	AT_BR1	0.981572	0.963484	**-0.143547**	0.020606
	AT_BR2	0.968228	0.937465	-0.059618	0.003554
	AT_BR3	0.842637	0.710037	**0.101394**	0.010281
	AT_BR4	0.818810	0.670450	**0.108121**	0.011690
INT_RTN	INT_RTN1	0.941593	0.886597	-0.026330	0.000693
	INT_RTN2	0.837897	0.702071	0.074195	0.005505
	INT_RTN3	0.958706	0.919117	-0.030221	0.000913
	INT_RTN4	0.900260	0.810468	-0.016002	0.000256
INT_INV	INT_INV1	0.697286	0.486208	**0.271649**	0.073793
	INT_INV2	1.017471	1.035247	-0.071034	0.005046
	INT_INV3	1.033439	1.067996	-0.100646	0.010130
	INT_INV4	0.844117	0.712534	0.119675	0.014322
	INT_INV5	1.082856	1.172577	-0.220253	0.048511
	INT_INV6	0.926482	0.858369	-0.020765	0.000431
Average		**0.868361**	**0.781127**	**- 0.00880**	**0.02641**

***** Data in bolds are significant method paths.
For details on calculations, see Liang, H et al. (2007, p. 85-87).

	IQ*	CRD*	USB	ATR	RISK	TRS	RTN	FAM	AT_ST	AT_BR	INT_INV	INT_RTN
IQ1	**0.749**	0.694	0.665	0.553	-0.452	0.580	0.508	0.494	0.603	0.532	0.619	0.443
IQ3	**0.792**	0.762	0.718	0.540	-0.488	0.653	0.606	0.329	0.638	0.358	0.684	0.551
IQ4	**0.805**	0.750	0.708	0.647	-0.435	0.604	0.563	0.225	0.648	0.295	0.669	0.483
IQ7	**0.826**	0.687	0.693	0.563	-0.465	0.576	0.567	0.244	0.665	0.276	0.653	0.496
IQ8	**0.758**	0.734	0.716	0.610	-0.434	0.589	0.648	0.226	0.611	0.292	0.654	0.526
IQ9	**0.956**	0.821	0.861	0.682	-0.481	0.666	0.644	0.230	0.770	0.289	0.655	0.615
CRD2	0.016	**0.053**	0.021	0.082	-0.001	0.010	0.034	-0.006	0.043	-0.021	0.013	-0.036
CRD4	0.768	**0.891**	0.780	0.652	-0.474	0.670	0.650	0.330	0.723	0.396	0.749	0.582
CRD5	0.589	**0.740**	0.632	0.548	-0.312	0.572	0.558	0.200	0.601	0.338	0.549	0.510
CRD6	0.855	**0.959**	0.832	0.656	-0.446	0.733	0.730	0.290	0.779	0.369	0.749	0.657
USB1	0.714	0.700	**0.864**	0.612	-0.487	0.610	0.597	0.170	0.654	0.164	0.547	0.536
USB2	0.810	0.812	**0.905**	0.677	-0.523	0.638	0.675	0.222	0.489	0.277	0.720	0.593
USB3	0.876	0.838	**0.938**	0.736	-0.537	0.713	0.678	0.212	0.810	0.251	0.711	0.635
USB5	0.781	0.759	**0.884**	0.660	-0.473	0.723	0.626	0.236	0.708	0.267	0.653	0.576
USB6	0.724	0.746	**0.840**	0.750	-0.483	0.625	0.682	0.165	0.762	0.290	0.683	0.518
USB7	0.816	0.758	**0.897**	0.702	-0.517	0.673	0.659	0.149	0.801	0.185	0.708	0.654
ATR1	0.554	0.579	0.607	**0.894**	-0.282	0.497	0.606	0.071	0.691	0.204	0.583	0.468
ATR2	0.594	0.581	0.657	**0.924**	-0.381	0.531	0.579	0.089	0.667	0.203	0.567	0.444
ATR3	0.689	0.655	0.729	**0.884**	-0.452	0.566	0.611	0.135	0.700	0.237	0.625	0.514
ATR6	0.726	0.716	0.797	**0.903**	-0.458	0.618	0.664	0.177	0.786	0.277	0.671	0.513
RISK1	-0.506	-0.452	-0.555	-0.435	**0.918**	-0.429	-0.499	-0.302	-0.551	-0.251	-0.512	-0.459
RISK3	-0.370	-0.297	-0.408	-0.296	**0.806**	-0.302	-0.322	-0.298	-0.370	-0.258	-0.387	-0.371
RISK4	-0.420	-0.433	-0.432	-0.338	**0.758**	-0.342	-0.522	-0.185	-0.472	-0.257	-0.533	-0.263
RISK5	-0.485	-0.413	-0.509	-0.401	**0.898**	-0.428	-0.489	-0.261	-0.480	-0.228	-0.460	-0.382
TRS2	0.536	0.565	0.572	0.631	-0.248	**0.763**	0.599	0.267	0.594	0.306	0.666	0.539
TRS3	0.648	0.671	0.654	0.416	-0.475	**0.843**	0.571	0.284	0.610	0.299	0.619	0.538
TRS4	0.559	0.611	0.606	0.476	-0.375	**0.824**	0.588	0.250	0.552	0.292	0.584	0.523
TRS5	0.581	0.632	0.615	0.425	-0.305	**0.859**	0.605	0.257	0.563	0.313	0.574	0.639
TRS6	0.627	0.677	0.649	0.597	-0.435	**0.857**	0.736	0.355	0.681	0.454	0.756	0.538
RTN1	0.677	0.712	0.738	0.655	-0.592	0.694	**0.891**	0.251	0.763	0.339	0.763	0.633
RTN2	0.525	0.581	0.584	0.524	-0.357	0.541	**0.844**	0.067	0.659	0.224	0.696	0.541
RTN3	0.604	0.673	0.608	0.600	-0.538	0.715	**0.871**	0.334	0.679	0.439	0.746	0.542

	IQ*	CRD*	USB	ATR	RISK	TRS	RTN	FAM	AT_ST	AT_BR	INT_INV	INT_RTN
RTN5	0.576	0.645	0.631	0.601	-0.404	0.657	**0.888**	0.117	0.720	0.273	0.821	0.671
FAM1	0.226	0.226	0.149	0.053	-0.287	0.251	0.161	**0.887**	0.191	0.811	0.247	0.206
FAM2	0.357	0.371	0.292	0.210	-0.392	0.380	0.354	**0.895**	0.308	0.833	0.442	0.306
FAM3	0.236	0.274	0.160	0.191	-0.270	0.320	0.253	**0.895**	0.252	0.880	0.329	0.241
FAM4	0.152	0.191	0.088	0.120	-0.190	0.225	0.167	**0.869**	0.136	0.800	0.200	0.205
FAM5	0.187	0.198	0.110	-0.011	-0.208	0.240	0.081	**0.883**	0.070	0.714	0.188	0.147
FAM6	0.354	0.379	0.297	0.108	-0.321	0.400	0.260	**0.822**	0.251	0.673	0.397	0.294
FAM7	0.267	0.269	0.197	0.091	-0.241	0.264	0.119	**0.897**	0.177	0.770	0.174	0.216
FAM8	0.265	0.307	0.211	0.143	-0.221	0.329	0.187	**0.885**	0.189	0.747	0.249	0.181
COG_AT_ST1	0.782	0.807	0.802	0.697	-0.514	0.683	0.735	0.288	**0.863**	0.407	0.726	0.586
COG_AT_ST2	0.744	0.770	0.802	0.740	-0.578	0.628	0.788	0.242	**0.896**	0.360	0.765	0.580
COG_AT_ST3	0.764	0.748	0.769	0.616	-0.521	0.671	0.706	0.189	**0.860**	0.292	0.728	0.618
COG_AT_ST4	0.701	0.680	0.780	0.678	-0.520	0.587	0.670	0.134	**0.870**	0.235	0.677	0.573
COG_AT_ST5	0.691	0.664	0.735	0.584	-0.444	0.647	0.652	0.181	**0.836**	0.269	0.676	0.576
COG_AT_ST6	0.743	0.725	0.768	0.554	-0.556	0.695	0.673	0.254	**0.843**	0.323	0.749	0.589
AFT_AT_ST1	0.550	0.610	0.581	0.691	-0.425	0.524	0.648	0.159	**0.807**	0.288	0.637	0.430
AFT_AT_ST2	0.431	0.441	0.448	0.633	-0.228	0.456	0.531	0.126	**0.681**	0.259	0.543	0.311
AFT_AT_ST3	0.528	0.542	0.543	0.730	-0.321	0.490	0.591	0.098	**0.777**	0.258	0.646	0.442
AT_BR1	0.242	0.240	0.158	0.151	-0.261	0.260	0.202	0.924	0.198	**0.906**	0.265	0.222
AT_BR2	0.276	0.370	0.187	0.167	-0.258	0.374	0.318	0.881	0.274	**0.937**	0.387	0.277
AT_BR3	0.398	0.460	0.319	0.284	-0.276	0.422	0.378	0.725	0.440	**0.896**	0.463	0.360
AT_BR4	0.352	0.415	0.317	0.335	-0.262	0.418	0.450	0.681	0.405	**0.875**	0.480	0.355
INT_RTN1	0.555	0.614	0.609	0.483	-0.421	0.593	0.634	0.210	0.587	0.292	**0.675**	0.923
INT_RTN2	0.586	0.627	0.626	0.567	-0.415	0.560	0.654	0.179	0.627	0.281	**0.704**	0.901
INT_RTN3	0.591	0.653	0.611	0.496	-0.365	0.609	0.615	0.243	0.576	0.301	**0.678**	0.933
INT_RTN4	0.570	0.559	0.555	0.408	-0.386	0.630	0.582	0.315	0.530	0.350	**0.658**	0.883
INT_INV1	0.751	0.793	0.800	0.738	-0.569	0.736	0.852	0.302	0.834	0.398	0.945	**0.725**
INT_INV2	0.683	0.724	0.702	0.632	-0.548	0.737	0.779	0.353	0.767	0.446	0.953	**0.702**
INT_INV3	0.677	0.714	0.676	0.636	-0.544	0.728	0.816	0.281	0.771	0.419	0.941	**0.676**
INT_INV4	0.728	0.785	0.770	0.720	-0.547	0.723	0.841	0.281	0.834	0.393	0.952	**0.720**
INT_INV5	0.629	0.674	0.632	0.522	-0.441	0.644	0.751	0.268	0.700	0.381	0.881	**0.634**
INT_INV6	0.649	0.738	0.657	0.559	-0.499	0.763	0.806	0.304	0.725	0.420	0.909	**0.712**

Construct	**Structural Model**		
INT_INV	0.806532[a]	(0.866248)[b]	0.060106[c]
INT_RTN	0.408993	(0.828074)	0.336686
AT_ST	0.784225	(0.685600)	0.271908
AT_BR	0.830957	(0.817032)	0.647604
IU	0.995844	(0.594612)	0.456906
RISK	0.348174	(0.717557)	0.219523
TRS	0.563232	(0.688713)	0.358993
RTN	0.718844	(0.763668)	0.425336
COG_AT_ST	0.938884	(0.790545)	0.742018
AFT_AT_ST	0.678615	(0.847454)	0.570006
IQ	-	(0.687052)	-
CRD	-	(0.558615)	-
USB	-	(0.789696)	-
ATR	-	(0.812278)	-
FAM	-	(0.773104)	-
Average	0.613542	0.736781[d]	0.408909
GoF[e]	= √ [(0.613542) x (0.736781)] = 0.672344		

a = variance explained, b = communality, c = redundancy,
d = computed as a weighted average of the different communalities with the weights being the number of manifest variables per construct (Guenzi et al. 2009, p.306; Tenenhaus et al. 2005, p.180).
e = GoF equals √ [(average communality) x (average R^2)].

Construct	**Model Quality**	
INT_INV	0.866273[a]	(0.695015)[b]
INT_RTN	0.828182	(0.332465)
AT_ST	0.685665	(0.532704)
AT_BR	0.816868	(0.663728)
IU	0.602816	(0.603847)
RISK	0.717725	(0.247299)
TRS	0.688755	(0.381297)
RTN	0.763688	(0.544209)
COG_AT_ST	0.790584	(0.737104)
AFT_AT_ST	0.847526	(0.565652)
IQ	0.705153	(-)
CRD	0.564710	(-)
USB	0.789634	(-)
ATR	0.812301	(-)
FAM	0.772852	(-)
Average	0.750182	(0.522164)

a = cv-communality, b = cv-redundancy

BAO3403 – Investment and Portfolio Management
Assignment Semester 1, 2009

Introduction

The focus of this assignment is on risk, return and equity analysis. The expectation is that students will develop skills in measuring returns, risk assessment and analysis, and valuation. Students are required to use real data that need to be gathered from the Internet.

Assignment Components

The exhibits contain the case problem, the 'beginner's guide to select a share' and a suggested report format. Real data from Woolworths Ltd, Lion Nathan Ltd and Super Cheap Auto Group Ltd will be used in the analysis.

Requirements:

You will be required to complete this assignment in teams of three. It is important that you form your teams as soon as possible. WebCT can be used to identify other students who are seeking partners for a team. I will make announcements prior to the lecture to alert students without a team to meet after the class. Team members do not have to be from the same tutorial group.

Please note that under NO circumstances will you be allowed to submit individual assignments (This is a group assignment).

Note that marks will be deducted for poor presentation. Assignments should be stapled in the top left hand corner. **Please do not submit assignments in folders.** It is also a requirement that all assignments be submitted with a cover sheet that will be provided on WebCT. Assignments will not be accepted or marked if they are lodged without the specific cover sheet.

The assignment requires each team to undertake independent work. No further assistance will be provided to teams in completing the assignment.

The assignment accounts for 10% of the subject's assessment.

Assignment Submission

The assignment must be submitted with a signed assignment cover sheet to your tutor in the week starting 18 May 2009. You are also **invited** to complete an online survey to look at companies' use of the Internet to communicate with investors at http://tinyurl.com/d6u3f7.

Assignment Instructions

- **Read the case problem. Follow the 'guide' and write a report as suggested in the exhibit. You are required to submit the report.**
- **Use the same companies as used in the case provided; i.e., Woolworths, Lion Nathan and Super Cheap Auto.**
- **In the report, include an abstract/executive summary and reference pages.**

Exhibit 1 – case problem

Roth Financial Advisors (RFA) is a discount broker serving non-professional investors. At the beginning, Roth maintained good relationship with the clients by continually attending to their investment queries. However the number of clients has been growing for many years now, and hence Roth needs to come up with something that can save the company's time and cost. He has thought of a guide that can assist his clients to select shares themselves. Roth hopes that this guide, being practical in nature and using real data can assist the clients, especially those who are new to investment, to make share selection. This guide will be provided to the existing clients by mail, while new clients will receive a copy upon their account registrations. Roth needs to first test the guide to make sure whether it will truly be useful for his clients. Hence, he has approached you, the undergraduate students, to act as non-professional investors and use the guide in order to evaluate shares.

The guide is given in Exhibit 2.

Exhibit 2 – The guide

A beginner's guide *to select a share*

Introduction

This guide is meant to assist you in selecting a share from a number of competitors. The selected companies used in this guide serve as examples. In your own future analysis, feel free to choose any other companies that you like. Please take your time to read and 'walk' through the guide as it may help you achieve your investment goal in a shorter time and using a more effective approach. We also suggest that you write a report of your analysis for future reference. A report template given towards the end of this guide can help you complete the share evaluation.

Analysis

Analyzing companies can be achieved through either *fundamental* or *technical* methods, or both. However, we suggest investors to rely more on fundamental analysis than technical analysis because, it is forward looking even though the data used is by and large, historical. Fundamental analysis may also educate shareholders about the fundamentals of a company's worth, because the main objective is to determine the company's intrinsic value and its growth prospects.

The analysis of an individual company has two components:

- The 'story' – what the company does, what its outlook is, its corporate governance, etc., and
- The 'numbers' – the financials of the company, balance sheet and income statement, and ratio analysis.

In order to analyze the two components, please follow the steps given in the next section. The blank tables provided in the suggested report will assist you to organize the acquired information.

STEP 1

We start with obtaining important numbers of companies. Choose several companies listed on the Australian Stock Exchange (ASX). In this guide, three companies have been chosen; Woolworths Ltd (WOW), Lion Nathan Ltd (LNN), and Super Cheap Auto Group Ltd (SUL).

STEP 2

Visit any free finance portals on the Internet. We suggest 'money MSN' and 'Yahoo! Finance' since they are user-friendly and use credible sources. Next, go to http://money.ninemsn.com.au/shares-and-funds/ and http://au.finance.yahoo.com/investing, and type the symbol ticket for the three companies; WOW, LNN and SUL, respectively.

Obtain the following information:

1. **Company's historical share price** – on Yahoo! Finance page, select 'historical' on the left panel to get monthly prices of each company between 1 May 2004 and 1 April 2009 (make sure that you have monthly prices of **60** months, except for SUL which begins trading on July 2004). Use the 'adjusted close prices in the analysis (hint: choose 'download to spreadsheet' option, open the file, ignore other columns except 'date' and 'adj. close' columns, and reverse the rows so that row 1 begins with 1 April 2004, or 1 July 2004 for SUL). Record this data in the excel spreadsheet so that you can analyze trends, average returns and risks. Note that Table 1 in Appendix 1 does not represent the actual prices of the shares.

2. **Dividend and Dividend Yield:** The annual dividend per share (DPS) and dividend yield are given on the 'company statistics' page of the Money MSN. Please use the 'current' statistics instead of the forecasted figures.

3. **Beta:** Beta is listed on the 'company statistics' of Money MSN or 'key statistics' of Yahoo! Finance.

4. **Return on Equity:** ROE is listed on the 'historical financials' page of Money MSN. Please use the ROE of the latest financial year (e.g., 06/08 or 12/08).

5. **Payout Ratio:** Payout ratio is also listed on the 'historical financials' page.

6. **Historical Earnings Growth Rate:** The five-year historical earnings growth rate is given on the 'company statistics' page. If five-year growth is not available, use one-year growth instead.

7. **Average Forecast Earnings Growth Rate:** The forecast 2-year earnings growth rate is also given on the 'company statistics' page.

8. **Current 2-year Treasury Rate:** Since the Reserve Bank does not release a 90-day Treasury note yield anymore, we shall use the 2-year Treasury bond rate as the risk-free rate. You can obtain the current 2-year treasury rate on http://www.rba.gov.au/Statistics/interest_rates_yields.html. The direct link to the excel file is located at http://www.rba.gov.au/Statistics/HistoricalInterestRatesYields/2009.xls, but please download it after 1 April 2009. For your analysis, use the average 2-year treasury rate for 2009 (i.e., for the period between 1 January 2009 to 1 April 2009).

STEP 3

Numbers don't tell everything. Therefore, it is also important to read the company's 'story'. The easiest source to gather the story is from the companies themselves. Please visit the websites of each company; http://www.woolworthslimited.com.au/, http://www.lion-nathan.com.au/, and http://www.supercheapauto.com.au/corporate.aspx. Now, look for pages that contain important information for investors such as director's statements, media releases,

corporate governance and information on Annual General Meetings (AGMs). Note down important information that might affect your judgement of the company's worth and future prospects.

STEP 4

Next, organize the 'numbers' and the 'story' that you have acquired in a report so that it can be referred to in the future. Once you have become familiar with share investment, there is no need to write a report every time you conduct a share analysis. In order to complete the report, please also consider the following questions:

Q1: Estimating the Price Trend – Use Excel to graph the historical monthly prices and returns of each share. Can you determine the trends of the share prices from the charts? Can you determine which share has the highest monthly return and which share has the lowest risk?

Q2: Estimating the Required Return – Use the Capital Asset Pricing Model (CAPM) to estimate the required (annual) return for each share. Use the average 2-year Australian Treasury rate between 1 January 2009 and 1 April 2009 for the risk-free rate, the beta obtained in 'Step 2' and a risk-premium of 7.3% (which is the historical average from 1974 to 2006).

Q3: Estimating Dividend Growth – Use the 'sustainable growth' computed by the (1 – payout ratio) x ROE. Do the numbers seem too low or too high when compared to each share's average historical and forecast earnings growth obtained in 'step 2'? Explain in the report.

Q4: Constant Dividend Model – Suppose that the companies' dividend will remain constant at their current level (e.g., $0.92 for WOW), and use the constant dividend model to value each share. Do the numbers seem too high or too low when compared to each share's average monthly price (between 1 May 2004 and 1 April 2009) and current price (as at 1 April 2009)? Explain again in your report.

Q5: Constant Growth Model – Given the current dividends, the required returns calculated in Q2 and the sustainable growth rate calculated in Q3, what should the prices of each share be in the constant growth model? Do the numbers seem too high or too low when comparing each share's average monthly price and current price? Recalculate intrinsic value using historical average growth and the analyst's forecast growth. Compare your results. Which growth, when used, provides the closest value to the current price?

Present your answers in a report[13] as suggested in the next section.

[13] Report template is not provided in this thesis.