

**THE EFFECT OF BRAND AFFINITY ON
INVESTOR STOCK CHOICE**

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LIST OF ABBREVIATIONS

ANOVA: Analysis of Variance

BPT: Behavioural Portfolio Theory

CA: Conjoint Analysis

CAPM: Capital Asset Pricing Model

CBC: Choice-Based Conjoint Analysis

CFA: Chartered Financial Analyst

EPS: Earnings per Share

HB: Hierarchical Bayes Estimation

IPO: Initial Public Offering (stock)

MRI: Magnetic Resonance Imaging

ROE: Return-on-Equity Ratio

ROI: Return-on-Investment

P/E: Price-to-Earnings Ratio

SEC: U.S. Securities and Exchange Commission

U.S.: United States of America

GLOSSARY OF KEY CONCEPTS AND TERMINOLOGY

Some of the key concepts and terminologies that will be used throughout this thesis are described and summarised below:

- Microeconomics or economics: used interchangeably in this paper, microeconomics is the branch of economics that studies the market behaviour of individuals.
- Positive and normative economics: positive economics seeks to describe economic behaviour as it is, whereas normative economics focuses on value judgements (what is optimal or ought to be). The focus of this research is positive economics, thus unless a concept is noted as normative, assume the positive aspect is being discussed.

- Neoclassical economics: was the primary economic school of thought during the 20th century, associated with the 'Chicago school of economics'. Its theories and models assume humans make decisions as rational economic agents that are efficient and unbiased processors of all relevant information and that their decision is based on the greatest utility to be received. Emotional aspects of choice are considered irrational and excluded from neoclassical models and frameworks.
- Behavioural economics: studies the effects of psychological, social, cognitive, and emotional factors on economic decisions. The sub-field of behavioural economics that focuses on investor behaviour research (versus consumer) is called behavioural finance. This research relies on behavioural economics and finance as its theoretical foundation.
- Irrational or emotional: For the purpose of this paper, the term irrational can also mean emotional. These describe the cognitive heuristics and biases people use or are affected by when evaluating and making decisions.
- Decision theory or theory of choice: within the study of economics and cognitive psychology, is concerned with identifying the values, uncertainties, process and other issues relevant in a given decision.
- Utility: an abstract concept within economics that refers to the arbitrary amount of value or pleasure one receives or expects to receive when purchasing and consuming an object or service when dealing with scarcity (unlimited wants and limited resources).
- Actor, person, individual, trader or agent: all refer to a human in different circumstances, situations, or context and are used interchangeably in this paper. Generally, actor is used when being observed for research, agent is

used when discussing an economic behaviour, and trader is used when an individual is evaluating and transacting investments.

- Stock, equity, share(s), investments or securities: are used interchangeably in this paper, and stand for the type of security that signifies ownership in a publically traded corporation in the U.S.
- Conjoint analysis (CA): is a quantitative multivariate statistical technique used to determine how people value different attributes that make up a product or service based on varying attributes. This research technique is the primary data-gathering tool for this thesis.
- Affinity or favourability: used interchangeably in this paper, it is the level of emotional favourability, based on numerous factors and attributes that an individual has for a brand.
- Heuristic: is an approach to problem solving where the brain conscientiously and/or sub-conscientiously uses mental shortcuts to evaluate and make a satisfactory decision when finding the optimal solution is impossible or impractical.
- Bias (cognitive bias): is the systematic pattern of deviation from rationality in judgement when individuals create their own 'subjective social reality' based on their perceptions and inclinations.
- Brand: can be defined several ways depending on practitioner and researcher focus; for the purpose of this thesis branding is defined as a person's association of qualities and attributes with a company on a holistic basis (e.g. Google, Apple). Branding is the strategies and tactics companies use to establish and management their brand.

ABSTRACT

Name of University	The University of Manchester
Candidate's full name	Kyle C. Murphy
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Date	2015

This study focuses on investigating some of the factors that influence the choice of stock to purchase (invest) by retail individual investors within the same industry. Specifically, understanding how brand affinity and stock choice of investors correlate and the effect on the price of the stock. Brand affinity, in this context, refers to the level of affect of favour that an individual has towards a certain corporate brand. The research also aims at developing a model for predicting the relationship between financial performance metrics of a company, brand affinity, and investor stock choice, which can be used in developing a simulator for predicting pricing and stock choice behaviours by simulating market choices. This research makes a relevant contribution to the fields of behavioural economics/finance, business strategy and investment management. Collection of primary data is done using a controlled experiment that involves an online simulation of a quantitative study using the choice-based conjoint analysis approach, which is a conjoint analysis variant. The data is collected and analysed using Sawtooth Software, an application for conjoint analysis, because of the complex mathematical operations involved.

Investor stock choice is taken as the dependent variable while independent variables comprise of brand affinity and five financial performance metrics, which are dividend yield, price-to-earnings ratio, price-to-book ratio, return on equity and earnings per share. This study finds that brand affinity has a major impact, and is the most important factor affecting investor decision making in purchasing stocks. It is established that brand affinity and investor stock have a direct positive relationship, which is also the same for higher brand affinity levels and stock price. It is also established that when selecting stocks, investors do not exclusively rely on the rationality and expected utility in the same industry with same risk profiles. A market simulator is also successfully developed to examine the cross-elasticity effects between different stock attributes and levels of those attributes, albeit with a few limitations, which are to be improved through further research.

DECLARATION

No portion of the work referred to in the thesis has been submitted in support of an application for another degree or qualification of this or any other university or other institute of learning.

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DEDICATION

This thesis is dedicated to my grandfather W.B. Murphy, who taught me the value of inquiry, listening, and education.

And to my wife Jenn, for her everlasting patience, I dedicate this work. Finally done!

AUTHOR

The author has over 25 years' experience as a practitioner of branding, marketing, strategy, management and finance in the roles of Chief Marketing Officer (CMO), Chief Operating Officer (COO), Chief Financial Officer (CFO), and Chief Executive Officer (CEO). He has launched, built and successfully exited several multimillion-dollar companies and assisted multiple companies with mergers, acquisitions, and initial public offerings (IPO). He has used conjoint analysis for 20 years in practitioner-based market research and brand strategy.

The concept for the research topic came to him while working in a boutique investment bank and struggling to determine and justify company valuations based on existing economic models.

The author also is a full time practitioner faculty of strategy and entrepreneurship at the Pepperdine University Graziadio School of Business and Management.

The author holds the degree of Bachelor of Science in Management from Pepperdine University, in Malibu, California, and the degree of Master of Business Administration from the Graziadio School of Business and Management at Pepperdine University.

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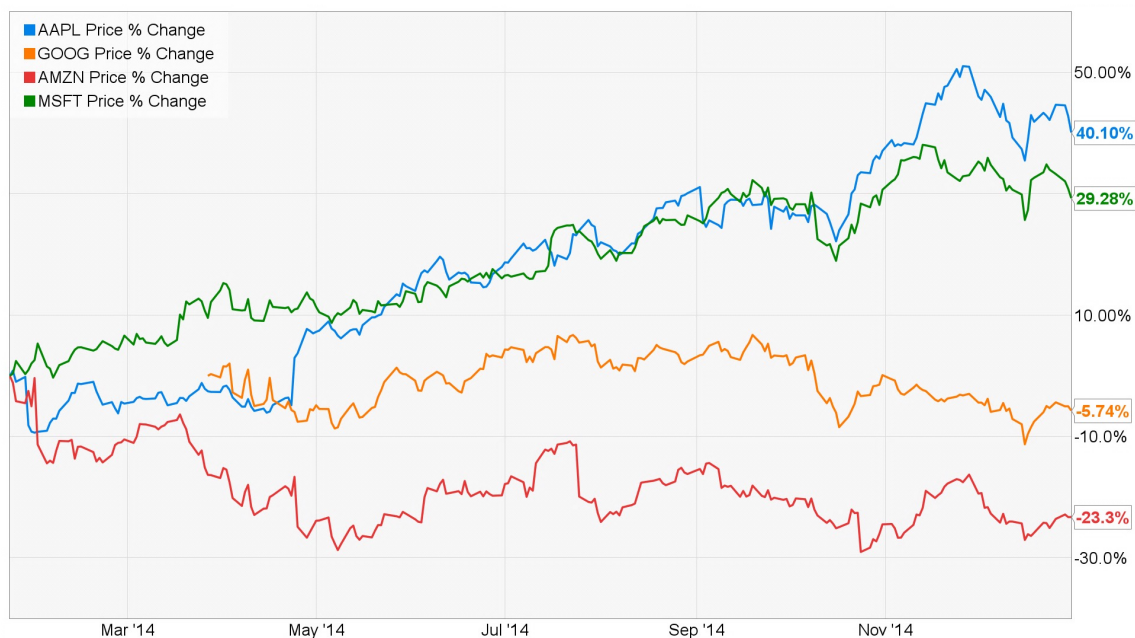
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1 INTRODUCTION

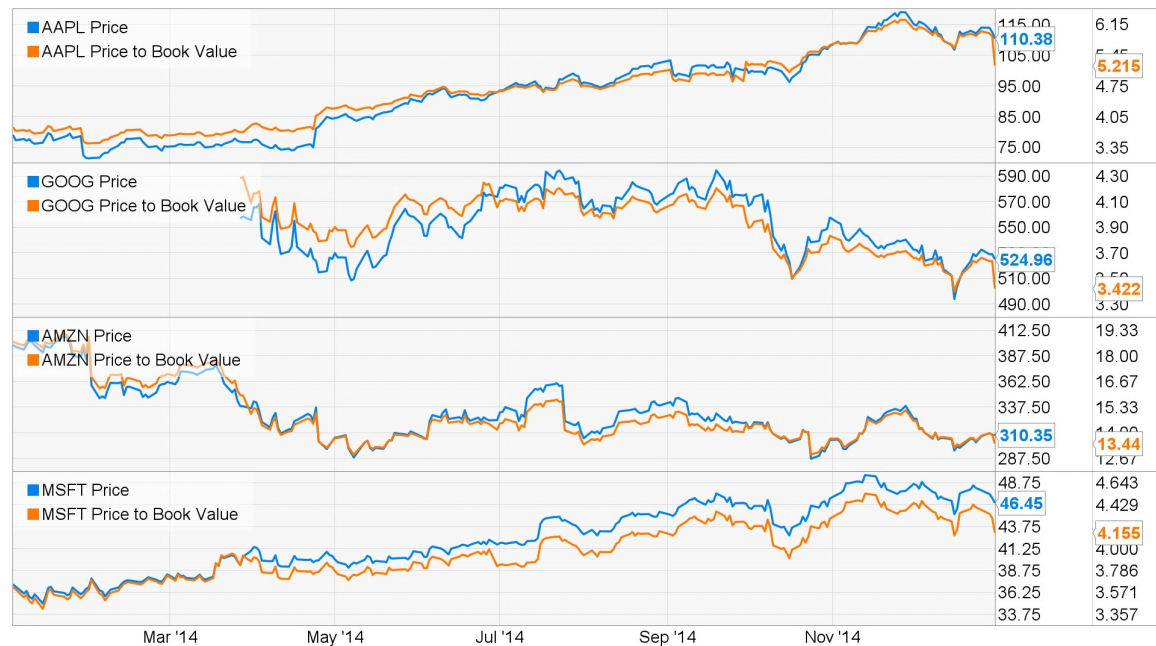
Prices of stocks for U.S. based public companies are highly volatile and display unpredictable and varying correlations to company earnings or any other neoclassical economic and financial factors, such as earnings, comparative risk, dividend rates, or assets. Many stocks prices change daily, if not on a second-by-second basis on trading exchanges, largely disconnected from measurable financial performance or economic based news and data (see Figure 1.1). The market enterprise valuation based on these varying stock prices reflects a premium, often significant, from the net book value (aka net asset value in the U.K.) of the enterprise (see Figure 1.2). The cause of this price premium is generally attributed to the expected growth and earnings of the company, but further investigation reveals that companies with similar financial performance, growth prospects and risk profiles within the same industry often observe significantly different valuation premiums (Olsen, 1998).

Figure 1.1: Stock Price Volatility for Apple, Microsoft, Amazon, and Google (2014)



Source: YCHARTS

Figure 1.2: Stock Price vs. Book Value for Apple, Microsoft, Amazon, and Google (2014)



Source: YCHARTS

Unlike consumers, who expect to receive a certain amount of utility or pleasure from the consumption or use of purchased items or services, investors are looking for return on investment, which is return of principle invested plus some premium (rate of return) due to length an investment is held and risk assumed. The focus of this research is on decision-making by individual retail investors between similar investment options (Apple versus Google stock), when opportunity cost, scarcity, market forces, and economics systems are the same, not on the choice to make an investment, save or spend.

A number of scholars argue that traditional neoclassical economic theories based on the rationality of man (where people always seek to maximize their utility and any emotionality in a decision equates to irrationality) and the efficient market hypothesis (the market is always efficient, reflects all relevant information, and stocks always trade at their fair value) cannot explain or model this premium and variation between

company valuations as reflected in the stock price (Fama, 2000, Shiller, 2002, Shefrin, 2007, Thaler, 2015). Mehra and Prescott (1985) observed, as measured from 1889 to 1978, that rationally based equilibrium pricing models could not account for either short-term or long-term stock prices and returns on equity.

Indeed, the U.S. financial crisis and stock market gyrations of 2007-2008 revealed fundamental flaws in the efficient market hypothesis and the supporting theories of human rationality in economic decision-making and thus pricing in market conditions. Additionally, indications of other influences, such as the 'irrational exuberance' (Shiller, 2009) displayed during economic 'bubbles' of the dot.com period of the late 2000's and the housing market prior to the financial crisis in 2008 in the U.S. and the subsequent 'busts' further exposed these flaws.

Newer economic choice theories based on psychological understandings of human decision-making, specifically the impact of heuristics and biases, has opened up the opportunity for additional research and models to explain and predict investor behaviour when evaluating and buying stocks, including pricing in dynamic markets (Kahneman and Tversky, 1979, Thaler, 2000). These theories and research are collectively called the field of 'behavioural economics', and the sub-field referred to as 'behavioural finance' when applied to investor decision making, versus consumer behaviour. In behavioural economics, it is irrelevant whether the factors and the cognitive decision process that influence decision-making are considered rational or irrational (biases, heuristics, framing) by neoclassical economic definitions (Tversky and Kahneman, 1986, Kahneman et al., 1982). Behavioural economics accepts all cognitive processes, rationally and emotionally based, as part of the decision-making process (McFadden, 1999). That being said, behavioural economists have shown that formal predictive models of behaviour can be developed even when emotionality is considered (Jolls et al., 1998).

While behavioural finance has gained significant traction in both the academic and practitioner fields, and extensive research has been conducted on behavioural and cognitive factors that influence investor behaviour, the cause of volatility and stock price premiums has yet to be holistically identified, and a predictive decision-making model developed.

Specifically, a new paradigm, founded on behavioural economic theory, to predict and model stock prices is needed by management practitioners, investors and investment professionals that take into account all factors that influence investor choice. This model, if created, could serve both descriptive and predictive purposes, assisting in identifying current causes and rationale for company valuations and providing the ability to predict future valuations based on multi-variant scenarios.

Investor choice has repeatedly been observed to be objective and rational (lacking emotion) when evaluating a stock of a company the investor dislikes (Clark-Murphy and Soutar, 2005, Sharma et al., 2008), thus heuristics or biases that support favourability of a company is a likely source of price premiums not reflected by investors without such affinity. I suggest corporate brand affinity (favourability) is a construct that can be used to measure and predict investor choice and stock prices. Strong and differentiated brands have been shown to enhance significantly firm performance (Colucci et al., 2008, Warlop et al., 2005) and investors have been shown to prefer companies with high brand recognition (Frieder and Subrahmanyam, 2005). It also has been observed 'that stocks of companies with prestigious brands have high market-to-book ratios' that can not be explained by additional risk, asset growth, or information asymmetry (Billett et al., 2014, p.744). So there is an empirical foundation for the concept of brand affinity influencing individual investor behaviour.

This research topic is related to concepts, constructs, and theories in three distinct but complementary areas of research and literature; positive (descriptive) microeconomics, choice theory within the field of cognitive psychology, and branding within the field of marketing.

Nobel laureate Herbert Simon (1959) set a foundation for behaviour economics with his 'bounded rationality' theory that recognized humans were not perfectly rational, utility maximizing machines without emotional influences, and that humans make satisficing choices that 'bound' their rationality.

The foundational theories of behavioural economics, first proposed by Nobel laureates Daniel Kahneman and Amos Tversky and further expanded on by Richard Thaler specifically around finance, established the basis for a more realistic set of models to address 'irrational' but predictable human economic behaviour (Ariely and Jones, 2008). Kahneman and Tversky challenged rationality and expected utility hypothesis models and theories when they documented a cognitive basis for common human errors using heuristics and biases and applied it to economic decision-making, most notably their 'prospect theory' (Tversky and Kahneman, 1974, Kahneman and Tversky, 1979, Kahneman et al., 1982). Thaler (1985) further observed that investors used 'mental accounting' to divide and allocate their assets with differing values depending on use, and then subjectively 'frame' a transaction in their mind, which determines the utility they expect to receive.

1.1 BRAND AFFINITY

Brand affinity is a relatively new theoretical construct that is defined as the positive attitude, level of favour or affect an individual has towards a brand holistically, inclusive of specific features, descriptors, and attributes of the brand (e.g., personality, reputation, image, attitude, culture, etc.)(Kotler and Pfoertsch, 2010). There are a large

number of factors, both tangible and intangible that influence a person's opinion of an entire company, the 'corporate brand', and these vary from person to person (Dev et al., 2008). These include, but are not limited to; factors affecting corporate reputation, perception of management, and personal experience with the brand. Research has identified sixteen measurable factors that may contribute to an individual's level of corporate brand affinity and that people understand the construct without prodding, and they reliably self-report their level of affinity for a corporate brand (Murphy, 2010). Brand affinity is measured by overall brand favourability ratings and forced rankings in surveys. Brand affinity serves as the primary emotional based (non-financial) choice variable in this research, serving as both a construct and heuristic that investors use to evaluate companies for investment.

1.2 RESEARCH QUESTIONS, AIMS AND OBJECTIVES

The aim of this research is to provide a new paradigm that accurately measures the effect of brand affinity on stock (equity) prices when faced with a choice between companies in the same industry. That is, to answer the question: how does brand affinity effect investor stock choice? To achieve this, the research has these objectives:

- To investigate, for current individual retail investors of U.S. stocks, the factors involved in the decision to choose one stock over another in same industries when financial factors are controlled.
- To understand what relationship, if any, exists between investor choice of stock (dependent variable) and their level of brand affinity (independent variable).
- To develop a predictive model of relationships between brand affinity, company financial performance metrics, and investor stock choice and/or stock price premiums.

- Based on the above model, to develop a market simulator for practitioners that can be used to predict behaviour and pricing based on simulated market choices.

1.3 EXPECTED RESULTS AND CONTRIBUTION

The primary theoretical contribution of the research is to provide a new model that reliably predicts the effect of brand affinity on investor stock choice and measures the effect of brand affinity on stock prices. As previously discussed in this chapter, the literature gives reason to think there should be a relationship between brand affinity for a company and both the willingness to choose one company's stock over another and the price premium (or additional risk accepted) investors are willing to pay for the preferred stock.

The major contribution to practice is the development of a model and market simulation tool for predicting investor behaviour incorporating brand affinity, which may be used on both an individual and an aggregate market level for company stock prices and valuations. On an individual level, the model will attempt to predict the willingness of an investor to pay a premium for investing in a company that they have a higher level of brand affinity towards. On an aggregate market level, if overall brand affinity can be measured towards a brand or basket of brands, then the model can quantify the portion of a company's value is attributable to its brand, based on book value and market capitalization analysis.

Two distinct areas of business may benefit from my research findings, investment management and business strategy. In the field of investment management, knowing if and how much a stock carries a price premium due to aggregate levels of positive brand affinity can assist investors and financial planners avoid overvalued stocks in their portfolio allocations and make better comparisons between similar stocks. For

individual decision-making, knowledge of what influences his/her thought process can prevent costly, if not catastrophic investment mistakes (Thaler and Sunstein, 2008).

In business strategy, building a high level of brand affinity can increase brand equity and thus overall market value, which has many implications for initial public offerings (IPO) and capital financing to hostile takeovers. Additionally, for merger and acquisitions, accurate valuations and thorough understanding of the factors of such valuations are crucial.

1.4 RESEARCH METHODOLOGY

Measuring the effect of brand affinity on stock choice required the collection of new primary data on individual stock choice behaviour, as no data existed that could answer the research questions of this thesis. An experimental economics strategy to collect data using a controlled experimental study was selected. This strategy was chosen because determining cause-and-effect relationships between multiple factors (variables) and estimation of part-worth utility (preference scores) was necessary to achieve the goals of this research. An experimental economics study allows for the manipulation of independent multidimensional variables in a highly controlled procedure that is not available with other strategies and methods.

An online simulation quantitative study using Choice-Based Conjoint analysis (CBC), a variant of conjoint analysis (CA) was selected as the optimal data gathering methodology. Conjoint Analysis is a multivariate research methodology that can help in sorting out the relative significance of an item's multidimensional properties (McFadden, 1991). CA has been observed to be an effective research methodology option when isolating an effect is difficult, such as the case with brand affinity in a risk-based choice experiment (Vriens, 1994). Due to the functional and mathematical complexity of administering a CA study and analysing the results, advanced computer

software must be used. Sawtooth Software, the leading technology platform for conjoint analysis was leveraged for the data gathering.

An investor's decision to choose one stock over another is the dependent variable in the research study. The independent variables are brand affinity and the five most commonly researched financial performance metrics examined by investors when evaluating a stock: price-to-earning ratio (P/E), earnings per share (EPS), return on equity (ROE), price-to-book ratio, and dividend yield. These variables reflect the key item attributes or measurements, which investors use to survey, evaluate and select an equity investment.

Additionally, brand affinity cannot easily or reliably be manipulated since it is an internal construct (heuristic) made up of numerous factors, therefore the level of affinity for specific brands was measured for each participant as part of the study. Participants were presented with four different but industry related companies stock within the study: Apple, Google, Amazon, and Microsoft. These companies were chosen for the study due to their high brand profiles, broad multi-product/service business models, and high levels of stock volatility with price premiums.

Metric conjoint analysis models the judgments of individual participants specifically. At the point when the greater part of the attributes is apparent, metric conjoint analysis leverages ANOVA (analysis of variance) for a specific output of attribute measurement (Lang, 2011, Gustafsson et al., 2013). The attributes are the independent variables, the judgments contain the dependant variable, and the part-worth utilities are the β 's, the parameter measures from the ANOVA model.

A sample of 200 active individual retail stock traders in the U.S. was surveyed to provide a statistically significant representation of the population. The participants were

non-probability purpose sampled by sending invitations to clients of CFA Institute members and through social media posts to LinkedIn, Facebook, and Twitter.

The resulting output from a conjoint analysis study, raw conjoint (part-worth utility) data is of limited value to interpret on its own (Orme, 2006). The most valuable analysis tool that can be generated from a conjoint analysis study, if the data are reliable, is a market simulator (model) that creates simulated market choices and prices. This market simulator model was successfully developed and is illustrated and discussed in chapters 5 and 6.

1.5 THESIS STRUCTURE

To address to the aforementioned research questions and to achieve the objective, the thesis is organised into seven chapters, which are as follows.

This first chapter introduces the research topic, research background and key research questions. Chapter 2 provides a review of the literature and the theoretical frameworks that are relevant to the research topic. In this chapter, the key discussions regarding choice are discussed, and more specifically investor choice, as it relates to marketing, psychology, and economics. This chapter also examines the lack of research and pricing/valuation models that are inclusive of decision making heuristics and biases. The chapter concludes with a discussion of the theoretical frameworks that will guide the research.

Chapter 3 explores the rationale and research for brand affinity as a construct and variable in choice based studies. A review of existing brand and other choice influencing constructs is discussed and the opportunity for a new construct that encapsulates non-financial choice factors based on heuristics and biases is outlined.

The chapter concludes with a comprehensive description of the brand affinity construct and all factors included.

Research methodology is described in chapter 4. First the ontological and epistemological perspectives for the research are established, the research methodology, which relies primarily on quantitative methods, is explained, and a rationale for selecting specific research strategy and techniques is given. Finally, the research design and data collection methods are explained.

Chapters 5 and 6 present the results of the research. In Chapter 5 the results of primary data collection are presented, which includes data from an experimental economics controlled study using a conjoint analysis framework. Chapter 6 provides a discussion of the results from the research and the market simulator that was developed.

Chapter 7 addresses management implications of the research conclusions. Specifically, implications for business strategy and investment management including ethical considerations are discussed.

Finally, Chapter 8 discusses the conclusions arrived at from the research, limitations of the research, and describes practical, theoretical and methodological contributions of the research and identifies areas for further research.

2 LITERATURE REVIEW

The research topic ‘the effect of brand affinity on investor choice’ is related to concepts, constructs, and theories in three distinct but overlapping areas of research and literature; positive economics, choice theory within the field of cognitive psychology, and branding within the field of marketing. This chapter will provide an overview with discussion and critique of key literature and theories related to the research topic, as well as provide an outline of the theoretical frameworks from which the research propositions and hypotheses are derived. The choice to invest in a stock is considered an economic decision (Thaler, 1995), so an emphasis has been placed on economic literature.

Primary goals of the research is to provide a descriptive analysis and model of how investors’ choose and price stocks of similar companies, therefore the review of economics literature is focused on ‘positive economics’, which is the branch of economics that concerns the description and explanation of economic decision making (Eatwell et al., 1987). Positive economics, versus normative economics, focuses on observable facts and cause-and-effect behavioural relationships, including the creation and testing of economics theories (Keynes, 1999). Stated more simply, the Nobel laureate Milton Friedman (1953) posited that positive economics can be defined as the economic aspects of ‘what is’, whereas normative economics discusses ‘what ought to be’. While critiques of positive economics have been presented by some (Hill, 1968), it is an accepted field by the academics and business practitioners. Consequently, literature related to normative or optimal decision-making was purposely omitted unless it provided additional context for the research propositions and hypotheses.

Choice theory literature provides a cognitive psychological perspective and foundation to understand human behaviour when making decisions, especially with uncertainty and risk (Thaler, 1985). Investor and finance related decision-making had traditionally

been considered the purview of the field of economics, since economic agents are assumed to be rational, not influenced by behavioural biases (Barberis et al., 2002). Daniel Kahneman and Amos Tversky, two noted psychologists changed this when they established a cognitive basis for common human errors that occur in the presence of heuristics and biases and applied it to economic decision-making (Tversky and Kahneman, 1974, Kahneman and Tversky, 1979, Kahneman et al., 1982). They won the Nobel Memorial Prize in Economic Sciences in 2002 for this discovery and launched the field of behavioural economics (Kahneman, 2003). Behavioural economics combines both economics and cognitive psychology into one field of research for the purpose of researching economic decision-making (Ariely, 2009). Behavioural economics and the sub-field of behavioural finance, which focuses on economic decision-making related to investing, provide the theoretical frameworks for my research.

The primary, non-financial variable for my choice research is brand affinity, so branding literature review is focused on brand as a predictor of behaviour, including the various constructs for measuring brands as a decision-making factor. Additional attention to brand literature is addressed in Chapter 3, where I discuss the development of the brand affinity construct.

The strict rules on advertising, promotion, sales and marketing of investments and securities (including stocks/equities imposed by the Securities and Exchange Commission (SEC), a federal regulatory agency in the U.S., make the market and decision-making for securities unique to the U.S. (Hazen, 2011). That being said, the scope of my research is focused narrowly on investment decision-making between stocks in the same industry and stock market, so variability between stock market and government regulatory structural are not variables in the decision-making process.

Thus, while the scope of the research was focused on individual investors in the U.S., international literature published in English was included when appropriate.

Institutional investors, those that manage other people's assets and investments, face different incentives and less personal opportunity cost, if any, than individual investors making decisions with their personal assets. Because of this fact, institutional investors have been observed behaving differently than individual investors when making investment decisions (Frieder and Subrahmanyam, 2005). Therefore, literature related to institutional investors is not relevant to this thesis.

2.1 ECONOMICS

Microeconomics, the branch of economics that studies the behaviour and decision-making of individuals, is dominated by the neoclassical economic school of thought that was founded on the premise of human rationality (Veblen, 1899, Becker, 1976). Neoclassical theories and models assume humans make decisions as rational economic agents that are efficient and unbiased processors of all relevant information and that their decision is based on the greatest utility to be received, all things equal (Fama, 1970). Economic utility can be defined as the total satisfaction, happiness, or value received by an economic agent from consuming a good or service (Edwards, 1954). A person is often referred to an agent in economic literature, so that nomenclature has been used in this section, though actor, person, individual, and agent may be used interchangeably.

2.1.1 RATIONAL CHOICE THEORY AND EXPECTED UTILITY HYPOTHESIS

Rational choice theory, the theoretical framework for rationality in decision making, one of the two cornerstone theories of neo-classical economics, states that individuals always make prudent and logical decisions that provide them with the greatest value and that are in their highest self-interest (Jevons, 1871). The rational agent is assumed

to take account all available information, probabilities of events, and potential costs and benefits in determining preferences, and to act consistently in choosing the self-determined best choice of action (Simon, 1953). Additionally, rational choice theory assumes that an individual has preferences among the available alternatives that allow them to state which option they prefer. These preferences are assumed to be complete because the agent can always determine which of two alternatives they consider preferable or that neither is preferred to the other, and transitive, that is if option A is preferred over option B, and option B is preferred over option C, then A is preferred over C (Becker, 1976).

As a foundational theory for normative choice models, the rational choice theory has been very effective, but empirical evidence reveals economic agents in real-life do not always make rational decisions as defined under the theory (Allais, 1953, Green and Shapiro, 1994), so several augmented rational based theories have arisen to deal with human limitations of rationality within decision making. The most prominent of those theories in literature is the theory of 'bounded rationality', as proposed by Nobel laureate Herbert Simon (1953). He proposed that people are not always able to obtain all the information they would need, that they have cognitive limitations, and limited time to make the decision to make the best possible decision as defined in rational choice theory, which created a 'bounded rationality'. While the bounded rationality theory came much closer to describing how economic agents in real-life made decisions, one key feature of the rational choice theory remained unaddressed and troublesome, that rationality as defined required a consistent ranking of the alternatives by agents. Consistent ranking of alternatives has not been empirically observed (Kahneman and Tversky, 1979, Thaler, 1985), but is required for predicting outcomes and patterns of choice under the rational choice theory, including bounded rationality.

The framework of utility maximization is the second fundamental cornerstone for neoclassical economic theoretical models (Fama, 1976), which was originally posited as 'Moral Expectation' by Daniel Bernoulli (1738). Bernoulli put forth his theory as a normative function that should be used to correct expected value depending on probability or risk (Jordan, 1924). Bernoulli recognized that a strict mathematical formulation for expected utility did not account for risk aversion when choices have uncertain outcomes, where the risk premium is generally higher for low-probability events than for high-probability event (Jordan, 1924).

While fundamentally a sound theory under specific conditions, which will be examined in the next paragraph, its original purpose was normative not descriptive (positive) of choice behaviour. That is, it addresses how decisions should be made, not how they are actually made, which is a fundamental flaw for any positive economic theory and/or literature that relies on utility maximization.

The moral expectation theory was expanded upon in the mid-twentieth century to become the 'expected utility hypothesis' to take into account risk aversion, size of pay-out, and pay-out probability in addition to utility maximization by several leading economists of neo-classical economics (Becker, 1976), most notable those associated with the Chicago school of economics, including but not limited to Nobel winning economists such as Gary Becker, Eugene Fama, and Milton Friedman.

Bernoulli also formalized the construct of 'marginal utility' in his writings, which was the additional satisfaction a consumer gains from consuming one more unit of a good or service (Becker, 1976). To illustrate the concept, the satisfaction you receive from one glass of water would be greater than a second, and then a third even less than the second. Additionally, the same amount of additional money or goods was less useful or valuable to an already-wealthy person than it would be to a poor person. While marginal utility is not always present in choice, the concept is helpful in understanding

that agents will evaluate choices differently as either internal or external context or choice factors change for them.

Von Neumann and Morgenstern then axiomatized the expected utility hypothesis into a descriptive model when certain rational choice behaviour rules were applied. Under the von Neumann-Morgenstern utility theorem, four axioms must be satisfied for the expected utility hypothesis to hold true in real-life conditions (Von Neumann and Morgenstern, 1944):

- **Completeness:** assumes that an individual has well-defined preferences and can always decide between any two alternatives.
- **Transitivity:** assumes that a person decides consistently.
- **Independence:** pertains to well-defined preferences and assumes that two unknown gambles when mixed with a third one maintain the same preference order as when the two are presented independently of the third one. The independence axiom is considered the most controversial one.
- **Continuity:** assumes that when there are three lotteries (A, B and C) and the individual prefers A to B and B to C, then there should be a possible combination of A and C in which the individual is then indifferent between this mix and the lottery B.

A person is said to be rational if all four axioms are satisfied (Fama, 1976). This enabled the utility function to be mathematically represented as the von Neumann-Morgenstern utility representation theorem, which is useful as a normative or predictive tool, especially when an individual must choose from one unknown outcome over another (Von Neumann and Morgenstern, 1944). Early researchers that leveraged the

von Neumann-Morgenstern models accepted that real decision-makers in practice would violate some of the conditions, but that the conditions could be interpreted nonetheless as 'axioms' of rational choice (Anand, 1993).

Savage (1954) further expanded on the expected utility hypothesis by dealing with subjective probability for decision making under uncertainty in his derivative 'subjective utility theory'. To address the descriptive and predictive weaknesses of the expected utility theory, Savage showed that if the decision-maker adheres to axioms of rationality, believing an uncertain event has possible outcomes each with a unique level of utility, then the agent's choices can be explained as arising from this utility function combined with the subjective belief that there is a probability of each outcome. Stated simply, different people may make different decisions because they may have different utility functions or different beliefs about the probabilities of different outcomes. Consistent and predictable ranking of alternatives by agents continues to exist within the subjective utility theory for it to hold up, which is a significant flaw as a positive economics model.

Although Fama is credited with perfecting the efficient market hypothesis, he observed that the correlation between risk (β) and market return was insignificant (Fama and French, 1992). The fundamental notion of maximizing future wealth in decision-making has been significantly challenged by numerous studies (Kahneman et al., 1997, Statman, 2004, Fama and French, 2004a, 2004b, Clark-Murphy and Soutar, 2005). Without both the maximizing future wealth and reducing risk components in the expected utility hypothesis, it is fundamentally flawed.

The epistemological leap from Bernoulli's interpretation of expected utility under rationality as a normative choice model to the axiom anchored expected utility hypothesis and its derivatives, as descriptive models, is very troubling for several fundamental reasons. One, rationality has empirically been shown to not require

transitivity, independence or completeness (Anand, 1993), which is required under the expected utility hypothesis. Secondly, and most importantly, empirical evidence has shown that economic agents do not behave with predictable rationality when choosing between options with uncertain outcomes (Kahneman et al., 1982). Thirdly, as a hypothetical behavioural measure, utility does not require attribution of mental states or heuristics, such as happiness, satisfaction, or affinity into utility maximization decision making, only the accounting of value from such state (Becker, 1976).

The two theoretical cornerstones of neo-classical economics, rationality of choice and utility maximization are useful and valid frameworks for normative choice models, but as tenants of positive choice models they provide limited usefulness as they oversimplify the decision-making process and exclude important behavioural and cognitive factors of choice. Experimental tests of the expected utility hypothesis have not yielded unequivocal results.

The premise of rationality and the expected utility hypothesis was first critically challenged by the noted French decision theory economist Maurice Allais through his Allais Paradox (1953). He observed that agents would modify preferences between simple lotteries so as to minimize risk and disappointment in case they do not win the highest lottery prize offered. Allais noted that this behaviour did not fit the independence axiom of the expected utility hypothesis neither the definition of rational choice, and was heavily influenced by personal emotional elements.

This leads to my first two conclusions and propositions for the current study:

- P1: Investors do not rely exclusively on rationality when choosing stocks within the same industry with similar risk profiles.
- P2: Investors do not rely exclusively on expected utility when choosing stocks within the same industry with similar risk profiles.

2.1.2 CHALLENGES TO RATIONALITY AND EXPECTED UTILITY THEORIES

Models based on rational choice theory and expected utility hypothesis do not take into account emotional and psychological factors, but extensive research shows that these factors are very significant in real-life choice (Kahneman and Tversky, 1979, 1982, 1996, 2000, Kahneman et al., 1986). This basic premise opens the door to numerous other descriptive models to both explain and predict choice behaviour.

Allais' initial challenge to the expected utility theory was followed up with groundbreaking research by Kahneman and Tversky, whom developed the 'prospect theory' (1979), which exposed fundamental flaws to the tenants of rational choice theory and the expected utility hypothesis. The prospect theory describes the decision process in people as two stages: editing and evaluation. In the editing stage, possible outcomes of a decision are ordered or ranked following one or more heuristics. Specifically, people decide which outcomes they see as fundamentally identical, set a reference point, and consider lower outcomes as losses and larger outcomes as gains. In the evaluation phase, people behave as if they would compute a value, based on the potential outcomes and their respective probabilities, and then choose the alternative having the higher utility. A certainty effect, which leads to irrational risk seeking/aversion, and an isolation effect that causes inconsistent preferences was also identified by their research (Kahneman and Tversky, 1979).

Most notable of Kahneman and Tversky's findings is that they observed heuristics are more predictive than rationality theories (1996). This finding and numerous subsequent empirical studies that supported their initial theories (Kahneman and Tversky, 1979, 1982, 1996, 2000, Kahneman et al., 1986) helped establish the field of 'behavioural economics', which studies the effects of psychological, social, cognitive, and emotional factors on the economic decisions of individuals and the consequences, including market prices and returns. Since choice models built on the frameworks of rational

choice theory and expected utility theory decisions do not take into account emotional and psychological factors, behavioural economic researchers have been free to explore new theories and descriptive models of choice based on observable human behaviour. This is fundamental for my research, as I look to provide a new model that accurately measures the effect of brand affinity on stock choice and the subsequent the price premium, if any.

A heuristic is a mental shortcut that allows people to solve problems and make judgments quickly and efficiently (Kahneman and Tversky, 1996). These rule-of-thumb mental processes vary from person-to-person, can change from time-to-time within the same person, and can be influenced by numerous factors including context and emotional state. Heuristics shorten decision-making time and allow people to function without constantly stopping to think about their next course of action. Heuristics are helpful in many situations, but they can also lead to biases' or be influenced by existing biases.

A sub-field of behavioural economics is 'behavioural finance', which focuses specifically on investor and financial markets behaviour. Thaler (1987) was the first to focus on investor choice within the behavioural economic framework by observing decision-making anomalies that went against the economic paradigm of rationality. A fundamental distinction of behavioural finance from the broader behavioural economics field of research is the difference between consumers and investors intent. Although the literature on brands influence on consumer choice is rather comprehensive, the difference between consumer choice and investor choice is deep. Consumers choose to buy a good or service in order to consume or use it, which provides a certain amount or utility or pleasure. The decision process, whether based on rational or heuristics or a combination of these choice tactics, consciously or subconsciously, is based on the intent to consume or use. Investors choose to buy an asset, tangible or intangible

consciously to provide a return on investment and/or protect principle value by reducing risk, not to consume it (Thaler and Sunstein, 2008). Thus, agent utility can be measured when purchasing a stock based on the expected return on investment (return of principle plus gain) an investor believes they can realize from the investment, taking into account the level of risk and probability of outcomes.

Another difference between consumer choice and investor choice in the U.S. and other free market economies is pricing. While most consumer pricing is presumed to be market based, that being it is established by buyer and seller behaviours through the economic law of supply and demand (Henderson, 1958), in fact, the prices are rarely fluid enough and/or changed by the sellers, to fluctuate day-to-day, much less in real time. [The exception to this perhaps being auctions and commodities based consumer products such as petrol.]

In contrast, Equities traded on U.S. stock markets exchanges are completely fluid, with prices often changing many times a second. This provides a useful market to observe real-life economic choice behaviour and thus pricing in a reasonably controlled environment. Under neo-classical economic models, the price for an asset is considered correct or at equilibrium and the market efficient because all agents are rational (Friedman and Friedman, 1980). But with a company's stock price changing hundreds, if not thousands of times a day, the only way the agents could be considered rational is that hundreds or thousands of bits of information that impact the demand (choice) and valuation of the company are being released everyday. Shiller (1981) noted that volatility in asset prices is higher than justified by changes in intrinsic value and that under standard models of asset valuation, the volume of trading should be lower than actually occurs. Even if this were humanly possible to consume and process that much data, which it is not (Bushee et al., 2010), no human would want to consume that much information to make a decision on which stock to buy and at what price. This

leads to two fundamental questions underlying my research, why is the price of stocks so volatile and why do investors value companies differently, even if objectively from financial and risk aspects they might appear equal?

By studying stock traders that focused on company and industry news (fundamental analysis) versus those that focused on trading momentum and market data (technical analysis), it was observed that individuals use overly-simplified mental models, heuristics, to evaluate stocks that neither take into account all the information, as required for rationality, nor always seek to maximize utility (Harrison and Stein, 1999).

Thaler (1985) observed that people use mental accounting when making decisions and that the accounting was subject to psychological bias. In addition, Hirshleifer (2001) outlined the effect of investor psychology on asset pricing, and observed investors over- and underpay for an asset based on cognitive biases. For example, De Bondt and Thaler (1985) observed that cognitive biases caused investors to overreact to company news and thus affect asset pricing. They argue that asset prices can be at equilibrium, but the price may not reflect pure rationality.

Cognitive biases in behavioural economics are the same as cognitive illusions, the more commonly used term in the field of psychology, which occurs when agents see different versions of something, an image, data, or a situation, depending on how they interpret it (Kahneman and Riepe, 1998). This occurs for two reasons, one, because the brain cannot comprehend all the data and relies on heuristics to interpret and respond to the data, and two, the brain relies on stored knowledge about the world to interpret the data it receives, which causes biases (Eagleman, 2011). Specific cognitive illusions can create ambiguous, paradoxical (impossible), distorting, or fictitious views of the data (Helmholtz and Southall, 1962). In this thesis, I argue that brand affinity is an important heuristic used by individual investors.

The proposition is supported by research by Gregan-Paxton and Cote (2000) into investor decision-making that provided empirical evidence that investors were using analogies about one familiar company to evaluate another novel company. Their research leveraged a framework that uses four-stages to examine how investors use to acquire and evaluate investments: familiarizing, exploring, scanning, and reasoning (Bouwman et al., 1995). They concentrated on the reasoning (deciding) phase, where evidence showed that an investor's primary focus was on non-financial information to predict future company success and that agents used analogies of similar known companies to simplify the decision process when dealing with the large sets of data to evaluate a company. Analogical reasoning is a commonly observed heuristic (Samuelson, 2001), which I argue here is a theoretical foundation that can be applied to explain behavioural observation of brand affinity's effect on choice.

Even though choice behaviour with the observed heuristics and biases is seen through neo-classical economists eyes as irrational or illogical, the research discussed in this chapter so far suggests it provides a much more realistic view of real-life agent decision-making. Indeed, models based on behavioural economic frameworks have been shown to be predictive of real-life choice behaviour, regardless of rationality (Tversky and Kahneman, 1974, 1979, Kahneman et al., 1982).

This leads to my third proposition:

- P3: Brand affinity is a heuristic that investors use to evaluate a company for investment.

2.1.3 PRICING

Since investors rarely purchase a single company's stock outside of an investment portfolio of stock, or planned portfolio, thus, theories and frameworks around portfolio and pricing are relevant to my research. The dominant framework for

portfolio management is the modern 'portfolio theory' (Markowitz, 1952), which states that investors should choose a mix of investments to maximize return and minimize risk based on expected utility, but investors' have been observed not always making investment decisions in a way that maximizes utility, in the neo-classical economics rational sense (Tomer, 2008).

In investment management practice, the Capital Asset Pricing Model (CAPM) (Sharpe, 1964) based on the modern portfolio theory and the efficient market hypothesis (Fama, 1970) has been a foundation of determining the appropriate pricing of assets under rational decision making, but the U.S. financial system's near collapse in 2008 revealed that pricing under the CAPM does not hold true (Brown and Walter, 2013). Other modern portfolio theory based models have also been empirically shown to be invalid since the 2008 U.S. financial crisis (Omisore, 2012).

Thus, while Barberis and Thaler (2003, p. 1055) noted that the benefit of this framework is that it is 'appealingly simple', they also stated, 'unfortunately, after years of effort, it has become clear that basic facts about the aggregate stock market, the cross-section of average returns, and individual trading behaviour are not easily understood in this framework'.

Several pricing models have been posited that take into account behavioural finance frameworks, including the 'behavioural capital asset pricing theory' (Shefrin and Statman, 1994) and 'behavioural portfolio theory' (BPT) (Shefrin and Statman, 2000). The behavioural capital asset pricing theory places investors into two segments, 'information traders' who behave rationally and 'noise traders' who commit cognitive errors. They also observed that the so called irrational noise traders were not accounted for in current investor behaviour models and that these traders made up a much larger portion of the market than the previous researchers had acknowledged. The model seeks to identify the equilibrium price or rational price for an asset by

identifying a mean price based on Bayesian probability (Shefrin, 1981) and Markov chain learning (Shefrin, 1983).

The impact of noise traders was also observed when historical stock market transaction volume was analysed and revealed much higher levels of trading volume than rational behaviour would dictate (French and Roll, 1986). While the behavioural capital asset pricing theory has value in determining what may be an 'fair' equilibrium price by neo-classical economics definition, it fails to describe why and how investors are choosing and pricing stocks. Additionally, I argue it seems logical that the equilibrium price of a stock should include 'noise traders', and not try to statistically eliminate them, as rationality is not a requirement of free market supply and demand economic equilibrium pricing. Simply stated, the equilibrium price is what it is, without interpretation.

Another alternative model to modern portfolio theory, that does allow for 'noise' in decision making was the 'behavioural portfolio theory' (BPT), proposed by Shefrin and Statman (2000). BPT was developed as a descriptive portfolio theory on the foundation of SP/A (security-potential/aspiration) theory (Lopes, 1986) and prospect theory (Tversky and Kahneman, 1979), two prominent behavioural economic theories of choice under uncertainty. The SP/A theory uses aspiration level as a second criterion in the choice process (Lopes and Oden, 1999). BPT assumes that a single representative agent drives prices and that a small number of cognitive biases influence this representative agent. BPT also suggests that investors have varied aims and create an investment portfolio that meets the range of goals, which are broader than the basic utilities of profit maximization and risk management as constrained by the modern portfolio theory and CAPM. BPT is a useful model for describing portfolio composition and diversification in real-life, which may influence stock price, but empirical evidence has yet been presented to validate it's as a predictive model.

A third pricing model, the 'adaptive markets hypothesis' attempts to reconcile the efficient market hypothesis with behavioural economic theories by apply principles of evolution to interactions, such as competition, adaption, and natural selection (Lo, 2004). While interesting from a theoretical viewpoint, not enough empirical research exists leveraging the adaptive markets hypothesis to evaluate it as a valid descriptive or predictive choice model.

I propose a new behavioural finance model can be developed for predicting investor choice and stock price that leverages the brand affinity construct as the primary behavioural/cognitive variable along financial performance metrics. Thus I submit the following hypothesis:

- H1: There is a direct positive correlation between brand affinity and investor stock choice.
- H2: There is a direct positive correlation between levels of brand affinity in the investor population for a stock and the stock price for that brand.

2.1.4 CONCLUSION TO ECONOMIC LITERATURE DISCUSSION

The wealth of knowledge in economic literature is substantial, but flaws in rational choice theory and expected utility hypothesis expose many follow-on choice and pricing theories and research to significant scepticism. Behavioural economic literature provides a foundation for my research but there is a gap in knowledge and thus the opportunity to create a new model and paradigm in stock choice and pricing around that leverages brand affinity and its effect on investor choice.

2.2 PSYCHOLOGY

Decision theory within the field of psychology, also known as theory of choice, is a well studied field of cognitive psychology (Simon, 1986), which has not been constrained by

the economic concepts of rationality and irrationality. Cognitive psychology is the study of mental processes that affect behaviour (Neisser, 1967), which is objective in nature and seeks to understand and describe the root processes of memory, perception, problem solving, and choice (Watson, 1913). Though none of the decision theory literature available and reviewed specifically corresponded to my research on investor choice and brand affinity or any pricing models, this is left to the field of economics, the significant body of cognitive psychology research provides a foundation for economics and my research.

Psychobiological research by Kroeber-Riel (1979) around consumer activation, also called arousal, which is the stimulation of the cerebral cortex into a state of general wakefulness or attention, plays an important factor in explaining consumer behaviour from a biological and physiological foundation. Activation, like cognition, is defined as a fundamental variable in human behaviour and has been likened to arousal or alertness and has been shown to influence and cause human behaviour. Simply stated, psychological processes originate from physiological ones. This provides a foundation for choice research that is grounded in biological laws, and that decision-making may be rooted in evolutionary emotional traits.

Neuroeconomics, a subfield of behavioural economics, though founded on neuropsychology fundamentals, the branch of psychology concerned with how the brain and the rest of the nervous system influence a person's cognition and behaviours, has provided insights into brain mechanisms to inform microeconomic theory that supports current behavioural economics theory (Camerer et al., 2004b). Specifically, neuroeconomics research reveals that areas in the brain that generate emotional states also process information about risk, rewards, and punishments, suggesting that emotions influence financial decisions' (Kuhnen and Knutson, 2011). Kuhnen and Knutson (2011) found that people in positive emotional states were

induced to take risks and be confident in their ability to evaluate investment options. Neuroeconomics researchers argue that the way parts of the brain activates and ultimately functions for decision-making is predictable and parsimonious (von Helversen et al., 2008), which is supported by the behavioural economics literature.

Neuroeconomics research using functional MRI (fMRI) observed that the mind can 'play tricks' when subjects think they are making a rational decision and that there was lack of independence in the brain between risk and reward (Zweig, 2007), both of which are fundamental underpinning of behavioural economics. Camerer (2007) also observed through fMRI that the brain processed information in a routine way that can be used to make reliable predictions about behaviour, which supports the premise of predictive behavioural economics models. These findings further support the first two propositions, namely:

- P1: Investors do not rely exclusively on rationality when choosing stocks (within the same industry with similar risk profiles).
- P2: Investors do not rely exclusively on expected utility when choosing stocks (within the same industry with similar risk profiles).

The fundamental cognitive psychological concept of 'affect', supported by neuroeconomics research, is key to understanding investor choice behaviour and the effect of brand affinity. Affect is defined as the external expression of emotion attached to ideas or mental representations of objects (Isen et al., 1987). Affect refers to the emotional state of decisions-maker and its impact on cognition of the decision-maker, which impacts tendencies to evaluate particular entities with favour or disfavour and make comparative judgements between entities (McFadden, 1999). Typically, affective evaluations are of the form good versus bad, attractive versus unattractive, or pleasant versus unpleasant (Zajonc, 1980, Damasio, 1996). Put simply, affect is the specific

quality of goodness or badness someone feels for an object or entity, such as a brand, and how that influences their behaviour (Slovic et al., 2002).

Positive affect or favourability systematically influences performance on many cognitive tasks including choice (Ashby et al., 1999). Positive affect has been associated with increased dopamine levels in the brain, which is theorized to predict or account for positive influences on 'the consolidation of long-term (i.e., episodic) memories, working memory, and creative problem-solving'. For example, the theory assumes that creative problem solving is improved, in part, because increased dopamine release in the brain improves cognitive flexibility and facilitates the selection of cognitive perspective.

A significant amount of research has shown that even moderate fluctuations in positive affect can systematically affect cognitive processing (Isen, 2001). Isen and others have also shown that mild positive affect, the sort that most people experience every day, improves creative problem solving (Isen et al., 1987, Estrada et al., 1994). Choice theory research has shown a link between affect and choice (Desai and Mahajan, 1998); correlation of which is necessary to presuppose that brand affinity, essentially a type of affect, is a predictor of behaviour in choice and decision-making.

Positive affect can be viewed as a quality assigned to a company or an investment opportunity. For example, a company's stock with a highly positive affective evaluation is likely to be seen as good in terms of a number of other specific attributes, such as the quality of its management, its strategy, or financial projections. However, the basis for the affective evaluation may not be related to management quality or financial viability, but rather to the association of the company with the exciting or 'flashy' qualities of its business industry, which has been documented as a source of financial choices (Ben-David et al., 2007). Further evidence shows that there is a positive correlation between affect and higher market valuation and thus stock price (Statman et al., 2008).

More specifically, Akerlof and Shiller (2009) identified that overconfidence in individual economic decision making is often the culprit of irrational decisions that under normative conditions would be rational. This leads to subjects making higher risk decisions than optimally should taken (Camerer et al., 2004a). This supports hypothesis 2 posited previously:

- H2: There is a direct positive correlation between higher levels of brand affinity and stock price, all else equal.

Positive affect is a required attribute of brand affinity (Glover, 1988). If affinity for a brand influences the choice of an investment, it is an indicator of overconfidence and potentially could lead an investor to choose riskier stocks. The level of affect someone has for a company or brand is not easily ignorable in decision-making, as choice research based on genetic needs has identified feeling as an uncontrolled component in behaviour (Glasser, 1998). This relates to brand affinity, which is a feeling for a company. If feeling is uncontrolled and influences choice, then my research should show a direct correlation to brand affinity and choice. Thus, Hypothesis 1 gains further support

- H1: There is a direct positive correlation between brand affinity and investor stock choice.

Studies suggest people use an 'affect heuristic' that improves judgmental efficiency by deriving both risk and benefit evaluations from a common source, which I suggest may be brand affinity when choosing between stocks of known companies (Finucane et al., 2000). Kahneman (2003) described the affect heuristic as 'probably the most important development in the study of judgement heuristics in the last decade' (p. 710). This heuristic will be explored in greater detail in the theoretical frameworks section of this chapter.

Branding has been studied by cognitive psychologists and been determined to be one of the most important determinants of consumer choices (Philiastides and Ratcliff, 2013). Research found people with subjective value information can model preference-based choices reliably, and that branding biases are explained by changes in the rate of the integration process itself. This result suggests that branding information and subjective preference are integrated into a single heuristic. This supports the proposition

- P3: Brand affinity is a heuristic investors use to evaluate a company for investment.

While psychology choice theory provides the cognitive behavioural foundations for research into investor choice and brand affinity, its primary purpose is to provide a theoretical foundation for behavioural economics theory relied on for my hypotheses.

2.3 BRANDING

Branding is a well-studied field though existing literature correlating branding and investor behaviour is limited. Therefore, most branding literature reviewed addresses the known effects of branding as a predictor of behaviour and constructs and concepts relevant to brand affinity. Branding can be defined several ways depending on practitioner and researcher focus (e.g. strategy, design, etc.); for the purpose of this thesis branding is defined as a person's association with qualities and attributes with a name (e.g. Google, Apple).

Historically in business, brand development and management was focused on product branding (Stobart, 1994). The concept of a corporate brand that encompasses the company as a whole is a newer concept, but it is well established in the literature (Aaker, 2004, Dev et al., 2008). This concept is important because affinity for the corporate brand is the focus of my research.

Brand affinity is defined as the general attitude and level of 'favour' a consumer has towards a brand, inclusive of any specific features and attributes of the brand (e.g. product quality, image, reputation, etc.). Affinity also can be defined as the degree of a positive attitude towards the corporate brand (Salinas, 2009).

Brand affinity, while generally a well-understood abstraction (Bloxham, 1998, Earl, 2010, Pearlman, 2007), as a defined construct or heuristic is a new concept and been addressed only on a very limited basis in published research or literature. I put forth a pre-thesis working paper that empirically studied brand affinity as a construct and its potential as a heuristic for evaluating a company (Murphy, 2010); this paper will be discussed in the next chapter. The need for a construct like brand affinity was identified by Pearlman (2007). He acknowledged brand affinity's ability to both influence and serve as a predictor of consumer buying behaviour.

There are several documented descriptors of brand attributes from a consumer perspective including brand personality (Aaker, 1997, Geuens et al., 2009), brand attitude (Aaker and Jacobson, 2001), brand image (Bird et al., 1970), and brand reputation (Veloutsou and Moutinho, 2009). While consumers and investors were considered to be distinct actors in economics, within branding we can assume they are analogous actors and interpret brand attributes comparably (Dev et al., 2008).

Brand image is defined as the consumers' perception and interpretation of a brand's identity 'as reflected by the brand associations held in consumer memory' (Keller, 1993, p.3). Brand identity is the way a company wants to present its brand to target groups (Nandan, 2005). These are both multi-dimensional constructs of a brand that contain many attributes and components. Brand awareness is a measurement that is closely related to brand image, which measures the strength of a brand in memory including the ease and likelihood that the brand will be recognized or recalled (van Riel et al., 1998). While both brand image and awareness must be present for brand affinity

to exist in a subject, they lack the emotional context compared to affinity to be leveraged for my research, though it can be assumed that a person with high level of affinity for a brand would also have high awareness.

Corporate image, plays a potential role in brand affinity, which is defined as collective impressions of a population about a company (Easton, 1966). Measuring corporate image through attribute and non-attribute scaling has been successful in research (van Riel et al., 1998, Dowling, 1988), which provided an effective measurement framework for brand affinity (Murphy, 2010).

Brand personality can be defined as 'the set of human characteristics associated with a brand' (Aaker, 1997, p.347). This framework is of interest because people have been shown to have affinity for other humans and brands based on akin characteristics (Fischer, 2006, Freling et al., 2011). While measuring specific characteristics of brand personality is outside the scope of this research, the fact that companies project brand personalities provides credence that people can have an emotional affinity to a company's brand.

Brand attitudes are consumers' overall evaluations of a brand, which may be positive, negative or neutral (Bass and Wilkie, 1973). Brand attitudes can be related to beliefs about non-product related attributes, symbolic benefits, and consumers self-expression (Praxmarer and Gierl, 2009). Researchers have used a wide range of adjectives and descriptors for brand attitude, with many variations over the years, though none has become standard (Aaker and Jacobson, 2001). A positive brand attitude is closely related to brand affinity though brand affinity provides a more holistic view of a company in a simple favourability rating.

Brand reputation connects tangible business data, news, and reporting with public perception to understand how people form perceptions of a company's reputation

(Chaudhuri, 2002). A significant factor of brand reputation is corporate reputation which varies by contextual situations (Chun, 2005). Corporate reputation is defined as an overall assessment of an organization by its stakeholders (Davies et al., 2003). Corporate reputation and investor satisfaction was correlated by Helm (2007); which provides support for the connection of brand affinity and investors. Corporate brand differs from corporate reputation because reputation is ultimately the result of brand management, and therefore not controllable (Salinas, 2009). From a strict asset and accounting basis, the corporate brand is an asset and corporate reputation is not because the brand can be separated (e.g. bought, sold or transferred), whereas corporate reputation cannot (International Accounting Standards, 2004).

The reputation of a firm influences appeal as investment choice (Helm, 2007) and individual investors have been shown to prefer a stock with high brand recognition (Frieder and Subrahmanyam, 2005). Research into the interaction of a person's company-related attitudes, their tendency to buy the company's stock and purchase/use the company's products showed a positive correlation (Aspara and Tikkanen, 2008). Investors tend to assume that good investment opportunities come from 'good' companies, this from companies with high reputational rating (Shefrin and Statman, 1995, Shefrin, 2001). These points support the previously posited hypotheses:

- H1: There is a direct positive correlation between brand affinity and investor stock choice.
- H2: There is a direct positive correlation between higher levels of brand affinity and stock price when compared to other companies within the same industry.

The construct of 'brand affect' appears to be the closest related construct to brand affinity and provides significant support for brand affinity as a factor in decision-making.

Brand affect is derivative of affect in psychology and is defined as an experience of feeling or emotion for a brand (Batson et al., 1992). Affect was positively correlated to brand perceptions by Adval (2003). Chaudhuri and Holbrook (2002) measured brand affect as part of a study on brand commitment and purchasing. They defined brand affect 'as the potential in a brand to elicit a positive emotional response' (Chaudhuri, 2006, p.121). Their framework for measuring affect relied on asking subjects three emotional response questions about 'feeling good' and levels of happiness and pleasure received from a brand. The ability for subjects to accurately self-report brand affect provides a level of confidence that subjects in my research will be able to accurately self-report their levels of brand affinity.

Brand affect has also been measured by using name recall and suitability metrics by Erevelles and Horton (1998). Recall and suitability are not applicable for brand affinity because affinity is a deeper emotional response based on multiple factors than recall and suitability.

Brand affect has been empirically shown to be effective at predicting consumer purchase intention (Morris et al., 2002). Also of note is that research has shown that investors prefer stocks with positive affect (Statman et al., 2008), but this research did not conduct any measurement into choice or price variables specifically, so it provides limited usefulness in a descriptive model.

While closely related, brand affect is not interchangeable with brand affinity in my research. Affect has a broader meaning than affinity and includes many types of moods and emotions (Batson et al., 1992). Affinity is a type of emotion within affect, but it is much more focused on the specific aspect of 'favourability'. Research shows affect does not occur until a subject has trial experience with a brand (Smith and Swinyard, 1983), which differentiates it from brand affinity which does not require any direct experience. The close relationship of affect to affinity provides a basis to propose

brand affinity as a heuristic used by investors and a factor of stock choice. This supports the proposition:

- P3: Brand affinity is a heuristic investors use to evaluate a company for investment.

Brand loyalty is a measurement of customer propensity to make repeat purchases and has been found to have a positive correlation to brand affect (Matzler et al., 2008). Brand loyalty has also been positively correlated to stock ownership (Schoenbachier et al., 2004). While the research was focused on building brand loyalty and satisfaction by encouraging stock ownership by customers, it revealed that brand satisfaction might be a motivator for customers to invest in a company's stock. Because the research was limited to existing customers and product brand satisfaction, which may or may not be related to the company's brand, and satisfaction requires specific experience with a company or its products, the scope of this research does not address the effect brand affinity has on investor choice. Despite the aforementioned positive correlations, brand loyalty is a repeat behaviour and is too distinct from the singular choice being posited in this research.

Theories and literature into constructs and measurement of brand equity (Aaker, 1992, Silverman et al., 1999, El-Tawy and Tollington, 2008) are not relevant to brand affinity because brand equity focuses on measuring the value of the brand itself, while brand affinity is a predictor of behaviour. Though, brand affinity could be a factor in brand equity, as higher levels of affinity may create more value.

Brand preference and brand choice are frameworks used by branding and marketing researchers to evaluate consumer judgement, biases, cognitive processes, and decision-making behaviour of consumers (Philiastides and Ratcliff, 2013). No literature exists with direct research on brand preference and choice correlated to stock choice.

The research conducted for this thesis and the proposed model will add to the knowledge base of these two frameworks. Though specific to investor choice behaviour, additional research may be able to apply the model to consumer choice behaviour.

Extensive practitioner literature and rankings exists around branding, though none address brand affinity reliably. The four most well know brand rankings use revenue/EVA (Interbrand), market value (BusinessWeek), admiration (Fortune), and company size (Forbes). Besides lacking a direct relationship to brand affinity, I find all four ranking lack the rectitude to stand up to sceptical analysis.

Based on a review of the branding literature, there appears to be sufficient evidence for brand affinity to be a construct that can be credibly measured and used as a variable in investor choice. Additionally, a review of brand literature reveals there is a gap in knowledge between brand affinity and investor choice.

2.4 LITERATURE SUMMARY

The interdisciplinary nature of this research required a review of a broad range of bodies of literature in economics, branding, and psychology leading to the hypotheses and propositions. Summarised in the table below (see Table 2.1) are the key bodies of literature related to the hypotheses and propositions.

Table 2.1: Hypotheses and Propositions to Literature Summary

<p>H1: <i>There is a direct positive correlation between brand affinity and investor stock choice.</i></p>	<p>-Behavioural Portfolio Theory (Shefrin and Statman, 2000) -Overconfidence and Risk (Akerlof and Shiller, 2009; Camerer et al., 2004)</p>
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	<ul style="list-style-type: none"> -Firm Reputation and Investor Preference (Shefrin and Statan, 1995; Helm, 2007)
<p>H2: <i>There is a direct positive correlation between levels of brand affinity in the investor population for a stock and the stock price for that brand.</i></p>	<ul style="list-style-type: none"> -Behavioural Capital Asset Pricing (French and Roll, 1986) -Behavioural Portfolio Theory (Shefrin and Statman, 2000) -Consumer Activation (Kroeber-Riel, 1979) -Overconfidence and Risk (Akerlof and Shiller, 2009; Camerer et al., 2004) -Firm Reputation and Investor Preference (Shefrin and Statan, 1995; Helm, 2007)
<p>P1: <i>Investors do not rely exclusively on rationality when choosing stocks (within the same industry with similar risk profiles).</i></p>	<ul style="list-style-type: none"> -Bounded Rationality (Simon, 1953) -Prospect Theory (Kahneman and Tversky, 1979) -Biases and Heuristics (Tversky and Kahneman, 1974, 1979, 1982, 1996) -Uncertainty and Risk (Thaler, 1985) -Neuroeconomics (Zweig, 2007)
<p>P2: <i>Investors do not rely exclusively on expected utility when choosing stocks (within the same industry with similar risk profiles).</i></p>	<ul style="list-style-type: none"> -Allais Paradox (1953) -Prospect Theory (Kahneman and Tversky, 1979) -Mental Accounting (Thaler, 1985) -Neuroeconomics (Zweig, 2007)
<p>P3: <i>Brand affinity is a heuristic investors use to evaluate a company for investment.</i></p>	<ul style="list-style-type: none"> -Analogical Reasoning (Samuelson, 2001) -Neuroeconomics (Camerer, 2007) -Affect and Stock Price (Statman et al., 2008) -Affect Heuristic (Finucane et al., 2000)

2.5 CONCLUSION

2.5.1 THEORETICAL FRAMEWORKS

This difference in consumer and investor motivation and intent means the research must work within the frameworks of behavioural finance theory to have validity.

Outlined below are the key frameworks and theories relied upon for this research:

- **Prospect Theory:** The foundation of behavioural economics, developed by Kahneman and Tversky (1979), their theory challenged the core tenants of neo-classical economics—rationality of choice and expected utility hypothesis. The theory contends that agents make economic decisions based on perceived gains rather perceived losses when risk exists, as agents value gains and losses differently, even when the probabilities of outcomes are known. They observed that losses have more emotional impact than gains.
- **Bounded Rationality:** The second cornerstone of behavioural economics, was posited by Simon (1982), which countered the rationality of choice and expected utility hypothesis as well. The theory contends that economics agents have three constraints when making economic decisions:
 - Information about possible alternatives and their consequences is often limited and unreliable;
 - The human mind has limited capacity to process and evaluate available information; and
 - There is limited time to make decisions.

These limitations or bounds on rationality require agents to use heuristics to simplify the decision process and focus on satisficing their decision rather than maximizing

utility. Additionally, it was observed that the use of heuristics often leads to bias in the decision-making process.

- Mental Accounting: Thaler (1985), the pioneer of behavioural finance, leveraged the prospect theory value function to theorize and observe that agents divide their current and future assets into non-transferrable, separate allocations. Agents then use 'mental accounting' to assign different levels of utility to each allocation, which affects their decision-making and estimated outcome for each allocation. Within mental accounting research, framing was identified within the mental account process that revealed agents subjectively 'frame' a transaction in their mind that determines the utility they expect to receive.
- Affect heuristic: The reliance on feelings of specific qualities of 'goodness' or 'badness' as a rule-of-thumb to evaluate and process information, and make decisions (Finucane et al., 2000, Slovic et al., 2007) In a broad study, affect was shown to be a valid predictor of behaviours and choice, even more so than cognition (Morris et al., 2002). Additionally, considerable evidence shows that affect plays a significant role in pricing (Statman et al., 2008).
- Secondary theoretical frameworks:
 - Confirmation bias: Preconceptions play a significant role in decision-making (Wason, 1960).
 - Familiarity heuristic: Past outcomes are considered as potential future outcomes (Heath et al., 1990).
 - Representativeness' heuristic: past events influence decision-making. (Tversky and Kahneman, 1986).

- Optimism bias: Agent's subjective confidence is greater than their objective accuracy (Sharot, 2011).
- Narrative heuristic: Agents prefer stories to analysis; narratives are crucial to how people sense of reality and provide a frame of reference to remember concepts (Tarim, 2015)
- Recency bias: Agents extrapolate recent events into the future indefinitely (Kappelman, 2001).

2.5.2 SUMMARY

One of the criticisms of behavioural finance is that data mining plagues empirical work and evidence is found out-of-sample (Subrahmanyam, 2008). However, as Subrahmanyam argues, the same can be said for most risk-based theories of investor behaviour where regression of data has been pushed beyond the limits of reliability. To prevent this argument with my research, a primary experiential experiment with human subjects was conducted, so mining of existing data is not required.

Although branding, choice theory, and economics are well-researched fields and provide theoretical frameworks and contextual foundations, there is an obvious gap in knowledge as to the effect that a specific cognitive heuristic, analogical reasoning regarding brand affinity (positive affect) has on investor stock choice and pricing, which this thesis aims to fill. As Thaler (1999, p.65) stated '...economists will routinely incorporate as much 'behaviour' into their models as they observe in the real world. After all, to do otherwise would be irrational'. The following chapter will provide an overview of the brand affinity framework and a discussion of the research conducted in the development of the construct.

3 BRAND AFFINITY AS A CONSTRUCT

The number of factors, both tangible and intangible that influence a person's opinion of an entire company, the 'corporate brand', is vast and varies from person to person (Dev et al., 2008). This fact provided a challenge to researching and measuring the effect of a corporate brand's influence on investor's stock choice. Negative or neutral opinion of a corporate brand has not been shown to negatively influence an investor's valuation of a company's stock (Billett et al., 2014), and research has shown that investors prefer companies with high brand recognition (Frieder and Subrahmanyam, 2005) and positive affect (Statman et al., 2008). An effective integrated and comprehensive construct had not yet been identified and studied that could serve as a predictor of behaviour, thus an opportunity and gap existed for a theoretical construct that measured the positive perception or favourability a person has for a company brand, from a holistic vantage.

This newer theoretical construct is named 'brand affinity', which is defined as the holistic positive attitude or level of favour an individual has towards a brand, inclusive of specific features, descriptors, and attributes of the brand (e.g. personality, reputation, image, attitude, culture, etc.)(Kotler and Pfoertsch, 2010). The word affinity is derived from the Latin expression 'affinitas' (Dictionary.com, 2009), meaning 'related' and is defined as 'a natural liking for or attraction to a person, thing, idea, etc.' (Dictionary.com, 2004). The intention behind defining the construct is to determine if a flexible and simple favourability measurement arrived at through a research participant's scaled rating or forced preference ranking can be used as a variable in studies, and that the favourability measurement reflects all relevant factors of brand affinity. A hypothetical construct is defined as an explanatory variable that may or may not be observable, where multiple factors and referents exist but are not all-inclusive (Cronbach and Meehl, 1955).

Measuring affinity for a corporate brand is not complex, as people have been shown to reliably and internally consistently self-report their favourability of brands (Thomson et al., 2005). However, the factors an individual considers to arrive at an affinity rating or ranking for a brand had not been documented, so a foundation pre-thesis study and working paper was developed to identify the factors that contribute to brand affinity, describe the construct and evaluate its comprehensiveness to encapsulate brand affinity (favourability)(Murphy, 2010). The more comprehensive the construct, the more valuable it will be as a tool for research and predicting behaviour when a holistic view of a corporate brand is required, such as this thesis. Additionally, the more comprehensive the construct, the more likely brand affinity would also serve as a heuristic people use when evaluating a company (Kahneman et al., 1982). Secondly, brand affinity would be a contributor to brand equity (brand value), if the construct was shown to be a valid predictor of behaviour (Aaker, 1992).

A construct for consumer affinity was suggested that classified it into two primary areas, macro drivers and micro drivers with several categories within each segment (Oberecker et al., 2008). While consumer affinity differs from brand affinity, this dual area structure was leveraged for the study and it proved to be an effective framework to describe and measure the factors of brand affinity.

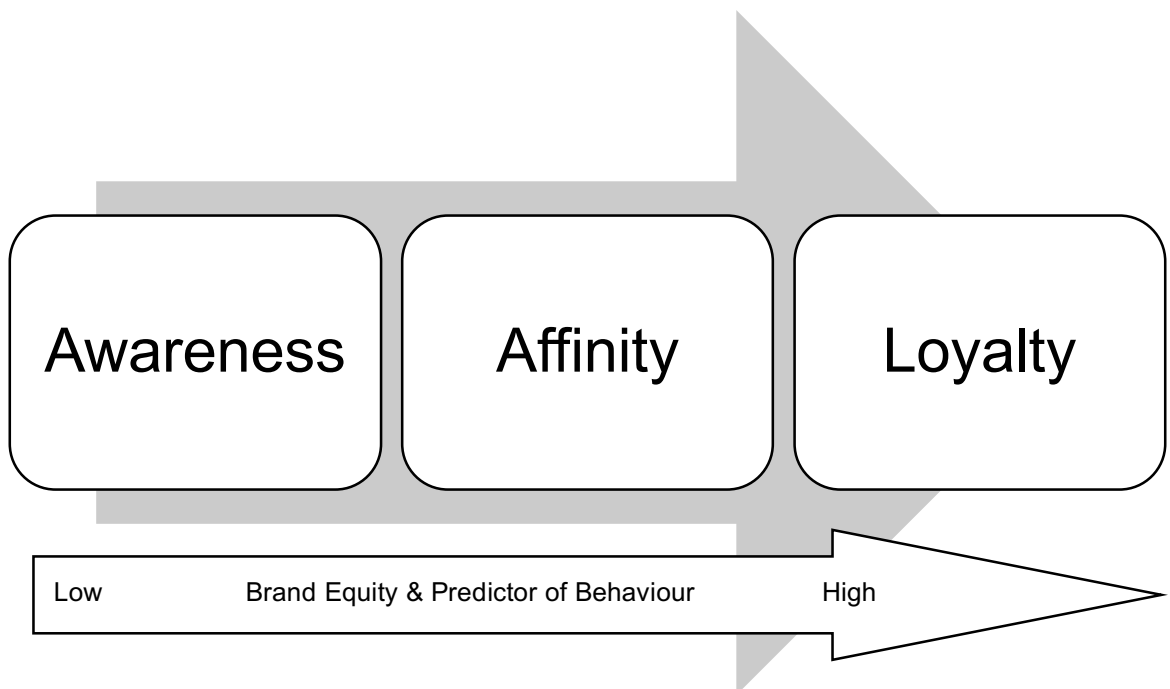
3.1 BRAND AFFINITY AND BRAND MEASUREMENT

While the traditional goal of investing, building and managing a brand is influencing consumers to choose the brand and then developing a base of consumers loyal to the brand, the process of getting a potential customer to that point can be very complex (Chaudhuri and Holbrook, 2001). Much of the marketing and advertising done by companies is focused on the first stage of branding, creating brand awareness (Aaker and Biel, 1993). Taking potential customers from brand awareness to a brand loyal customer is a factor of many variables, both internal and external, similar to creating

brand affinity. By moving customers through awareness to a loyal customer, brand equity is increased (Srivastava et al., 1997, Salinas, 2009).

Brand affinity fits between and compliments brand awareness and brand loyalty very well on both brand equity and behavioural predictor measurements. To have a level of brand affinity, a person must have some level of awareness of the brand, but awareness alone does not add much value to brand equity as it is not a strong predictor of behaviour (Aaker, 1996). Conversely, once a person shows brand loyalty with repeat purchases, it can be assumed they have some level of affinity for the brand. At this stage, significant value is generated for brand equity, but behaviourally, the gap between brand awareness and brand loyal customer is significant, so I suggest brand affinity bridges this gap (see Figure 3.1).

Figure 3.1: Brand Awareness, Affinity, and Loyalty on Scale of Brand Equity and Prediction of Behavior



To illustrate the role of the construct of brand affinity, figure 3.1 places brand awareness, affinity and loyalty on a sliding scale with the level of brand equity and

behavioural prediction from low (left) to high (right). Brand awareness is on the far left of the scale due to its low contribution to brand equity and weakness in predicting behaviour. Brand loyalty is on the far right of the scale due to its high contribution to brand equity and strength as a predictor of behaviour (Danaher et al., 2003). Brand affinity sits in between awareness and loyalty on the scale but also is a natural complement to awareness and loyalty because affinity requires awareness to exist, and loyalty requires affinity to exist.

For brand affinity to be a construct on par with brand awareness and brand loyalty, it must be able to measure brands independently versus just being a cognitive tool for comparison and brand preference evaluation. The research shows agents can evaluate brand affinity on an individual brand basis, and thus the construct passes this significant test (Murphy, 2010). Alternatively, if a potential agent has no awareness of a brand, then they cannot have any level of affinity for it, so pre-awareness aspects of branding are not relevant to the construct.

3.2 RESEARCH STRATEGY AND METHODOLOGY

The initial research questions were:

- Q1: What factors contribute to a person's affinity for a brand?
 - Q1_a: Can these factors be measured and/or weighted?
 - Q1_b: Are these factors consistent among different people?
- Q2: Is brand affinity a uniformly understood concept by people?
- Q3: Can brand affinity be measured directly or will it have to be measured indirectly through measurement of the factors?
- Q4: Will agent's accurately self-report their level of affinity for a brand?

The initial propositions put forth were:

- P1: There are a finite number of measurable factors that influence brand affinity.
- P2: A construct can be developed to measure brand affinity based on multiple factors.
- P3: Agents uniformly understand the concept of brand affinity.
- P4: Agents accurately self-report their level of affinity for brands.

To identify an initial list of brand affinity factors, qualitative primary data was collected from 10 in-depth interviews with vice presidents of marketing or Chief Marketing Officers (CMO) from 10 mid- and large-sized firms (>\$10m in revenue) located in Los Angeles, California. The participants were asked to identify factors they have identified in their research and marketing analytics that influenced brand affinity. An equal number of men and women were interviewed to help eliminate any gender bias. The number of interviews was decided by measuring the quantity of data received from successive interviews, whereas, upon the point when two participants in a row identified no additional factors, additional interviews were halted. All participants were responsible for marketing and managing brands both domestically in the U.S. and internationally.

From the data collected, factors of brand affinity were marked with a series of codes, which were emergent from the text. The codes were further grouped into higher-order concepts that already exist in literature of similar issues for manageability. From these concepts, which are posited to represent factors contributing to brand affinity, an initial framework of the construct was identified, and research propos developed (Strauss and Corbin, 1990).

Using the emergent brand affinity factors, framework, and propositions identified from the interviews, an online survey was developed and a convenience sample created by distributing a participant request and survey link virally through social networking channels (e.g. LinkedIn, Facebook, Twitter). The participants were asked to rate the level of influence the thirteen identified factors on their favourability of a company, on a four-step scale from none to little, moderate, and large. The survey also asked an open-ended question to identify other, unlisted factors that influence their favourability of a company, and then rate those factors on the same scale as the prepopulated list of factors. The participants were then asked to rate several corporate brands based on both the pre-populated and ad hoc attributes identified. Participants also ranked the corporate brands on a favourability scale (from 1 to 10) and then force rank those brands based on preference. This was done so correlations between attribute ratings and a favourability rating and/or forced preference ranking could be conducted.

A minimum goal of 100 responses (sample size) was established to provide enough data to be relevant for statistical significance (Wilkerson and Olson, 1997). The convenience sample collected over a one-week period was 180 completed surveys from participants across the U.S. While not intending the study to be necessarily representative of the population, the demographic breakdown of the respondents was similar to the U.S. population, excluding those under the age of 18 and over 65.

3.3 RESEARCH FINDINGS

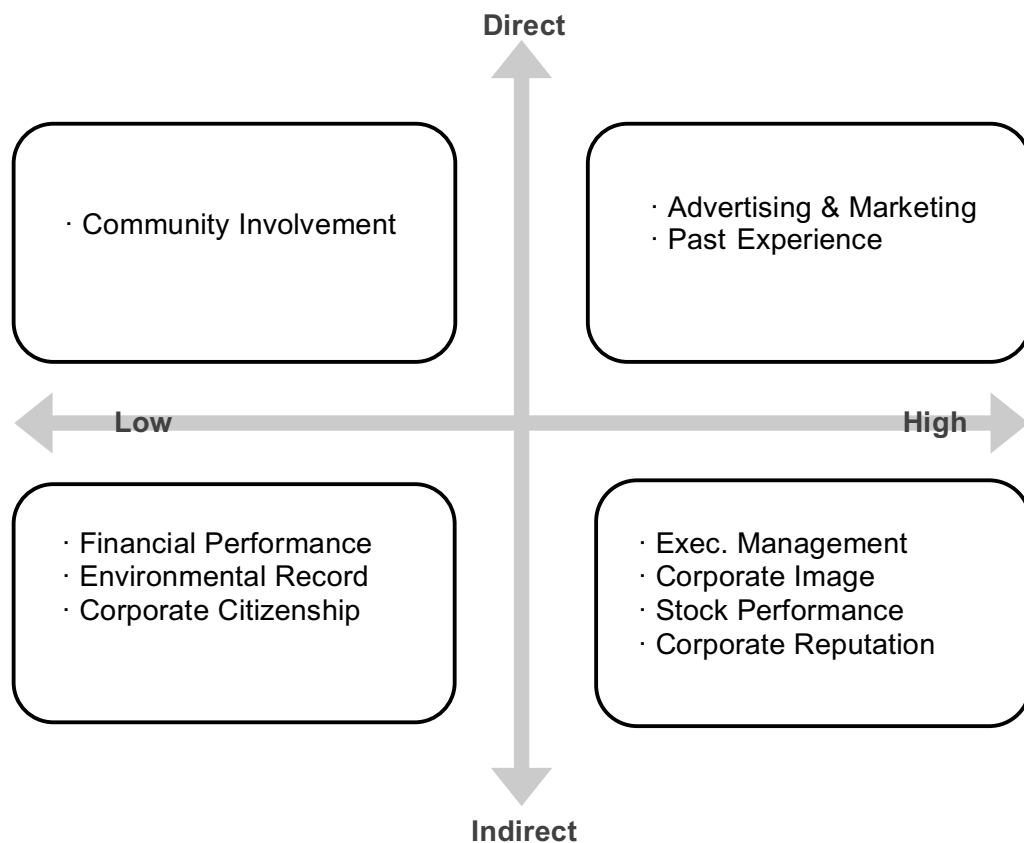
There were an initial ten measurable factors of brand affinity identified from the ten in-depth interviews:

- Community involvement
- Advertising & marketing
- Financial performance
- Environmental record

- Corporate citizenship
- Executive management
- Stock performance
- Past experience (company and/ or product/service)
- Corporate image
- Corporate reputation

While some factors were clearly and directly identified, other factors were more subtle and identified through the patterns of agents' conversation around certain topics. Additionally, interview participants frequently referred to factors in two distinct categories—direct versus indirect brand involvement and level of influence. From these data, a two-axis framework was derived with the level of influence on the x-axis and direct/indirect on the y-axis. The ten factors were then plotted on the chart into four quadrants—direct/low influence, direct/high influence, indirect/low influence, and indirect/high influence (see Figure 3.2).

Figure 3.2: Identified Factors of Brand Affinity (Initial)



Data from the survey identified six additional factors and guidance for modifying three of factors already identified. New factors identified were:

- Prices
- Endorsements
- Political involvement
- Product/service quality, design & performance
- Peer & family influence
- Employee relations

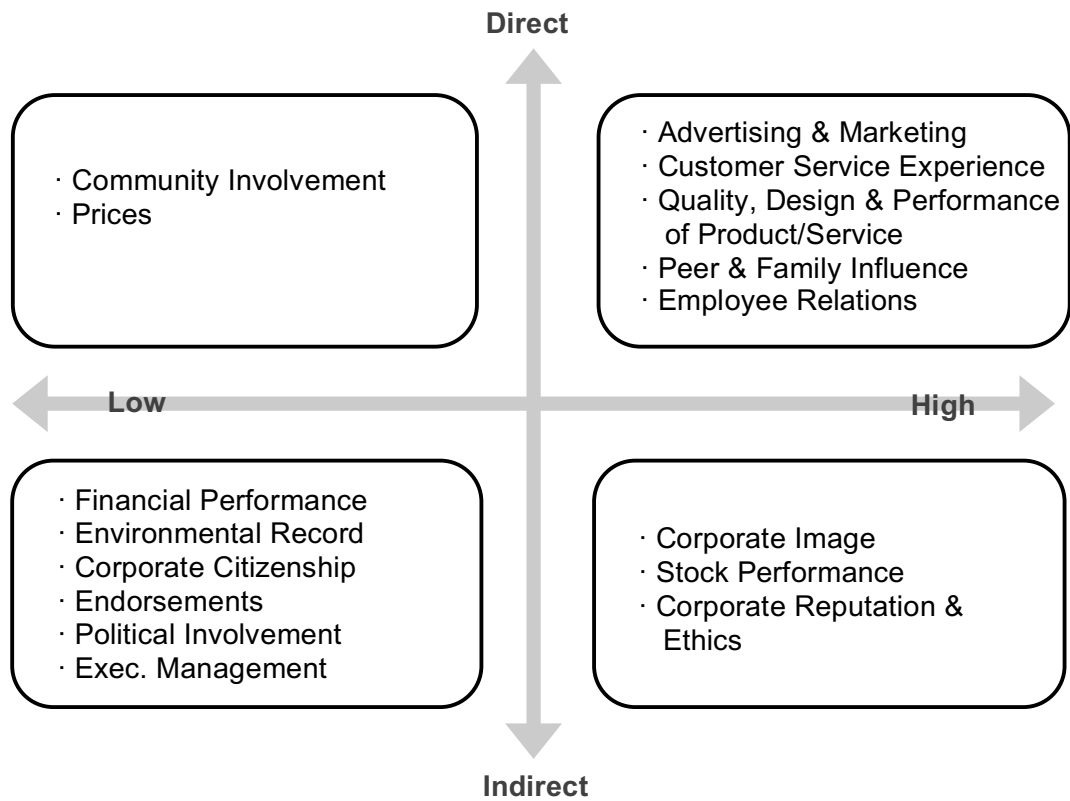
Modified factors were:

- Corporate reputation Δ Corporate reputation & ethics
- Past experience Δ Customer service experience
- Executive management moved from high to low influence

Figure 3.3 reflects all sixteen factors plotted on the previously identified framework.

While the factors can be plotted in each quadrant, it is noteworthy to observe more factors weighted towards the direct/high influence and indirect/low influence quadrants than the opposing quadrants.

Figure 3.3: Identified Factors of Brand Affinity (Final Construct)



3.4 CONCLUSION

A review of existing brand literature reveals that the 16 identified factors have all been already identified individually, in other brand constructs, or as brand constructs themselves, or other marketing related constructs in existing literature, but most notably no other major factors of brand favourability or equity have been identified in the literature. This analysis reveals that the construct is comprehensive enough to serve as a construct to measure the affinity (favourability) of a corporate brand holistically.

The survey data also supported the premise that brand affinity is a well-understood concept for measuring the favourability of a brand, regardless of what specific factor or factors influenced the participant's affinity, because participants who rated some or all of the identified attributes with positive levels were strongly positively correlated

($r=0.92$) with self-reported brand affinity ratings and rankings. Based on this observation, it is suggested that brand affinity is a valid and reliable construct, which is measurable through self-reporting using a brand favourability scale and/or preference ranking. This finding supports using the brand affinity construct as a predictor of behaviour in future studies.

4 RESEARCH METHODOLOGY

This chapter presents the methodology and logic used for the research study that emerged from the underlying literature and theoretical frameworks presented in the previous chapter. A quantitative study using Choice-Based Conjoint analysis (CBC) was selected as the optimal methodology for this thesis and the research questions. The following discussion will first discuss the epistemological approach and outline the justification for using CBC including evaluation of alternative methodologies, as well as describe the specific design of the experiment.

4.1 RESEARCH PHILOSOPHICAL FOUNDATIONS: ONTOLOGY AND EPISTEMOLOGY

Ontology is the philosophical study of being, existence, or reality, which traces its roots back to the Greek philosophers, including Parmenides and Plato. Related to ontology is the philosophy of knowledge or epistemology, which describes the way humans create their knowledge about the world in which they live and how we justify such knowledge (Khalil, 2003). To simplify, as Fleetwood (2005, p.197) stated, ‘the way we think the world is (ontology) influences: what we think can be known about it (epistemology); how we think it can be investigated (methodology and research techniques)’. Dretske (2000, p.592) further clarified by stating, knowledge is distinguished ‘from mere true belief and lucky guessing [because] it is based on some form of justification, evidence or supporting reasons’.

A primary epistemological and ontological consideration within economics research is quantitative versus qualitative research strategies. Bryman and Bell (2015) suggest that quantitative research methods support a deductive (testing of theory), positivist epistemological orientation and objectivism ontological orientation, whereas qualitative research is better suited to an inductive (generation of theory), interpretivist epistemological orientation and constructivism ontological orientation. While some

debate has been presented that these distinctions are not useful (Bryman and Bell, 2015), for this research, a post-positivist, quantitative experiment was determined to be appropriate considering the theoretical foundations and testing of such, as outlined in the previous chapter.

4.1.1 POSITIVISM AND POST POSITIVISM

Positivism is an epistemological position that holds that the objective of information is basically to portray the world as one encounters it and learning of anything past that is incomprehensible (Mill, 1968). Thus knowledge is observable and measurable; that which is not observable or measurable cannot be knowledge. This is the foundation of the scientific method, which allows for repeatable models that can be discovered through experimentation. According to Denzin (1970) in the positivist view, the universe is deterministic and works by laws of circumstances and end results that can be observed through exploratory techniques. The key methodology of the logical technique is the examination, the endeavour to recognize common laws through direct control and perception.

The most critical challenge to positivism evolved into what is called post-positivism. Post-positivism perceives that the way researchers think and work and the way we think in our ordinary life are not unmistakably distinctive (Popper, 2014). Experimental thinking and judgment skills thinking are basically the same procedure within post-positivism and there is no distinction in kind between the two, just a distinction in degree (Gliner et al., 2011). Post-positivism perceives that all perception is untrustworthy and has errors so all hypotheses are revisable. The position where the positivist trusted that the objective of science was to reveal reality, the post-positivist trusts that the objective of science is to hold consistently to the objective of being accurate about reality, despite the fact that one can never accomplish that objective (Kumar, 2010). Post-positivism admits data from experiments, self-reported surveys,

and observed human behaviour (Dwivedi, 2009). This research accepts the post-positivist position and adopts an experimental methodology.

4.2 RESEARCH DESIGN

4.2.1 CAUSAL RESEARCH

For this study, a causal research design or experimental design is found to be the most suitable research design. It is chosen in light of the fact that it both falls within the scope of the post-positivist approach and that it can provide the researcher a wide scope to look at real world circumstances while providing an opportunity to test research hypothesis and propositions. An experiment requires the 'generating specific combinations of attributes and levels that respondents evaluate in choice questions, which allow for numerous and unexpected options and results' (Reed Johnson et al., 2013, p.3). Analyses of experimental research allow the researcher to recognize connections and correlations between diverse variables focused with controlled circumstance utilizing both quantitative or qualitative procedures to put forth in summed up expressions, equations or other types of models.

Causal research design may be considered as specifying explanations as 'if and afterward' assertions that help provide evidence toward accepting or rejecting research hypotheses. This kind of research design is utilised to measure the impact of particular changes in the independent variable(s) on the dependent variable. Most social researchers look for causal clarifications through these tests of hypotheses, which reflect tests of theory. Causal impact happens when change in one procedure (independent variable) results in a change in another variable (dependent variable). The causal research design assists researchers with understanding ways in which the world works through the procedure of demonstrating a causal connection between variables (Saunders et al., 2012).

Conjoint Analysis is an experimental method used in this research where researchers develop and present descriptions of alternative products or services (Green et al., 2001). One of the methods of experiment called discrete choice experiments (DCE) is often misrepresented as conjoint analysis (CA) (Mueller et al., 2010). However, there is a substantial difference between CA and DCE. CA is based on the theory of conjoint measurement and DCE is based on random utility theory.

Surveys with closed questions are the chosen research strategy for this research. The quantitative information that is assembled is analysed utilizing statistical programming, which is Sawtooth Software.

The experimental method, Conjoint Analysis and survey data collection are each discussed and commented on in the following sections.

4.2.2 EXPERIMENTAL METHOD

Experimental methodology concentrates chiefly on the connections between known variables, which provides valid interpretational confirmation (Binmore et al., 2010). The points of strength and weaknesses of experimental exploration are discussed in this section. Experimental methodology helps in controlling autonomous variables to focus on the circumstances and end results relationship and remove the effects of non-essential or undesirable variables (e.g., the 'third variable' problem)(Gliner et al., 2011).

Experimental research designs are about control and so, even the most realistic situations frequently involve some abstractions from reality. The degree on which results can be summed up all over circumstances and true applications (i.e., generalised) is restricted. Experimental exploration assists with inward legitimacy, however, this is to the detriment of external legitimacy. Knowing the focal points and hindrances of trial examination can assist with figuring out whether this sort of exploration suits the need or not (Sekaran and Bougie, 2013).

Because of the control set up by the experimenter and the strict conditions, better results can be accomplished by measuring behavioural variations from small incremental changes of individual variables. Another fortunate thing about experimentation is that the degree of planning should be so precise that tests can be re-organised or re-run exactly and results can be checked multiple times. Good experimental control can likewise give researchers more certainty in regards to whether the changes in the dependent variable are likely to be as a result of manipulations in the independent variable(s). Notwithstanding, one of the impediments of experimental exploration is that not all situations are appropriate for manipulation due to moral, ethical or pragmatic reasons. Taking for example a circumstance wherein the researcher is negatively impacting of a person's way of life (without prior participants approval) or directly influencing a participant's ability to perform their job (especially in healthcare situations), the experiment would not be ethical. A researcher conducting an experiment much strive to never put a study's goal above human freewill (VanderStoep and Johnston, 2009, Walliman, 2011).

Just like any other kind of exploration, experimental research is likewise subject to human mistake and/or bias, such as through bias in sample selection, incorrect/selective measurement and interpretation, or accidentally influencing respondent behaviour through observer expectancy effects or demand characteristics. Well-planned and executed experiments can also involve much pre-testing, take much time to set up and so can be tedious and costly.

For this research, the propositions and hypotheses require determining cause-and-effect relationships for economic decision-making. Thus, an experimental economics strategy is required. An experimental economics study allows manipulation of multidimensional independent variables in a highly controlled procedure that is not available with other strategies and methods (Starmer, 1999). Further, previous

research in the area employs experimental economics. Vernon Smith (1979, 1982) along with Daniel Kahneman (1979) formalized the methodology for experimental economics; they shared the Nobel Memorial Prize in Economic Sciences in 2002. Kahneman built on the experimental research framework with Tversky, using it for their behavioural economics research (Tversky and Kahneman, 1979, 1981, 1986, Kahneman and Tversky, 1979, Kahneman et al., 1982). More specifically, Royne (2008) discussed that experimental research can be highly effective when measuring subject choice; the goal of my research. Hence, experimental studies are most suited to this study.

4.2.3 RESEARCH VARIABLES

In the present research, an investor's decision to select one stock over another is the dependent variable. The independent variables are the most commonly used financial performance metrics considered by investors, which were surmised from existing literature (Nagy and Obenberger, 1994, Loibl and Hira, 2009) and then validated against investor search and inquiry counts as reported by *The Wall Street Journal*, *Financial Time*, *Yahoo Finance*, and *Google* (Tan and Tan, 2012). The number of variables was set at five (financial based) plus one (brand affinity). The number of five independent variables in addition to the company variable was determined to be the ideal number based on extensive CA literature that identified five or six variables leading to robust market simulators without overwhelming participants by the number of choices (Orme, 2006, Green et al., 2001, McFadden, 1991).

The brand affinity independent variable is the company, as represented by its brand name (e.g. Google, Apple, Amazon, Microsoft), which if known by the participant creates a cognitive level of affect for the company (positive, neutral or negative)(Aspara and Tikkanen, 2011), and if positive, can be measured as such (Murphy, 2010). Affinity cannot easily or reliably be manipulated since it is an internal

construct made up of numerous factors; therefore the level of affinity for specific brands was measured for each respondent as part of the experimental study and then that data correlated to investor choice with the CA analysis. These four companies in the study were selected due to their high level of brand awareness, broad customer bases in both business-to-business and business-to-consumer segments, and competition amongst each other in multiple industries including retail, ecommerce, software, hardware, and technology based services. Participants were asked to rate the four companies on a scale of 1 to 5, with 1 being unfavourable or neutral and 5 being highly favourable. They were additionally asked to force rank the companies in order of preference.

The financial based performance metrics include price-to-earnings ratio (P/E), price-to-book ratio, dividend yield, earnings per share (EPS), and return-on-equity ratio (ROE). Loibl and Hira (2009) observed that the financial indicators selected for this research carried the highest correlation to investor behaviour amongst 20 performance metrics studied. Haugen and Baker (1996) conducted research into 56 performance metrics that could be a factor in investor choice and found that P/E ($t=5.5$), EPS ($t=7.8$), ROE ($t=3.9$), price-to-book ratio ($t=4.7$), and dividend yield ($t=2.7$) had some of the highest t -statistics in a R^2 regression analysis.

The financial metric independent variables ranges were determined by examining the ten-year average ranges for the primary industries that Apple, Google, Amazon, and Microsoft operate within (source: YCHARTS). Below are definitions and the ranges used for each of the selected financial indicators:

- Price-to-earnings (P/E): is the ratio of market price per share divided by annual earnings per share. The P/E ratio is the primary metric leveraged to determine comparable company stock prices, as individual stock prices lack meaning without the context of earnings or trends (Shiller, 2002). Comparing the price

and earnings per share for the company offers a great way to determine the stock valuation of a company and its shares as compared to the actual income made by the company. Stocks having higher P/E have higher forecast earnings growth than those having lower P/E. P/E ratio is a useful metric to compare the relative value of stocks. P/E ratio finds its application in the comparison of companies of the same sector or domain (Brooks et al., 2006). The value range used in the study was 15 to 25.

- Price-to-book: is the ratio of current closing price of the stock by the latest quarter's book value per share. It is a measure of company's current market price to its book value. It is believed to be the best indicator of a value approach based on lower market premiums to differentiate between successful and non-successful companies (Siegel, 2002). The value range used in the study was 3 to 6.
- Dividend yield: is the dividend per share, divided by the price per share. If the total number of shares of a company remains same the dividend price ratio is also a company's total annual dividend payments divided by its market capitalization. Dividend provides a ROI to investors while retaining the stock and is a key consideration on total expected ROI from an investment. The value range used in the study was 1.5 per cent to 3 per cent.
- Earning-per-share (EPS): is the monetary value of earnings from a share of common stock for a company. EPS serves as an indicator of a company's profitability. The value range used in the study was \$15 to \$25.
- Return-on-equity (ROE): is a measure of the ability of a firm to make profit from each unit of shareholder equity. ROE represents the capability of a company to make use of investment to generate earning and to grow. ROE in the range of 15-20% is said to be good. The value range used in the study was 10 to 30.

4.2.4 CONJOINT ANALYSIS

Conjoint estimation is a multivariate business research strategy that can help in sorting out the relative significance of an item's multidimensional properties (McFadden, 1991). Conjoint estimation alludes to any decompositional system that gauges the structure of buyers' preferences given the purchasers' general assessments of an arrangement of option items that are pre-specified as far as levels of diverse qualities. Utilising conjoint estimation, an analyst can make deductions about purchaser states of mind and inclinations toward particular segments. The particular strides in a conjoint estimation investigation incorporate conjoint configuration and organization (Rao, 2014).

The conjoint configuration incorporates two essential steps. To start with, the characteristics and property (independent variables) levels that together make up the outline details must be painstakingly picked. These qualities reflect key item attributes or measurements, which purchasers can use to survey the item. The properties need to incorporate those most important to potential purchasers. Independent variable levels ought to cover the entire range of values expected in the a real world scenario (Lang, 2011).

The most common utilized strategy for developing a partial factorial outline in conjoint estimation is the orthogonal array (table). Orthogonal array expand on the Graeco-Latin squares by growing exceedingly fractionated squares in which the item profiles are chosen so that the independent variable of every single primary choice scenario are adjusted, until no differences are observed. Orthogonal cluster outlines are utilized on the grounds that they have numerous attractive legitimate ties (Rao, 2014). To begin with, they permit one to assemble information on an extensive number of item profiles utilizing a moderately small number of item profiles. Second, from a measurable viewpoint, orthogonal outlines are generally productive (Rao, 2014).

Metric conjoint analysis models the judgments specifically. At the point when the greater part of the dimensions is observable, the metric conjoint analysis is a straightforward exercise using ANOVA to produce specific values. The characteristics are the independent variables, the judgments contain the dependent variable, and the part-worth utilities are the β 's, the parameter gauges from the ANOVA model (Lang, 2011). The accompanying equation demonstrates the metric conjoint analysis model for the study.

$$y_{ijklmn} = \mu + \beta_{1i} + \beta_{2j} + \beta_{3k} + \beta_{4l} + \beta_{5m} + \beta_{6n} + \epsilon_{ijklmn}$$

Where

$$\sum \beta_{1i} = \sum \beta_{2j} = \sum \beta_{3k} = \sum \beta_{4l} = \sum \beta_{5m} = \sum \beta_{6n} = 0$$

The y_{ijklmn} term is one subject's expressed inclination for a stock with the i th level of brand affinity, the j th level of EPS, the k th level of P/E, the l th level of ROE, the m th level of price-to-book ratio, and the n th level of dividend yield. The mean is μ , and the error is ϵ_{ijklmn} . The anticipated utility for the ijk item is

$$\hat{y}_{ijklmn} = \hat{\mu} + \hat{\beta}_{1i} + \hat{\beta}_{2j} + \hat{\beta}_{3k} + \hat{\beta}_{4l} + \hat{\beta}_{5m} + \hat{\beta}_{5n}$$

Nonmetric conjoint investigation discovers a monotonic change of the inclination judgments. The model, which takes after straightforwardly from conjoint estimation, iteratively fits the ANOVA model until the changes in attributes balances out. The R square changes incrementally each cycle until meeting, when the change in R square is basically zero. The accompanying equation demonstrates a nonmetric conjoint examination model for three elements (Gustafsson et al., 2013):

$$\phi(y_{ijk}) = \mu + \beta_{1i} + \beta_{2j} + \beta_{3k} + \epsilon_{ijk}$$

Where $\phi(y_{ijk})$ assigns a monotonic change of the variable y

The R square for a nonmetric conjoint investigation model is more significant than or equivalent to the R square from a metric examination of the same information. The smaller R square in metric conjoint examination is not so much a detriment, since results ought to be more steady and reproducible with the metric model. Today, metric conjoint investigation is utilized more frequently than nonmetric conjoint examination (Kumar, 2010).

Contingent upon the accurate nature of the information gathered, there are different alternatives for breaking down the information and generating part-worth values based on each respondent. The easiest methodology is to utilize simulated variable relapse with choice or rank-request information (Raghavarao et al., 2011).

$$R_{ij} = \sum_{k=1}^K \sum_{m=1}^{M_k} a_{ikm} x_{jkm} + \varepsilon_{ij}$$

j = a specific item or idea included in the research design;

R_{ij} = the choice gave by respondent i to item j ; (Alternatively, the rankings could be turned around so that higher numbers speak to more grounded inclination, and after that utilized as though they are like interim scaled appraisals);

a_{ikm} = part-worth connected with the m th level ($m=1, 2, 3, \dots, M_k$) of the k th property;

M_k = number of levels of property k ;

K = number of properties;

x_{jkm} = dummy variables that tackle the worth 1 if the m th level of the k th property is available in item j and the worth 0 generally; and

ij = lapse terms, thought to be ordinary circulation with zero mean furthermore, change equivalent to 2 for all i and j .

To encourage elucidation, the a_{ikm} 's acquired from relapse can be rescaled so that the minimum favoured level of every ascribe is set to zero and the most extreme favoured item blend is set to 100, creating results that are all the more effectively translated.

Letting \tilde{a}_{ikm} 's indicate the assessed (rescaled) part-worth, the utility u_{ij} of an item j to client i is equivalent to (Gustafsson et al., 2013)

$$u_{ij} = \sum_{k=1}^K \sum_{m=1}^{M_k} \tilde{a}_{ikm} x_{jkm}$$

Note that item j can be any item that can be planned utilizing the characteristics and levels in the study, including those that were excluded in the estimation of the part-worths in the above equation. A noteworthy explanation behind the wide utilization of conjoint investigation is that once part-worths (\tilde{a}_{ikm} 's) are assessed from a delegate test of respondents, it is anything but difficult to evaluate the reasonable achievement of another item idea under different re-enacted economic situations (Lang, 2011). One may ask: What piece of the overall industry would a proposed new item accomplish in a business sector with a few particular existing contenders? To answer this inquiry, it is important to indicate every single existing item as blends of levels of the arrangement of traits under study. In the event that more than one contending item has indistinguishable quality levels, evaluation of part-worth values from individual participants is generally required. (Raghavarao et al., 2011).

To finish the research plan it is important to indicate a decision standard to change part-worths into the item decisions that clients are well on the way to make. The three most normal decision guidelines are most extreme utility, random utility, and multinomial logit. Most extreme utility guideline: Under this standard one should accept

that every client browses the accessible options the item that gives the most elevated utility quality, including another item idea under thought. This decision standard is most fitting for high-inclusion buys such as autos, VCR's, and different durables that clients buy occasionally. This can be represented as:

$$m_j = \frac{\sum_{i=1}^I w_i p_{ij}}{\sum_{j=1}^J \sum_{i=1}^I w_i p_{ij}}$$

Where:

I = number of clients taking an interest in the study;

J = the quantity of item choices accessible for the client to look over, including the new item idea;

m_j = piece of the overall industry of item j;

w_i = the relative volume of buys made by client i, with the normal volume over all clients listed to the worth 1; and

p_{ij} = extent of buys that client i makes of item j (on the other hand comparably, the likelihood that client i will pick item j on a solitary buy event).

There are several practical variants of conjoint analysis (CA) experiments including classic rating-based systems (CVA), Adaptive Conjoint Analysis (ACA), Choice-Based Conjoint analysis (CBC), Adaptive CBC (ACBC), and Menu-Based Choice (MBC). CBC is the most commonly used methodology (78% of CA studies) because it 'closely mimics the purchase process for products in competitive contexts' (Orme, 2006). CBC shows respondents multiple scenarios with varying sets of attributes (variables) and asks them to choose which they would purchase. For these reasons CBC was chosen as the CA model for this research.

CBC method lets the analyst choose the interactions that can be included in the analysis. In a choice based market, the participants have the choice of a set of experimentally controlled profiles. Logit analysis fits a multinomial logistic regression model to this data by iteratively finding the maximum likelihood solution. The result reports the root likelihood along with every iteration and the log-likelihood. The chi-square test is the method of choice to evaluate logit models. This model is a good way to study the relationships in the data. Logit models are applied to generate simulation models to determine the shares of choice with any combinations of the attributes studied. The design efficiency is a matter of concern when using the logit model since it is more complicated than the liner regression model (Raghavarao et al., 2011).

Practical limitations including participant fatigue and the mathematical complexity of conjoint analysis that requires reliance on advanced software to conduct experiments and analyse the data (Orme, 2006). Sawtooth Software is the leading developer and provider of conjoint analysis software (Schreiber and Baier, 2015) and was leveraged for this research. Sawtooth Software version 8.4.0 was used to program this study including the CiW module to program the standard survey, the CBC module to program conjoint module and the CBC/HB module to compute utilities.

4.2.5 OTHER RESEARCH STRATEGIES EVALUATED

Other research strategies considered were correlation of data, observation, case studies, and Vickrey auctions. However, these were precluded for a number of reasons. First, as Royne (2008) notes, correlation of data around choice is not adequate to establish causation due to lack of control of extraneous variables.

Case studies are an examination considering individuals or a group of individuals. The information in this procedure is assembled through perception, cooperation, and a number of different strategies including examination of existing records, and tests. This

technique may give conclusions that are significant to the specific population being studied but does not lend itself to generalisations to the wider population. Case studies tend not to consider circumstances and end results on the grounds that they concentrate on investigation and depiction. It can be said that this technique is valuable for 'how' and 'why' questions, but the scientist does not have control over the occasions. Case studies are not appropriate when dealing with individual human behaviour and individual levels of brand affinity (Marlow, 2011, Jackson, 2012).

Finally, Vickrey auctions (VA) were evaluated. Vickrey's original inquiry treated both auctions of a solitary thing and auctions of different indistinguishable things, giving a system in which it is a predominant method for bidders to report their qualities honestly and in which results are proficient. For a solitary thing, the component is regularly alluded to as the second-value fixed offer closeout, or just the Vickrey auction. Bidders at the same time submit fixed offers for the thing. The most elevated bidder wins the thing, however (not at all like standard fixed offer tenders) the winner pays the sum of the second-highest offer. For instance, if the winning bidder offers 10 and the highest losing offer is 8, the victor pays 8. With these standards, a winning bidder can never influence the value it pays, so there is no motivator for any bidder to distort his quality. From bidder n's point of view, the sum he offers decides just whether he wins, and just by offering his actual worth would he be able to make certain to win precisely when he is willing to pay the cost. Both VA and CA have been evaluated and scrutinized empirically as effective for use in willingness-to-pay studies, which are highly similar to choice studies (Sichtmann and Stingel, 2007). Though, based on my analysis, CA was a better fit over VA because investor choice is a high involvement activity and VA appears to be better for low involvement decisions relative to CA.

4.2.6 SURVEYS

Surveys can be a good tool to represent to a population. Because of the large number of individuals who answer surveys, the information being collected can provide a superior depiction of the relative qualities of the sample included in the study and thus the population. When contrasted with different techniques for gathering data, surveys have the capacity to extract data that are close to the accurate properties of the larger populace (Kumar, 2010).

Surveys require that respondents can read, which may appear to be a reasonable assumption for most developed populaces, but researchers have observed adult illiteracy or poor literacy is surprising high in first world countries (e.g., the U.S.). Furthermore, regardless of the literacy rate of potential participants, a survey may be troublesome if uncommon or specialized terminology is used. Some populations, such as children, cannot effectively respond to written surveys (Kumar, 2010).

Survey based methods are attractive due to the ease at which they can be performed. The advent of web based technologies offer a plethora of services from conducting survey to analysis of data, which makes this a very suitable option. Surveys conducted online can reduce the geographical dependence, at the same time diverse cultures and large number of cross-cultural surveys can be conducted. Surveys have no limit in terms of the information that can be collected, giving enormous flexibility in data analysis. A broad range of data including attitude, knowledge, opinions, behaviour, skills, values and facts can be collected.

Last, yet surely not minimum, you need to consider the overview's practicality technique for your study.

- Costs: Expense is frequently the real deciding variable in selecting overview sort. Researcher may want to do individual meetings, yet cannot legitimize the

high cost of preparing and paying for the questioners. Researcher may want to convey a broad mailing yet cannot bear the cost of the postage to do as such. In such cases online, email, telephone or video calling are useful and cheap options for remote communications.

- Time: A few sorts of surveys take longer than others because of larger sample size (Kumar, 2010). The amount of time required also depends on the method of survey. In case of interviews specific one to one interaction is required and are more time consuming. However, questionnaire and free response surveys can be filled online, which may be very fast and efficient way of collecting information from cross cultural populations in a short time.
- Staff: Meetings help questioners who are moved and all around prepared. Gathering directed studies help individuals who are prepared in collecting support. A few studies may be in a specialized zone that obliges some level of skill in the questioner.

This research strategy is as often as possible used to collect both qualitative and quantitative data. This method is supported on a sample of respondents from a selected population through the managed presentation of surveys. This arrangement of poll can be directed through the web or up close and personal from just a few to many numbers of individuals. Studies can be helpful over an extensive variety of guidelines. The data that is assembled utilising this strategy is helped to be examined for creating results. The quantitative information is dissected utilizing statistical programming, for example, MS Excel or SPSS. Then again, the qualitative information can be examined through distinctive procedures including topical examination. This method however, has a few drawbacks like respondents may not be motivated enough to provide honest responses. They may not feel comfortable to reveal personal information in an unfavourable way. Another reason may be lack of memory about the subject. It is possible to get biased opinions due to difference in the responders and non-

responders, in which case the data obtained is not true representative of the population, making it difficult to generalise the results. The knowledge of respondents and also the way they interpret the questions can affect their responses, leading to errors in the data.

4.3 CONDUCT OF THE RESEARCH

The chosen research methodology required two steps with each research participant. The first step was measurement of the subject's level of brand affinity for a basket of corporate brands that were used in the experimental exercise, as well as gathering demographic information. The second step required respondents taking part in an investment decision simulation exercise where variables were controlled and manipulated as appropriate for the study. Outlined below are details and discussion of the research methods selected for these two steps.

To measure the subjects' level of brand affinity for a basket of company brands (i.e. Apple, Microsoft, Google, Amazon) used in the experiment, participants answer a survey that required them to rate their affinity for each company brand as well as a forced ranking of the four brands. Foundations for this survey and accurate measurement of brand affinity were discussed in chapter 3 (Murphy, 2010).

The second step of the research data gathering involved a Choice-Based Conjoint study and analysis (CBC) as the methodology for a choice-based controlled experiment. CBC allowed the creation of hypothetical financial/risk variables and scenarios for company stocks with different levels of investor affinity. The researcher has over 20 years previous experience using conjoint analysis for brand attribute, brand preference, product feature, and consumer choice studies, so he had a significant level of experience using it and analysing the data derived from it. Further, CBC and conjoint analysis (CA) in general has been used in numerous academic

brand related studies (Grunert et al., 2006) and scrutinized thoroughly in the literature as an effective primary research tool (Andrews et al., 2002, Green et al., 2001)(see section 4.2.4 above for a technical discussion of CBC).

CA has been observed to be an effective research methodology option when isolating effect is difficult, such as the case with the effect of a brand affinity in a risk-based choice experiment (Vriens, 1994). CA was used successfully to evaluate multi-attribute judgment when uncertainty exists (Basu, 1989), such as when investors face unknown risk and outcomes when purchasing stock. CA is also very good at measuring how buyers make trade-offs (Green et al., 2001), which is necessary with the multi-factor research that was conducted with investors.

Segal (1982) evaluated the reliability of CA and found it had an overall mean coefficient of $r=0.764$ over multiple evaluative decisions; which is a strong correlation. He noted that the successive evaluative judgments made by subjects during CA were more consistent than can be attributed to chance (Segal, 1984). CBC can deal with the heterogeneity of different investors' utility functions by not pooling data; so it has unique mathematical properties that were useful in the analysis of data from the experiment (Chen and Hausman, 2000).

Challenges and weaknesses with CA include respondent overload or confusion and irrelevance independent alternatives (IIA) bias (McCullough, 2002). Several drawbacks with CA studies may include the complexity in creating and managing the process and potential cost (McCullough, 2002). Online and offline data collections methods with CA have been analysed and findings indicate that online data collection was superior than offline when using choice-based CA (Sethuraman et al., 2005). The cost of conducting the CBC study was limited by collecting data online instead of using onsite methods and using a comprehensive software package managed the process (Sawtooth Software granted a free academic license for this study). Using online methods also

made it easier to recruit participants from across the geographic U.S., which are more representative of the population and therefore provided enhanced validity to the findings.

4.3.1 SAMPLING

For this study, the primary data is gathered from individual retail investors in the U.S. In exploration terms a sample is a gathering of individuals, articles, or things that are taken from a bigger populace for estimation (Walliman, 2011). The sample should be illustrative of the target populace to guarantee that the research can sum up the discoveries from the exploration test to the populace all in all (Walliman, 2011). To make inferences about populaces from tests, a researcher utilizes inferential insights, to focus a populace's attributes by specifically examining just a representative segment of the populace (Walliman, 2011). A sample is generally required in a study because of the following challenges:

- The size of numerous populaces: Surveying millions of participants is not realistic from cost and time constraints.
- Inaccessibility of a populace: Some populaces are so hard to reach with that just an example can be utilized, e.g., detainees, individuals with serious dysfunctional behaviour, debacle survivors and so forth. The difficulty may be connected with expense or time or simply locating the potential respondents (Kumar, 2010).
- Accuracy and testing: An example may be more exact than the aggregate study populace. A broadly distinguished populace can give less dependable data than a precisely gathered sample (Denzin, 1970).

The two principal techniques utilized as a part of survey exploration are probability sampling and nonprobability sampling. In probability sampling all members of a

population have an equal and known chance of being chosen, and results are likely to closely mirror the whole populace. Several variables should be considered (accessibility, expense, and time) when selecting the sampling strategy (Sekaran and Bougie, 2013). Some extra attributes of the two strategies are listed below:

4.3.1.1 PROBABILITY SAMPLING

- Researchers have a complete ability to inspect the sample and they have contact data for the whole populace.
- Researchers can must set up a process or procedure that assures that the different segments in the population have equal probabilities of being chosen (Kumar, 2010).
- Researchers can extrapolate their outcomes to the whole populace.
- Can be costly and tedious to conduct (Marlow, 2011) and can only be used if a sampling frame of the whole population is available. For some populations, sampling frames are not available.

4.3.1.2 NONPROBABILITY SAMPLING

- Used when there is not a comprehensive population list accessible (sampling frame) and researchers have no ability to estimate the size and impact of sampling error (missed persons, unequal representation, and so forth.).
- Not random (Marlow, 2011).
- Can be powerful when attempting to create thoughts and getting input; however researchers cannot generalise outcomes to a whole population with valid degrees of certainty.
- Can be quicker and yield depth of information, and may be the only option open in the absence of a sampling frame, yet does not hold up to standards of probability sampling (Denzin, 1970).

In the current study, although specific data were required from individual retail investors who have affinity to the selected brands there was no sampling frame for all investors in the chosen companies available to the researcher. Therefore, a non-probability purposive sample was employed. A purposive sample aims at collecting data from only those potential respondents with capability to answer the research questions having experience or particular attributes pertinent to the field of study who are thus able to assist with the research. One of the criticisms of purposive sampling is that it can be prone to researcher bias in choosing the sample. In this case, this was overcome by the approach being made to respondents at the choice of and through a third party (see section 4.3.2) or through a general invitation on social media. The sample is also considered in terms of proportions of demographic and other features likely to be important, for example, to aid in segmentation, or to further understand the behaviour of the population.

4.3.2 SAMPLE CHARACTERISTICS/REQUIREMENTS AND SIZE

Before choosing how extensive a sample ought to be, the study populace needs to be characterised (who is eligible or not for the study). The topic of how substantial a sample should be can be challenging, with test size dictating different limitations (financing, accessibility, the time requirements and so on)(Kumar, 2010). Sample size relies on upon the following factors:

- The sort of information investigation to be performed;
- The desired accuracy of the appraisals one wishes to accomplish;
- The kind and number of correlations that will be made;
- The quantity of variables that must be analysed at the same time; and
- How heterogeneous the examined populace is (Gliner et al., 2011).

Target sample population characteristics were narrowed to U.S. based individuals whom are active retail investors (i.e., more than five trades a quarter) in U.S. publically traded companies. Investors who conduct less than five trades (purchases or sales) a quarter have been observed to primarily hold the majority of their investible assets in mutual funds (SIFMA, 2014) and thus any single stock choice for investment by these inactive traders may not be reflective of a traditional investment expecting a ROI but more for novelty (Stroz Jr, 2000).

A large and broad sample size and population was thought necessary to allow for demographic and behavioural segmentation of the findings among age groups, gender, income/net worth, education, and investing activity levels. Differences in equity investing behaviour by age have been identified (Bodie and Crane, 1997) and thus may be significant. Gender segmentation may be significant based on gender differences (Barber and Odean, 2001) noted when measuring overconfidence in stock trading. Income/net worth and investing levels based on number and sizes of stock trades are the most common segmentation metrics used by the financial planning community (Clark-Murphy and Soutar, 2005).

Another factor in determining sample size was the need for precision of statistical significance when testing hypotheses among different segments. Several additional factors that also influenced the sample size decision include the practicality factors of timeframe and cost. Considering all factors, and using guidelines for population validity and cross-validity from Algina and Keselman (2008), a sample size of 200 subjects was adequate, though as little as 100 subjects would provide statistical validity.

Research subjects were selected through purposive sampling from client investors made available by investment banks, brokerages and financial planners. Members of the CFA Institute assisted with my research by helping to recruit research respondents from their client base. The CFA Institute is the preeminent member and chartering

organization for financial analysts and planners worldwide. CFA members were good resources as they have a vested interest in better understanding investor behaviour (Coleman, 2015). The limitation with this sampling plan is that a segment of the market that is not served by brokers or financial planners affiliated with the CFA Institute or a larger broker-dealer may have been neglected. To alleviate this potential bias, I conducted an open call for participants among social media networks focused on investors. Respondents were also acquired from Twitter, Facebook, and LinkedIn. In the final tally, 82 per cent of participants came from CFA initiations and 18 per cent from social postings.

Potential participants under 25 years old were rejected, as less than 1 per cent of equities are owned by individuals under 25 years of age (SIFMA, 2014), so their potential impact on stock prices is negligible. Additionally, those with incomes of less than \$50,000 were also rejected as more than 90 per cent of assets invested in by those with lower incomes are mutual funds (SIFMA, 2014), so they do not make individual stock choices. Approximately 25 per cent of initial participants were terminated from completing the study due to not meeting these age and income requirements (a specific count of those rejected was not obtainable since the study did not track Internet IP addresses of participants, for privacy reasons).

For segmentation and correlation analysis purposes against the CA results, participants were asked identify their gender, age group, highest level of education obtained, marital status, employment status, trading activity level, house income (before taxes), size of stock portfolio, ethnicity, and if they use a financial advisor as part of a demographic and psychographic survey portion of the study.

4.4 RESEARCH ETHICS

Ethics is a crucial consideration when to conducting research, especially with the academic environment. Educational institutions, professional organizations, and governmental organizations have applied the particular codes and rules concerning research ethics that impact this research. The key ethical research principles are summarized in the following way:

4.4.1 PLAGIARISM

Plagiarism is the act of stealing and passing off the ideas or words of another as one's own (Kumar, 2010). Therefore, to avoid this type of unethical conduct in this thesis, I have sought to accurately cite all works attributable to someone else and I also have provided a complete bibliography for all citations (see Bibliography section).

4.4.2 CONFLICTS OF INTEREST

A conflict of interests happens when the responsibility of any individual relevant to particular research conflicts with their personal interests (Gliner et al., 2011). There were no conflicts on interest in this study, as no financial rewards existed for conducting this study for someone else and I do not stand to gain from the outcomes of this research in other ways. Additionally, no professional relationships existed with any of the participants and the results were not used to influence the respondents in any way.

4.4.3 DATA COLLECTION AND MANAGEMENT

Data management is exposed to particular problems concerning research ethics including the collection of reliable data ethically, ownership, and responsibility of secure storage of collected data and maintaining the data. To ensure all data was securely and ethically collected and maintained, the guidelines and policies of The University of

Manchester for research conduct were followed (Director of Research and Business Engagement Support Services, 2012), Specifically, the study was conducted in anonymous way so no personal identification information or computer IP address or other tracking was collected. All data collected was maintained in a secure, encrypted database that required two-factor authentication to access, and was not shared with anyone outside of the research project. Participants were notified and asked for consent prior to participation in the study of the purpose of the research and use and security of their data (see Appendix A).

5 RESEARCH RESULTS

This chapter provides the results and an analysis from the conjoint analysis experiment and related survey. After successful pre-testing of the web-based survey and conjoint analysis choice experiment, the formal data gathering survey and experiment was successfully conducted during the week of May 11, 2015 through May 15, 2015 (see Chapter 4.3 for discussion on the conduct of the study). The survey and experiment was closed to additional participants upon the capture of data from 200 qualified participants within the one-week time segment, which achieved the quantity thresholds for both statistical validity with Choice-Based Conjoint analysis (CBC) studies (McFadden et al., 2005) and ability to compare interval-level estimates of relative values (part-worths) observed in the test datasets for additional experiment validity testing (Allenby et al., 1995).

5.1 PARTICIPANT DEMOGRAPHIC CHARACTERISTICS

This was a non-probability but purposive sample that hoped to produce a sample containing sufficient respondents not only qualified to produce meaningful answers and judgements (and therefore, contained a higher proportion of active individual retail U.S. equity traders) but also who represent a spread across the wider population of investors as judged by the similarity to the general U.S. population (Desarbo et al., 1995). The reasoning behind the sampling strategy to produce a sample of active investors is explained for equity transaction activity levels and household income, along with the results for those strategies as well as the accompanying results for portfolio size and use of financial advisors. The sample composition for gender, age, education level, marital status, employment status and ethnicity is then presented and discussed. The results show that the aims of the sampling strategy were achieved.

5.1.1 EQUITY TRANSACTION ACTIVITY LEVELS

The majority of U.S. equity individual retail investors are not frequent traders, with over 50 per cent, on average, making no transactions within the past 12 months, as measured over the last five years (SIFMA, 2014). The experiment reflected a sample with more active investors than the U.S. average, with 66.5 per cent of participants having made more than one transaction a month on average (see Table 5.1). The inclusion of more active individual retail investors was purposely sought for the experiment as active investors would be less likely to be influenced by market noise due to unrelated stock market news (Barber and Odean, 2013) during the experiment period and more familiar with pricing and evaluating stocks using multiple financial metrics (ratios) (Barberis et al., 2001), and thus provide a more valid experiment.

Table 5.2: Participants Equity Trading Activity

Trading Activity		
	Frequency	Per cent
1 or fewer trades a month	67	33.5
2-5 trades a month	90	45.0
5-9 trades a month	33	16.5
10 trades or more a month	10	5.0
Total	200	100.0

5.1.2 HOUSEHOLD INCOME

Ownership of equities in the U.S. varies significantly across household income groups, ranging from 10 per cent for those earning less than \$25,000 per year to more than 80 per cent for those earning \$100,000 per year or more (SIFMA, 2014). Choice of specific equities has not shown significant difference between household incomes, when all things held the same (Bodie and Crane, 1997). That being said, brand

preference and choice has been observed to vary between household incomes levels (Aaker, 1996, Shin et al., 2012), and may be a factor for level of brand affinity within the experiment. This will be examined in the CBC results discussion section.

Households earning less than \$50,000 per year were disqualified from the experiment, in an effort to attract more active stock traders, as discussed in the previous Equity Transaction Activity Levels section and Research Methodology chapter. Accounting for the exclusion of the lower income households, the frequency of household incomes was as expected and similar to U.S. averages, with the largest frequencies within the \$50,000 to \$74,999 and \$75,000 to \$99,999 segments, which collectively account for 67.5 per cent of the sample (see Table 5.2).

Table 5.3: Participants Household Income

Household Income		
	Frequency	Per cent
\$50,000 to \$74,999	67	33.5
\$75,000 to \$99,999	68	34.0
\$100,000 to \$149,999	41	20.5
\$150,000 to \$199,999	16	8.0
\$200,000 to \$249,999	4	2.0
\$250,000 or more	4	2.0
Total	200	100.0

5.1.3 EQUITY PORTFOLIO SIZE

Equity portfolio size has been directly correlated to investor transaction volume and frequency, but not on stock choice (Hartzmark, 2015). Not surprisingly, portfolio size and age have been directly correlated (Spaenjers and Spira, 2015), though none of the above findings are expected to have an impact on stock choice within the experiment.

According to The Vanguard Group (2015), one of the largest investment management firm in the U.S., the average equities portfolio balance in the U.S. for those aged 25 to 34 years is \$17,219, which steadily increases to \$91,108 for those aged 55 to 64 years.

The frequency of participant’s portfolios above \$100,000 in the sample was 60%, which was expected as the purposive sampling was conducted with groups that would have larger portfolios (see Table 5.3). While the sample is not reflective of the population, I do not believe this affects the results of the experiment, as portfolio size is not expected to influence stock choice when selecting from companies with similar risk profiles.

Table 5.4: Participants Equity Portfolio Size

Portfolio Size (Stocks)		
	Frequency	Per cent
Less than \$100,000	80	40.0
\$100,000 to \$249,999	62	31.0
\$250,000 to \$499,999	35	17.5
\$500,000 to \$999,999	18	9.0
\$1,000,000 or more	5	2.5
Total	200	100.0

5.1.4 USE OF FINANCIAL ADVISORS

The use of registered financial advisors by participants was 63.5 per cent (see Table 5.4), which reasonably reflects the U.S. average of 59 per cent for equity investors (SIFMA, 2014). Investment professionals, those who advise investors and invest other people’s assets, have been shown to not be as susceptible to behavioural biases as individual investors who invest their own assets (Frieder and Subrahmanyam, 2005).

Thus, the purpose of recording the use of financial advisors by participants in the survey was two-fold; one, to determine if using advisors influenced the stock choice behaviour of individual investors outside of the advisor-investor relationship and exchanges, and two, for the purpose of comparing population representativeness to the sample. I believe the sample to be representative of the U.S. equity investor population.

Table 5.5: Participants Use of Financial Advisors

Use of a Financial Advisor		
	Frequency	Per cent
Yes	127	63.5
No	73	36.5
Total	200	100.0

5.1.5 GENDER

While the population of adults 18 years of age and older in the U.S. is very closely divided 49.2 per cent male and 50.8 per cent female (U.S. Census Bureau, 2010), the sample gender of participants was divided 64.5 per cent male to 35.5 per cent female (see Table 5.5). This was not a surprising finding as the Securities Industry and Financial Markets Association (SIFMA, 2014) observed that in U.S. households with investment decision-makers aged 25-64, the gender frequency of male sole decision-makers to female sole decision-makers was 51 per cent and 38 per cent, respectively (Bartlett et al., 2010). The remaining 11 per cent was comprised of co-decision-makers, where the male and female were both equal investment decision-makers in the household. So while the participant's gender frequency skewed 15 per cent more male than the U.S. average in this study, the female gender frequency was within 2.5 per cent of the U.S average for sole female investors and taking into the percentage of

households with co-decision-makers, I believe the sample to be representative of the U.S. equity investor population.

Table 5.6: Participants Gender

Gender		
	Frequency	Per cent
Male	129	64.5
Female	71	35.5
Total	200	100.0

5.1.6 AGE

Age distribution in the sample was skewed towards younger participants with 55.5 per cent of the participants between the ages of 25 and 44 (see Table 5.6). This compares with an average age of 51 for U.S. equity investors (Bartlett et al., 2010). The third largest group was participants aged 45 to 54 with 22 per cent frequency. Frequency in the sample dropped significantly for the two older age segments, ages 55 to 64 and ages greater than 65, with 12.5 per cent and 10 per cent, respectively. This can be explained in some measure by changes in investment choice; as investors near retirement and enter retirement they adjust portfolio allocation from equities to bonds and other fixed income securities with less perceived risk and volatility (Gerrans et al., 2010). Even though the net worth of investors generally increases with age, equities continue to decline as a share of investment portfolio (Spaenjers and Spira, 2015).

Additionally, investors over the age 55 have been observed using the Internet less than younger investors for investment research and trading (Hou, 2015), 82 per cent under the age of 40 used the Internet for financial related purposes versus 47 per cent for investor aged 65 or older (SIFMA, 2014). So it was not a surprise to observe a lower frequency of older investors in the sample, as the experiment was Internet based. The

self-service nature of Internet based trading implies higher cognitive costs for investors (Prahalad and Ramaswamy, 2004), but comparing online versus offline investor choice as a variable is beyond the scope of my research.

Greater brand loyalty has also been observed as individuals' age (Chaudhuri and Holbrook, 2001), so it is reasonable to expect those levels of loyalty would apply to stock choice. Conversely, while intuitively it makes sense that investor age and experience would increase their stock choice sophistication, evidence does not reveal this to be true, as behavioural bias is observed across individual investors with varying levels of sophistication (Feng and Seasholes, 2005).

Interestingly, successive cohorts, as measured by ten year-birth spans, have higher and faster growing rates of equity ownership in the U.S. since data was collected in the 1920's (Bartlett et al., 2010, Board of Governors of the Federal Reserve System, 2013).

Therefore, while the age frequency distribution of the sample did not match the current population age frequency for equity ownership, for the aforementioned reasons and that fact that a significant number of older participants in each segment were included in the experiment, I feel the results from the sample to be reflective enough of the U.S. equity investor population to address the research questions with a high level of confidence.

Table 5.7: Participants Age

Age		
	Frequency	Per cent
Age25 to 34	56	28.0
Age35 to 44	55	27.5
Age45 to 54	44	22.0
Age55 to 64	25	12.5
Age 65 and more	20	10.0
Total	200	100.0

5.1.7 EDUCATION

Participants' level of education was similar to U.S. investor averages with 66 per cent of the participants having obtained a bachelors level degree or higher (see Table 5.7), whereas the U.S. average is estimated at 75 per cent of equity owners having bachelors level degree or higher (SIFMA, 2014). This was an important factor in sample composition and research validity, as higher levels of education have been shown to lead to better decision-making and performance (Dhar and Zhu, 2006), particularly with financial decisions (Ellison et al., 1996).

Exploration and discussion of the effect of participant's education levels on the experiment's results will be discussed later on in this chapter.

Table 5.8: Participants Education

Education		
	Frequency	Per cent
Less than high school	1	.5
High school graduate (includes equivalency)	18	9.0
Some college, No degree	29	14.5
Associate's degree	20	10.0
Bachelor's degree	85	42.5
Graduate or professional degree	44	22.0
Ph.D.	3	1.5
Total	200	100.0

5.1.8 MARITAL STATUS

While marital status has been shown to have significant effect on savings and investment asset allocation (Love, 2009), there has been no evidence that marital status would impact brand affinity or brand preference amongst similar companies (Yao and Hanna, 2005, Chaulk et al., 2003). For that reason, marital status was not expected to be a factor in investor stock choice or reflect any significant variance to the results from the experiment. Marital status was included in the demographic section of the survey strictly to compare sample representativeness to the population in that the sample represents an adequate spread of respondents, that is, that even though the sample purposively contains more active investors, respondents are not unduly biased to particular sections of the population. For this purpose, the participant's marital status frequency of 71 per cent married or with a live-in partner was very similar to the U.S. average of 73 per cent married or living with a partner (see Table 5.8)(SIFMA, 2014). I believe the sample to be representative of the U.S. equity investor population.

Table 5.9: Participants Marital Status

Marital Status		
	Frequency	Per cent
Single	44	22.0
Married / Live-in	142	71.0
Widowed	2	1.0
Divorced	12	6.0
Total	200	100.0

5.1.9 EMPLOYMENT STATUS

Employment status has been shown to have significant effect on willingness to accept risk (Eckel and Grossman, 2002), a significant factor in stock choice. However, there has been no evidence that employment status would impact brand affinity or brand preference amongst companies in the same industry with similar risk profiles (Samuelson et al., 1987, Hechter and Kanazawa, 1997). For that reason, employment status was not expected to reflect any significant variance to the results from the experiment. Employment status was included in the demographic section of the survey for the purpose of comparing population representativeness in the sample for the same reasons as marital status. The participant's employment status frequency for full time, part time, and self-employed was 78 per cent, compared to the U.S. average of 77 per cent who are employed (full- or part-time)(see Table 5.9)(SIFMA, 2014). I believe the sample to be representative of the U.S. equity investor population.

Table 5.10: Participants Employment Status

Employment Status		
	Frequency	Per cent
Full time employed	132	66.0
Part time employed	12	6.0
Self-employed	12	6.0
Out of work	1	.5
A homemaker	14	7.0
A student	2	1.0
Retired	27	13.5
Total	200	100.0

5.1.10 ETHNICITY/RACE

Ethnicity/race and culture has been shown to be highly correlated to brand preference and choice, specifically preference to brands that have ethnic brand attributes (Suh, 2009). For this reason, the experiment only leveraged brands that have mass-market appeal and are not identified with any ethnicity or culture, or outwardly market ethnic attributes. This was done to eliminate any ethnicity bias or preference from the experiment. A correlation test was conducted against the ethnicity frequency variable and the experiment results and there was no significant correlation ($p > .05$) between the two variables, thereby validating the neutral ethnicity appeal of the brands in the experiment.

Within the sample, 82.5 per cent of the participants identified as white (see Table 5.10), The next highest ethnic frequency was Asian/Pacific Islander at 11 per cent and then Hispanic/Latino and Black/African America both with 3 per cent of the sample. These frequencies are reflective of household income composition within the U.S. population

(U.S. Census Bureau, 2010). This, the ethnicity/race frequency is reflective of the population as it relates to the experiment.

Table 5.11: Participants Ethnicity/Race

Ethnicity/Race		
	Frequency	Per cent
White	165	82.5
Hispanic or Latino	6	3.0
Black or African American	6	3.0
Native American or American Indian	1	.5
Asian / Pacific Islander	22	11.0
Total	200	100.0

5.2 BRAND AFFINITY SURVEY RESULTS

As part of the demographic survey immediately prior to the choice experiment, the participants' level of affinity (favourability) for the four corporate brands was measured (see Chapter 3 for discussion on brand affinity). Two measurements of brand affinity were conducted; on a favourability scale participants rated each brand and then they ranked the four companies in order of preference. This data was then interjected into the conjoint analysis study and correlated the participant's brand affinity part-worths from the choice experiment for self-reporting reliability testing. The dual source multivariate data for brand affinity was then built into the market simulator.

5.2.1 CORPORATE BRAND RATINGS

Participants were asked to rate the four stocks in the choice experiment by favourability from 1 (Unfavourable or neutral) to 5 (Highly Favourable). Not surprising Apple was rated most favourably by the participants, which correlates to Apple's number one

position on the two of the most well known brand rankings published by Forbes and Interbrand (see Table 5.11).

Table 5.12: Forbes and Interbrand Brand Rankings

Brand Rankings		
Brand	Fortune	Interbrand
Apple	1	1
Google	3	2
Microsoft	2	5
Amazon	13	15

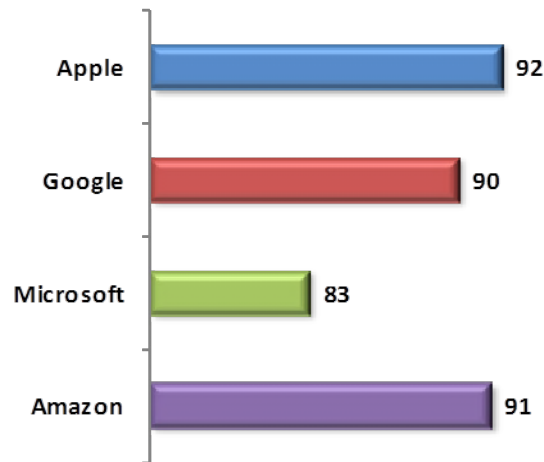
Source: Forbes (2015), Interbrand (2015)

All four of the corporate brands in the experiment were rated favourably by the participants, thus all participants self-reported having a level of brand affinity for the companies (see Table 5.12). Apple led with an overall rating of 94 out of 100, closely followed by Amazon and Google rated 91 and 90, respectively (see Figure 5.1). The participants gave Microsoft an overall rating of 83, the lowest brand affinity in the experiment amongst the four brands in the pool, but still favourable overall. It was important for the experiment's validity that all brands be rated positively, as brand affinity is a positive construct and a neutral or negatively rated brand would have to be excluded from the experiment's results. Having some heterogeneity amongst the brands is useful in CBC experiments for estimating part-worth magnitudes (Kim, 2013).

Table 5.13: Company Ratings

Rating of companies on a scale of 1 to 5, (5 being highly favourable to 1 being neutral or unfavourable opinion)		
APPLE	Frequency	Per cent
Highly Favourable - 5	116	58.0
4	67	33.5
3	10	5.0
2	3	1.5
Neutral or Unfavourable - 1	4	2.0
Total	200	100.0
GOOGLE	Frequency	Per cent
Highly Favourable - 5	103	51.5
4	76	38.0
3	15	7.5
2	5	2.5
Neutral or Unfavourable - 1	1	.5
Total	200	100.0
MICROSOFT	Frequency	Per cent
Highly Favourable - 5	88	44.0
4	77	38.5
3	25	12.5
2	9	4.5
Neutral or Unfavourable - 1	1	.5
Total	200	100.0
AMAZON	Frequency	Per cent
Highly Favourable - 5	108	54.0
4	74	37.0
3	11	5.5
2	6	3.0
Neutral or Unfavourable - 1	1	.5
Total	200	100.0

Figure 5.1: Overall Brand Affinity Ratings



5.2.2 CORPORATE BRAND FORCED RANKING

To ensure additional heterogeneity of individual participants brand affinity ratings and preference, a forced ranking of the four brands was also required in order of preference from 1 (most favourable) to 4 (least favourable). Similar to the brand rating results, Apple was ranked highest by 36.5 per cent of the participants, the highest frequency of the brands (see Figure 5.2 and Table 5.13). Greater heterogeneity was identified amongst the brands after Apple, as Amazon was ranked most favourable by 29.5 per cent of the participants, Google was ranked most favourable by 19.5 per cent of the participants, and Microsoft most favourable by 14.5 per cent of the participants. The importance of the level of affinity will be examined in the CBC results discussion section.

Figure 5.2: Brand Affinity Rankings

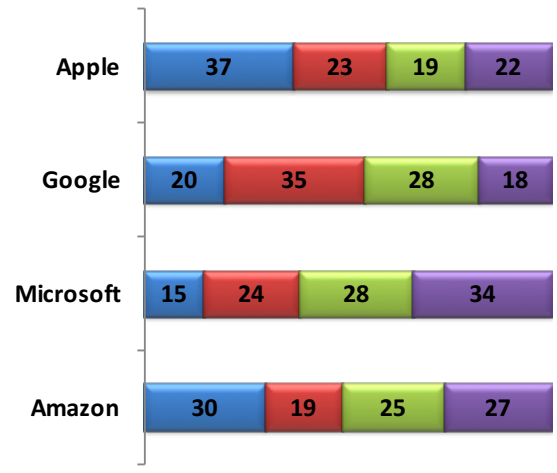


Table 5.14: Brand Affinity Rankings

Companies Ranking in Order of Preference		
APPLE	Frequency	Per cent
Rank 1	73	36.5
Rank 2	46	23.0
Rank 3	38	19.0
Rank 4	43	21.5
Total	200	100.0
GOOGLE	Frequency	Per cent
Rank 1	39	19.5
Rank 2	69	34.5
Rank 3	56	28.0
Rank 4	36	18.0
Total	200	100.0
MICROSOFT	Frequency	Per cent
Rank 1	29	14.5
Rank 2	47	23.5
Rank 3	56	28.0
Rank 4	68	34.0
Total	200	100.0
AMAZON	Frequency	Per cent
Rank 1	59	29.5
Rank 2	38	19.0
Rank 3	50	25.0
Rank 4	53	26.5
Total	200	100.0

5.3 CHOICE-BASED CONJOINT ANALYSIS EXPERIMENT RESULTS

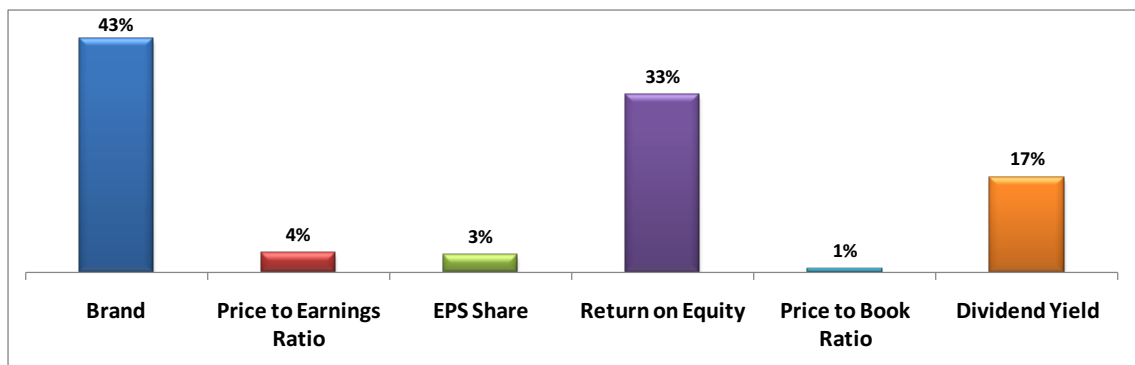
Outlined below is a summary of the primary results from the CBC study. Analysis of nominal, ordinal, and ratio data from a conjoint analysis is not appropriate (Orme, 2006). The results from the CBC are interval data derived from the part-worths utility data leveraging hierarchical Bayes (HB) estimation, which can only be conducted with software due to the computationally intensive process (Orme, 2006). It would be an error to interpret the part-worths directly, for example that the per cent of an attributes importance can mathematically extrapolated to the per cent of that attribute to price (Kim, 2013). The part-worths ratios is useful for basic understanding of the value participants place on an attribute or how the level of an attributes varies the part-worths, but for predicting behaviour and prices, the data must be inserted into a market simulator that uses sensitivity analysis (Orme, 2006). A market simulator was developed for this thesis, which will be discussed in section 6.5. Additional discussion and interpretation of the results follow in section 6.4

5.3.1 ATTRIBUTE IMPORTANCE

While not unexpected, the level of significance (part-worth) was surprisingly high for brand affinity; it is the most important attribute at 43 per cent followed by Return on Equity (33 per cent) and Dividend Yield (17 per cent). Price to Earnings ratio, EPS and Price to Book ratio have very low importance (see Figure 5.3). The more part-worth utility assigned to an attribute (shown as a percentage here), the more influence that attribute has over choice and thus price. The high level of brand attribute importance supports premise of this thesis (see section 6.4 for detailed discussion on these findings). The only other attributes importance level that was surprising was the low level of importance of P/E, which reflects and determines the price of the stock. The combined importance of brand affinity, ROE, and dividend yield (metrics that support long-term views of ROI) along with the low levels for P/E, EPS, and Price-to-Book ratio

(metrics that are more oriented towards quarterly released company financial results and price sensitivity) suggests there is significant price inelasticity with stock prices, which helps to explain the price volatility in the stock markets.

Figure 5.3: Attribute Importance



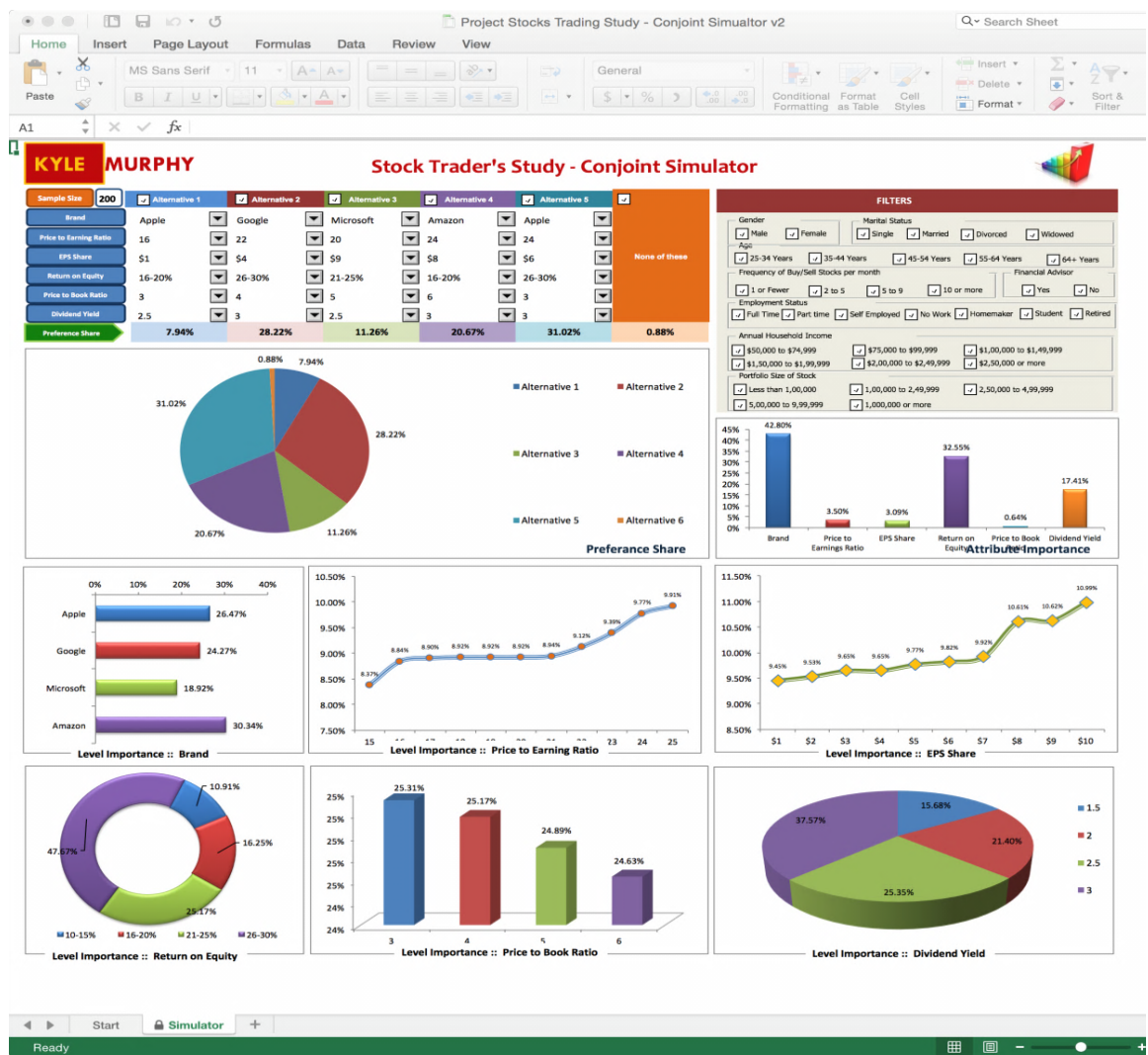
5.3.2 MARKET SIMULATOR

A market simulator was generated by the Sawtooth Software that converted the raw conjoint (part-worth utility) data from the study into a model that allows simulated market choices. By choosing this path of simulator development, it was ensured that the specific data obtained by this research is incorporated in the model. It could have been a generic model for simulating choices made by investors, but in that case, we could not say the findings of this study found their practical use.

Simulator development actually represents an achievement of the goal of the thesis to create a model that can predict behaviour and pricing based on simulated market choices. The simulator can be used to convert the raw data from conjoint analysis to gain practically useful insights from the data. From a practitioner view the market simulator is a much more useful tool than attempting to summarize utilities or compute average importance, as conjoint data in aggregate fails to detect important market segments with unique preferences. Later in section 6.5, how market simulators are beneficial to the business environment will be discussed. Part of the reason why

models are preferred is that interpreting raw outputs from conjoint analysis is too abstract to be useful for modelling (Orme, 2006). The simulator allows us to graphically represent data and make complex analysis easier. Presentation of results in a visual mode often is greeted with approval, because it makes relevant connections stand out in a simple manner. The simulator is presented in the Microsoft Excel workbook¹ (refer to Figure 5.4).

Figure 5.4: Stock Choice and Price Market Simulator in Excel



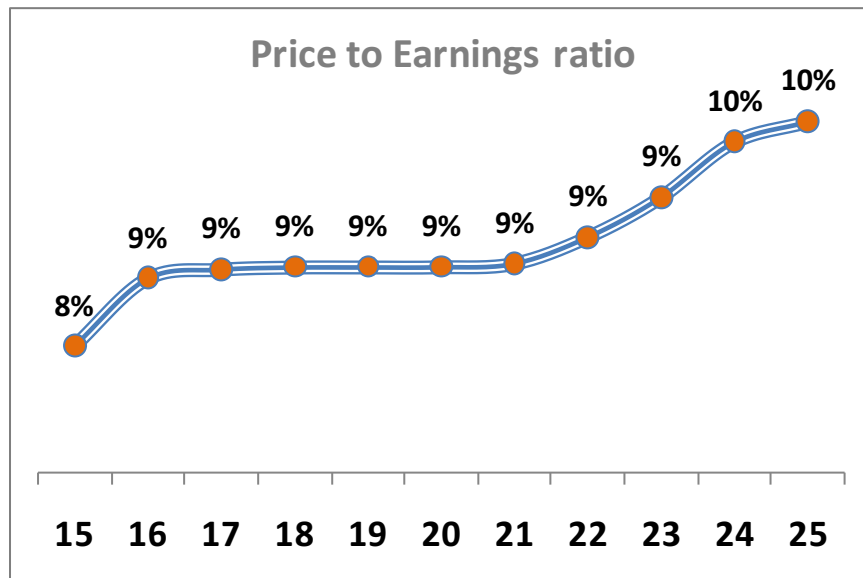
¹ Microsoft Excel file of simulator included on the CD enclosed in the sleeve attached to the back cover of this thesis.

5.3.3 ATTRIBUTE LEVEL IMPORTANCE

The brand affinity ratings and rankings from the survey (essentially the brand affinity attribute levels importance measurements) were not directly part of the CBC experiment, just the brand name was used, as each participants self-reported levels of brand affinity were considered fixed with in the experiment. Participants' data was then correlated to the brand attribute importance data from the CBC study and added to the market simulator (see sections 5.2.2, 5.2.3, 5.5 and 6.2). This type of interjection of prior knowledge into a conjoint study and market simulator has been shown to be an effective methodology to enhance the validity and usefulness of a market simulator when dealing with multiple sets of multivariate data (Allenby et al., 1995).

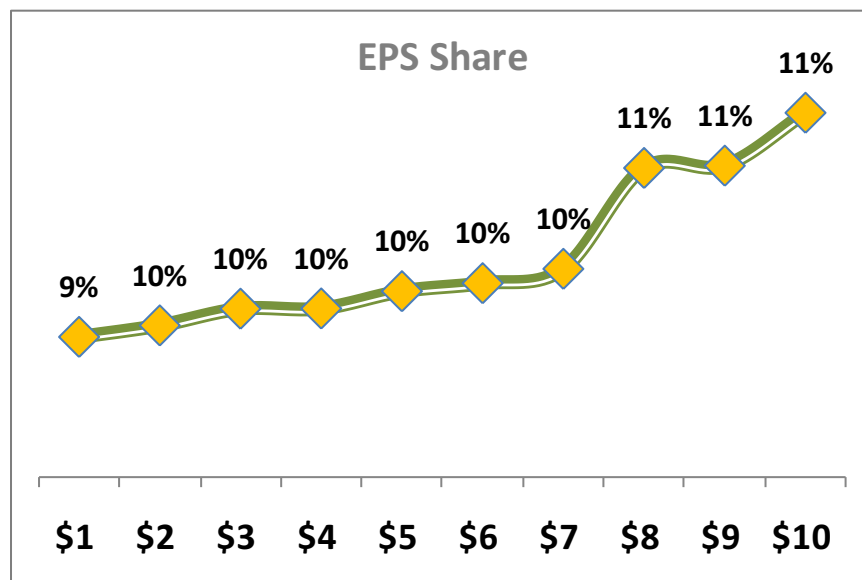
A higher Price to Earnings ratio is more preferred (see Figure 5.5), which reflects that higher prices for a stock, relative to earnings, are attractive to investors. While a higher P/E is a market signal of the expected growth of a company's earnings, it also reflects a significant premium on the price.

Figure 5.5: P/E Attribute Level Importance



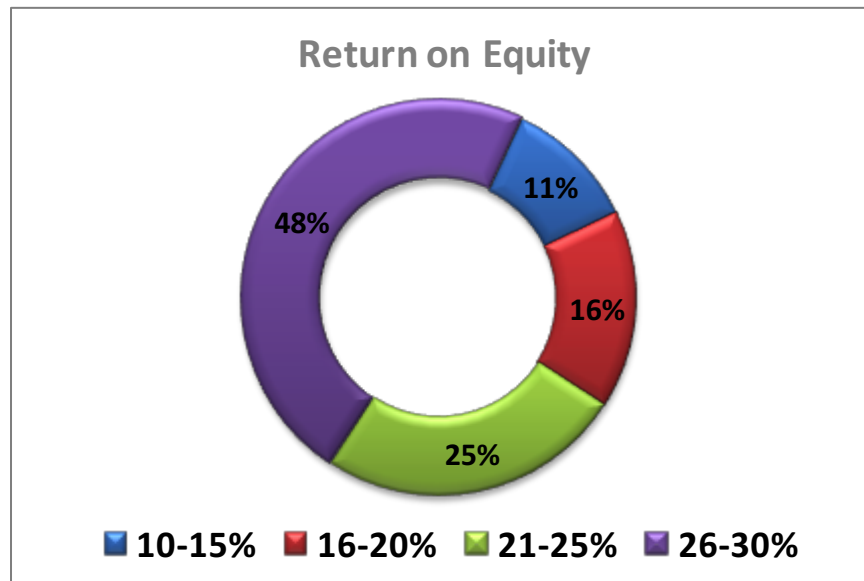
Expectedly, high EPS share is preferred more, but the difference in change is very low from \$1 to \$10 and the only noticeable change occurs from \$7 to \$8 (see Figure 5.6). This may be an issue of price perception, where \$7 is seen as less than \$10 but \$8 is mentally rounded up to \$10 where a multi-digit number is considered exponentially more valuable even though nominally it is not (Bessembinder, 1997, Petroschius and Monroe, 1987). Examining this attribute level independently provides minimal value to this research, though it is useful within the market simulator.

Figure 5.6: EPS Attribute Level Importance



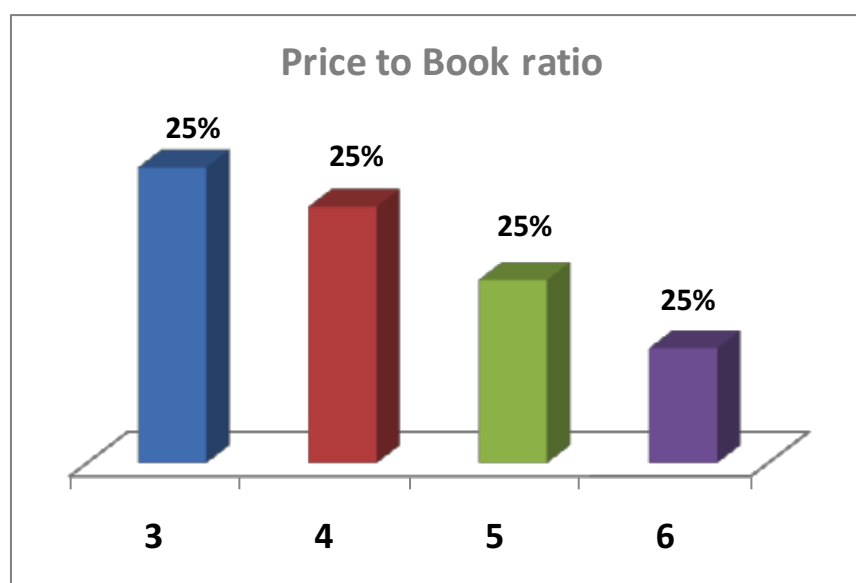
As expected, higher ranges of ROE are preferred when selecting stocks (see Figure 5.7). ROE is considered the bellwether standard performance metric for the past performance of a company (Haugen, 2010) and was expected to be the most important factor for stock choice. Lower levels of ROE were expected to have lower attributes levels than recorded, which may be a reflection of investors strong wiliness to choose stocks they favour.

Figure 5.7: ROE Attribute Level Importance



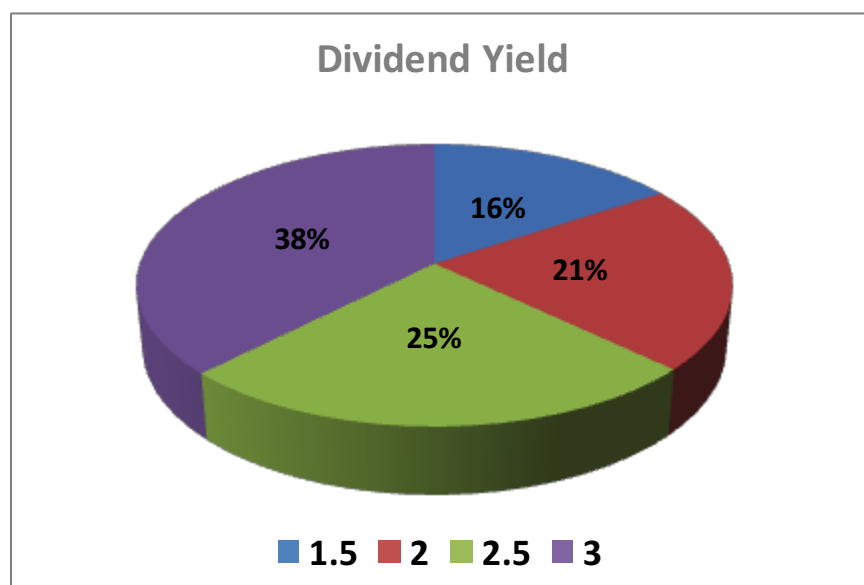
Change in Price-to-Book ratio is indifferent (see Figure 5.8). While this was not surprising, this ratio is the most reflective of the fair market value of the stock without premium. The indifference of the Price-to-Book ratio helps explain investors' willingness to purchase stocks over very broad range of prices and price premiums, which again helps to explain stock market price volatility.

Figure 5.8: Price-to-Book Attribute Level Importance



Higher dividend yield is more preferred than was expected (see Figure 5.9). The stocks chosen for the study are generally considered growth stocks, where ROI is primarily generated from an increased stock price and dividends are negligible portion of ROI. This result suggests dividends may be more important to investors of growth stocks than conventional investment management wisdom states. The usefulness of this data is within the market simulator.

Figure 5.9: Dividend Yield Level Importance



5.4 SUMMARY

The results from the survey and CBC experiment provided sufficient and valid data that is representative of the target population (active U.S. equity investors) to answer the research questions and address the hypotheses and propositions of this thesis. Most importantly, a valid market simulator for predicting investor choice behaviour and stock pricing was developed from the data. The following chapter will provide a discussion of the research results and the market simulator that was developed.

6 DISCUSSION OF RESULTS AND MARKET SIMULATOR

This chapter provides a discussion of the results from the research study and market simulator as presented in chapter 5.

6.1 RESEARCH RESULTS DISCUSSION

The most significant finding from the research results is that brand affinity is the most important factor when it comes to the investor's decision-making process. CBC analysis provided grounds for making conclusions about brand affinity and its role in a complex process of making investment decisions.

The results establish that brand affinity is a relevant factor. The results of the simulator indicate that High EPS, high ROE and high dividend yield are all factors that are preferred by potential investors, but when it came to making the decision about preferred investment, it turned out that brand affinity had the strongest influence (see Table 6.14). These results provide support for the premise of this thesis. In the literature review, it was discussed how traditional neoclassical theories failed in explaining how investors make decisions. Making a choice between various financial indicators of company's success is influenced by highly subjective references for success. It is common that people rely on their previous knowledge (even when it is only partial and potentially inaccurate) when they have to make decisions. In this case, level of brand affinity (favourability) stems from personal knowledge about the company and, the more affinity for a brand, the more it impacts choice.

Table 6.15: Summary of Attribute Importance

Attributes of Investor Stock Choice	
Attribute	Importance as %
Brand	43%
Price to Earnings Ratio	4%
Earning Per Share (EPS)	3%
Return on Equity (ROE)	33%
Price to Book Ratio	1%
Dividend Yield	17%

The results and literature review already presented direct readers towards the fact that brand affinity is important because it drives investors towards making the conclusion that a company has the needed qualities to turn out into a good investment. Brand affinity can be objectively measured, even though is arrived at through a participants subjective cognition, and having that in mind, it does not come as a surprise that making decisions based on brand affinity can lead to stock choice decisions that appear not to be logical without understanding an individual's emotional affinity for a company.

This will be later important for the market simulator. Though predicting human behaviour through a market simulator is exacting, the value of this research is that a model based on decisions explored through CBC analysis has taken into account the affective aspects of behavioural economics of stock choice.

Brand affinity proved to be a concept of practical value and the research process was designed in such a way that it enables me to test hypotheses and the research

propositions and to either accept or reject them. As a review, here is an overview of hypotheses and propositions made in the first chapters of this thesis:

- H1: There is a direct positive correlation between brand affinity and investor stock choice.
- H2: There is a direct positive correlation between higher levels of brand affinity and stock price when compared to other companies within the same industry.
- P1: Investors do not rely exclusively on rationality when choosing stocks within the same industry with similar risk profiles.
- P2: Investors do not rely exclusively on expected utility when choosing stocks within the same industry with similar risk profiles.
- P3: Brand affinity is a heuristic investors use to evaluate a company for investment.

Research objectives were formulated in the following way:

- To investigate, for current investors of U.S. stocks, the factors involved in the decision to choose one stock over another in same industries when financial factors are controlled.
- To understand what relationship, if any, exists between investor choice of stock (dependent variable) and their level of brand affinity (independent variable).
- To develop a predictive model of relationships between brand affinity, company financial performance metrics, and investor stock choice and/or stock price premiums.
- Based on the above model, to develop a market simulator for practitioners that can be used to predict behaviour and pricing based on simulated market choices.

Based on the existing literature and the conducted research, it can be claimed that brand affinity is the factor that influences investors' choice in situations when financial factors are under control. Furthermore, investors tend to choose (dependent variable) companies that they have higher levels of brand affinity for versus other similar choices (independent variable). Thus the null hypotheses were rejected for both H1 and H2 and we accept the hypotheses. The fact that brand affinity was a significant factor of investor choice supports the propositions that investors do not rely exclusively on rationality or expect utility when choosing stocks.

Testing of the third hypothesis takes a bit of deductive reasoning. Brand affinity is obviously a factor that contributes to choosing one company over the other while all other financial factors are under the control. In order to determine whether brand affinity is used as a heuristic, we will revisit the definition of a heuristic. According to Nimon (2013), a basic definition of heuristic is:

'A heuristic is a mental shortcut that allows people to solve problems and make judgments quickly and efficiently. These rule-of-thumb strategies shorten decision-making time and allow people to function without constantly stopping to think about their next course of action.'

One important characteristic of heuristics is that it makes the process of making a decision faster. In this situation, evidence does not reveal speed of decision. Investors do review financial data and on-the-spot decisions to invest are rare, though the volatility of the market often requires relatively quick decisions on which stock to purchase based on price fluctuations. This study is not a complete replica of the real-world situation in which the investor decision-making process takes a lot of time, discussing and planning. As in essence, heuristics are cognitive shortcuts based on which we make decisions, it can not be confirmed or denied that brand affinity is a heuristic, as it is not the only factor based on which the decision is made.

One option to be considered that brand affinity can be positioned as cognitive bias and not a cognitive heuristic. According to Kahneman and Riepe (1998) a cognitive bias is a type of error in thinking that occurs when people are processing and interpreting information in the world around them. Similar to heuristics, cognitive biases are often a result of our attempt to simplify information processing (Kahneman et al., 1982).

In cases when financial factors are almost equally good/bad, brand affinity can direct investors towards choosing the company with a familiar brand image. This seems to be more plausible solution for real-life situations in which they make decisions. For that reason, it is suggested that proposition number three is inconclusive and requires additional research or be re-formulated.

Based on previous parts of this section, it can be concluded that research objectives number one and number two have been fulfilled. The third and fourth research objective directed research work towards creating a predictive model of relationships between brand affinity, company financial performance metrics, and investor stock choice and/or stock price premiums and a market simulator for practitioners that can be used to predict behaviour and pricing based on simulated market choices. The result of this work, that is, the pricing simulator and model (which are considered to be the culmination of this study) are presented in the following subchapter.

Achievements of this study are summarized in the following Table 6.14:

Table 6.16: Research Hypotheses, Propositions, and Objectives Conclusions

<p>H1: <i>There is a direct positive correlation between brand affinity and investor stock choice.</i></p>	<p>Accepted</p>
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H2: <i>There is a direct positive correlation between levels of brand affinity in the investor population for a stock and the stock price for that brand.</i>	Accepted
P1: <i>Investors do not rely exclusively on rationality when choosing stocks (within the same industry with similar risk profiles).</i>	Accepted
P2: <i>Investors do not rely exclusively on expected utility when choosing stocks (within the same industry with similar risk profiles).</i>	Accepted
P3: <i>Brand affinity is a heuristic investors use to evaluate a company for investment.</i>	Inconclusive
RO1: <i>To investigate, for current investors of U.S. stocks, the factors involved in the decision to choose one stock over another in same industries when financial factors are controlled.</i>	Reached
RO2: <i>To understand what relationship, if any, exists between investor choice of stock (dependent variable) and their level of brand affinity (independent variable).</i>	Reached
RO3: <i>To develop a predictive model of relationships between brand affinity, company financial performance metrics, and investor stock choice and/or stock price premiums.</i>	Reached
RO4: <i>Based on the above model, to develop a market simulator for practitioners that can be used to predict behaviour and pricing based on simulated market choices.</i>	Reached

6.2 MARKET SIMULATOR DISCUSSION

A market simulator is the final result of this study (see also section 5.3.2). Everything that has been presented in this chapter, including secondary and primary research is incorporated in the model. In this section, the model itself will be presented, along with advantages and disadvantages of market simulators and potential benefits and its usage.

An ideal market simulator, like the one created (see section 5.3.2), would operate as if all the respondents are gathered in one place for making decisions regarding the stocks concepts in different competitive situations. The stock concepts are defined in terms of the variables and conditions used in the conjoint study. Simulation of the participant choices for different stocks helps us analyse the idiosyncratic preferences at the individual level. When multiple stock choices are available for every segment of the market, such a model is very useful in accurately estimating preferences of investors.

Conjoint analysis simulations can bring to light the cross-elasticity effects between different stocks attributes and levels of those attributes. If a particular participant has equal affinity for the stocks of two brands then these brands will compete with each other. The gain of money by one company is the loss of a share by a similar company than by a less similar company in the same situation. Simulation is the best tool to study the effects between different variables. Respondents that prefer a brand with high affinity are less price sensitive than for another stock with a lower level brand affinity, thus simulation allows for testing price sensitivity based on the level of brand affinity.

The conjoint simulation tool allows the organisations owning a brand to understand the choice of the respondents in different environments. The stock market simulator lets the researcher input multiple competitive brands or different stocks of the same brand

in a simulated competitive environment (e.g., Apple, Amazon, Microsoft and Google). Each stock is described by the variables of the conjoint study such as, P/E ratio, EPS share, and return on equity, price by book ratio and dividend yield. Therefore, if the respondent's stock choices based on these attributes are known, and then one can simulate the market behaviour using this tool. Within this virtual market new competitive brands can be added and competition between stock preferences between brands with different affinity can be predicted (Orme, 2006). The market simulator allows calculating the price premium on the shares and changes over time.

The conjoint simulator can be used as a guide for pricing strategy of the stocks by business strategists as well as by the investors to make decisions on which stock to buy. Taking overall brand affinity in the marketplace as an indicator of the value of a brand, the model answers the question: what quantity of a company's value is attributable to its brand, based on the book value and market capitalization analysis. Moreover, investors and financial planners can use the results of the simulator to identify overvalued stocks in their portfolio allocations and make better comparison between similar stocks. Business managers (strategists) can determine to what level brand affinity can increase the brand equity and thus overall market value. Additionally, for mergers and acquisitions, accurate valuations and thorough understanding of the factors of such valuations are crucial.

Another advantage of this simulator is to compare the behaviour of a stock with the competitors. For the brand owner, it can answer questions such as, how price sensitive are the decisions of investors buying a particular stock? What will be the effect of an increment of stock price on brand value? How it will affect my competitor(s)? For the investor, the simulation results allow them to set the best price for a stock. The business strategist can choose the portfolio of stocks for different market segments and maximise overall share.

The simulator tool is also input with segmentation information like market demographics. This allows one to investigate stocks prices that appeal to different segments of the market simulator (Orme, 2006). It is believed that, by valuing stocks at competitive rates for an IPO, they appeal to particular segments, which can increase overall investment in the stock and may also attract new investors in the company in turn increasing its value in the market.

Sensitivity analysis can be used to assess influence of different levels of each attribute. In this case, one may increase value of ROE gradually and see what will happen. After that, brand affinity can be increased or decreased and results can be observed. This procedure can be repeated for each of the elements in order to see what kind of change has the greatest impact. Comparing these results with the results of simulation can provide guidelines for both investors and companies. In case of investors, once when they gradually change value of each of the attributes, they can assess the possibility for each of the changes to happen. If the company of interest is stable, profitable and big, there is greater probability that its operating level will stay the same or experience moderate change than that it would drastically change. Based on comparison with real data, investors can conclude which scenarios are most realistic and among them choose the one that is most favourable.

Companies can also use this method, knowing what their investors look for.

Additionally, leveraging the model in a more complex way, investor's demographic characteristics can be manipulated and based on changes in each of them; companies can observe how potential behaviour would change. Changes in other segments may provide companies with an insight into the alterations that can be most detrimental. Based on this study, decrease in brand affinity may result in a failure to attract investors.

At the highest level, the simulator is able to incorporate changes in several attributes. Complexity is, unfortunately, one of the main characteristics of real business world. Decisions that investors make in real time are influenced by numerous factors. These factors can be situational and these are very hard to predict. However, there are some constant factors, such as investors' preferences and personal characteristics, which are encapsulated within the construct of brand affinity. Demographic variables exert substantial influence over people's decision-making process (Terpstra et al., 1993) and they are very often included in researches dealing with topics similar to this one. Personality traits have also been subject of many researches and to this study it is especially relevant that they influence risk-taking decisions (Lauriola and Levin, 2001), which are accounted for within brand affinity. For example, people who have high scores on neuroticism are less prone to high risk taking, while those who score high on openness to experience are more prone to high risk-taking behaviour (Lauriola and Levin, 2001). What matters is that there are certain decision-making patterns among people, which can be traced and leveraged for the purpose of market simulation. The following aspects are included in the model (see Table 6.15):

Table 6.17: Attributes and Stock Choice

Attributes related to investors	Attributes related to companies	Choice of a Stock
Gender	Brand Affinity	
Age	ROE	
Race	EPS	
Education	Dividend Yield	
Marital Status	Price to Earnings ratio	
Employment Status	Price to Book ratio	
Household Income		
Equity Transaction Activity Levels		
Equity Portfolio Size		

In this model, one is able to trace changes in the final decision if, for example, an investor became a middle-aged highly educated woman, who has a financial advisor and extensive equity portfolio, etc. Introduction of demographic variables and grouping variables referring to investment activity enriches the model and creates a more complex, but also more realistic environment. Also, it enables companies to direct greater attention towards their target groups of investors. This model would not only be a basis for making predictions, but it would also be used for strategy development when it comes to attracting new investors. Knowing what they value most is a good way of targeting and market segmentation.

Finally, it is necessary to assess advantages, disadvantages and implementations of the model. In the first place, simulators are a very good way of learning about customers, investors, and stakeholders (Kelton and Law, 2000, Sterman, 1987). They provide companies with insights that could not otherwise be available (Kelton and Law, 2000). They are also source of learning for investors, as they can predict what could happen in case of a drastic change in value of a financial indicator (Pindyck and

Rubinfeld, 1998). Furthermore, they can be used as preventive measure against making investment decisions which in the end turn out to be wrong and costly (Pindyck and Rubinfeld, 1998).

Making mistakes in simulations can be a valuable source of learning too. It is generally known from psychology that the learning process is most successful when it is coupled with mistakes (Chialvo and Bak, 1999). Investing is not an exception to the learning process, but the problem is that a majority of people cannot afford themselves to make mistakes with their invested savings; for that reason, simulators can be used. Those who understand the model behind a simulation can understand which thinking patterns lead them to making a wrong decision. This specific environment additionally gives the advantage of predictable, consistent, and prompt criticism (Barlas, 1989). Also, on the off chance that they have really committed unreasonable errors, the quick input assists them with correcting endlessly and not when it's past the point of no return (Barlas, 1989). The best piece of quick input with a simulator is that it prompts quick use of learning (Barlas, 1989). Application is, similar to experience, a noteworthy segment of powerful grown-up learning.

Simulators have their disadvantages, most notably is that they have to be based on solid theory that is compatible with real situation, which can be hard to achieve.

Reliable choice theories are still emerging, especially when it comes to human behaviour where there is more exceptions than rules (Van de Ven, 1989). In this case, in order to implement a correct simulator, all connections between attributes of an investor and attributes of a company and how these two relate to making a choice had to be documented. The construct of brand affinity was quantified equally with the other factors. In order to successfully develop the simulation model, many steps had to be conducted, anchored with collecting the primary and secondary research using experimental simulation study. Comparisons with real-life data would be the next step

necessary for the simulator developed to gain greater credibility (Gustafsson et al., 2013). Another drawback of developing a good simulation model is that it can take a lot of time and be expensive, as simulator creation tools of high quality often come at high prices (Slothuus Skjoldborg and Gyrd-Hansen, 2003).

Additionally, errors in simulation may come from some very prosaic reasons, such as wrong key pressed or moment of low concentration (Grefenstette et al., 1990). This is a risk for both those who create simulations and those who use them. Creators of simulations can take numerous precautions and they usually do, but those who use simulations do not always do so and that is when errors may begin to arise (Grefenstette et al., 1990).

6.3 SUMMARY

The aims and objectives of this thesis were attained and the research questions addressed by the study, most significantly: how does brand affinity effect stock choice and price? Factors or attributes that influence investors' choice of one stock over another were identified and the relationship between those variables and stock choice modelled. Results from the CBC experiment provide an empirical foundation to support the research propositions and hypotheses. Most notably, a direct positive correlation between brand affinity and investor stock choice was observed. Additionally, the higher the level of brand affinity the more significant a price premium an individual is willing to pay for a stock. These observations supported the propositions that investors do not rely exclusively on rationality or expect utility when choosing stocks.

The most significant results from the research study is a working market simulator based on the predictive model of relationships between brand affinity, company financial performance metrics, and investor stock choice and/or stock price premiums. Implementations of the model and simulator are numerous and they range from

personal application to business uses including predicting behaviour of potential investors and for scientific purposes so other researches can explore this topic in greater depth. The model and simulator can be also used at an aggregated market level for company stock prices and valuations. One of the advantages of such model is simulator is its flexibility when it comes to extent of its usage. While the model is exclusively related to assess the relations between brand affinity, investors and investment decisions, groups of people who can benefit from it are diverse.

7 PRACTICAL CONTRIBUTION AND MANAGEMENT IMPLICATIONS

Two distinct areas of business may benefit from my research findings, namely investment management and business strategy. In the field of investment management, knowing if and how much a stock carries of a price premium due to aggregate levels of positive brand affinity can assist investors and financial planners avoid overvalued stocks in their portfolio allocations and make better comparisons between similar stocks (Aspara and Tikkanen, 2008, Rutter, 2013). For individual decision-making, knowledge of what influences his/her thought process can prevent costly, if not catastrophic investment mistakes (Thaler and Sunstein, 2008).

Non-rational (emotional) self-awareness in economic choices has become a more acceptable reality in day to day behaviour with the success of several behavioural economics-based books that have gained mainstream success including Nudge: improving decision about health, wealth, and happiness (Thaler and Sunstein, 2008), Fooled by randomness: the hidden role of chance in the markets and in life (Taleb, 2001), Predictably irrational: the hidden forces that shape our decisions (Ariely, 2008), Sway: the irresistible pull of irrational behaviour (Brafman and Brafman, 2008), The black swan: the impact of the highly improbable (Taleb, 2007), The myth of the rational market : wall street's impossible quest for predictable markets (Fox, 2009), and Animal Spirits (Akerlof and Shiller, 2009).

In business strategy, building a high level of brand affinity for a company may be a competitive advantage by providing defence from hostile takeovers due to creation of a premium stock price and increasing access to capital from investors with high brand affinity for the company (Aspara and Tikkanen, 2008). Some secondary potential implications around a brand affinity model include leveraging it to increase IPO valuations and managing investor expectations during times of change or crisis.

7.1 BUSINESS STRATEGY IMPLICATION

The process of brand management entails growing brand equity. There are several stages that are incurred from the perspective of investors' acceptance of the brand. The initial stage involves the creation of brand awareness and recognition. This is then followed by advancement of knowledge and assessment of the brand, which leads to the stage where investor preferences and attitudes enter. The final stage involves the cultivation of trust in the brand by investors. This highlights complex activities that require an in-depth understanding of the concept of brand affinity as a way of controlling how the organisation relates with its investors as well as potential investors (Bornemann et al., 2015, Chand and Tung, 2011).

7.1.1 INVESTOR RECOGNITION

Familiarity and awareness with a brand is vital for investors to utilise a brand as an information signal. At a basic level, investors are aware of the existence of a brand. This recognition level is not significant, as it does not enable investors to utilise brands as a solution to their investment challenges. Therefore, a higher level of brand recognition is needed. In particular, investors need to be able to recognise that a brand offers solutions to specific problems in the market. Consequently, investors need to recognise existing functional risks that a specific brand can eliminate in their investment options. To establish this level of awareness requires an in-depth understanding of how brand affinity influences investor choices (Chand and Tung, 2011). This is key in formulating effective promotional campaigns that will ensure an organisation creates interest, attention, and exposure of its brand as a feasible solution to the problem the brand promises to solve in the market. In particular, the central information needed in defining a brand identity is rooted in understanding brand affinity as an approach to formulating promotional messages that make a brand accessible and memorable to the investors. This is the stage where investors start considering a

brand to be familiar (Iyer and Kashyap, 2009, Helm, 2007). Hence, through reaching the high levels of investor familiarity and awareness entails strategically positioned promotional expenditures.

7.2 INVESTMENT MANAGEMENT IMPLICATION

The CFA Institute acknowledged the need for a new understanding of client behaviour based on psychological not just traditional rational thinking models (Beyer, 2009).

Beyer noted that most client behaviour has come from discount trade data, which does not reflect the needs of higher net worth individuals with financial advisors. Regarding academic research into investor behaviour, Beyer noted that most studies conducted using students or volunteer subjects, which does not accurately reflect behaviour of investor in different stages of life and needs including emotional intelligence (EQ).

This study contributes to an improved understanding of the relationship between the reputation of a business organisation and investor satisfaction and ultimate loyalty. Moreover, the role of brand affinity in investment decision-making can be well positioned using the findings drawn from this study. These relationships have been supported by the data collected in this study. Considering the effect of brand affinity of investor loyalty, brand affinity plays a crucial role in compensating the investor's experiences in an organisation as reflected in their level of satisfaction such that any form of short-term changes in the dividends paid or the share prices does not result in instantaneous downturn of the investors' emotional predisposition towards the firm (Helm, 2007). This is specifically significant when considering the comparatively low impact of reputation and its ability to cause discounting of other vital information that is needed in the process of judging the investment value of a business organisation.

With regard to brand affinity and its role in reputation management, this implies that investing in an organisations brand reputation presents positive effects on the

emotional inclination of its investors as well as potential investors (Green and Jame, 2013, Cervino, 2008). The ability of a firms' brand affinity to influence investor loyalty has been greatly neglected in research studies on investor relations as well as reputation management. This study, therefore, offers a novel perspective of cultivating investor satisfaction and loyalty through building on brand affinity.

While the findings of this study strengthens the position taken by behavioural finance scientists on the ability of the emotions to cause a misleading investment decision masking (East et al., 2011), this study also considered other aspect of investor loyalty. As illustrated in the above results, the effects of satisfaction on behavioural loyalty among investors are significantly stronger than the actual consequences of effective loyalty. There is no significant impact of brand affinity on behavioural loyalty implying that brand affinity is not a powerful that has a direct impact on investors' future business relations with a firm. However, it is important for organisations to be aware that this study was not interested in ascertaining a measure for initial decision-making concerning first-time investors in a firm who in most cases research works in behavioural finance focus on. In addition, the direct impact brand affinity on behavioural loyalty through investor satisfaction must be considered (Green and Jame, 2013, Jacobsen, 2010). This effect is not very strong but given the paramount impact of data on financial performance in formulating decision regarding selling or holding stocks, the impact of brand affinity as a qualitative aspect of investor loyalty is rather striking. The results, however, also infer that exceptional firms' shares may not be held for longer periods that depraved company shares.

Concerning the conceptualisation of the ideas, the disclosure of weak indicators warrants further consideration (Aspara, 2013). Concerning the investor satisfaction perspective, it was evident that the development of share prices had an insignificant impact on the construct to investor satisfaction. This development has been correlated

with market volatility and declining stock performance that was faced by numerous investors in the recent past. Moreover, the investors have been found to be more focused on the safety of their investments (Bai, 2010).

7.2.1 BRAND AFFINITY AND CORPORATE REPUTATION

In the contemporary world, the growing requirements for investment capital are one of the forces that influence the reputation of business organisations. If business investors consider reputation to communicate vital information about long-term potential and profitability of a firm, the reputation of a company influences its attractiveness as an investment destination (Aspara, 2013). As much as this area of research has become attractive to business managers involved in investment relations, the effects of an organisations reputation on the behaviours and attitudes of the investors was not well positioned in literature (Stokburger-Sauer, 2011, Rice and Wongtada, 2007). As much as research has been able to present some evidence from accounting organisations; it deals with established investors and mostly remain proprietary (Aspara et al., 2008). This illustrates the importance of this study in positioning individual investor's consideration of organisational reputation. Since organisational reputation is directly correlated to brand affinity in the market, this study positions key findings that can enable organisations establish working investor-management strategies in the contemporary working environment.

According to various behavioural finance research studies, investors preference to judge firms as promising investment opportunities is influenced by their belief that these companies have a stronger reputation in the market (Aspara et al., 2008, Okpara and Onah, Wood et al., 2008). This study explored this perspective and illustrated that brand reputation influences organisational risks and ultimately returns expectations. In general, investors were found to believe that good investment opportunities exist in

companies that have a good reputation since brand affinity is as a result of brand reputation.

7.2.2 BRAND AFFINITY AND B2B BUSINESS ENVIRONMENT

The implications of this research can also be analysed from a B2B (business-to-business) perspective by positioning an investor as a business partner. In this context, it is important to note that the growing global competitiveness of the market has resulted in many business organisations to consider the role of their brand image and affinity in formulating competitive advantage with regard to B2B business context (Kylander and Stone, 2012). The B2B is a significant sector that is experiencing growth as firms seek investors to build their capital. Due to the unique features of the B2B business context such as elevated transaction costs, achieving high levels of loyalty and satisfaction as well as understanding the antecedents of investors is vital as it can lead to high levels of profitability of firms as they gain more investors that allow the firms to expand their market coverage hence revenue. Research has been able to position the role played by corporate reputation and image in investment behaviours and decisions (Temporal, 2011, Brodie et al., 2013).

Brand affinity, which positions the reputation of a brand, has a significant influence on investment processes that is unique when compared to brand image, which is limited to a single product category in a firm (Cornwall, 2008, Emari et al., 2012). Therefore, brand affinity plays a key role in developing and maintaining investor loyalty, which is key to sustainability of firms as withdrawal of investors' results to financial instability of a firm, which affects its business operations. Therefore, by presenting an approach that can be used to position the impact of brand affinity on investor loyalty and the role played by personal relationships in formation of loyalty, this study offers policy directions that can be used by firms to attract and maintain investors (Kylander and Stone, 2012, M. Steffes et al., 2008).

Furthermore, corporate reputation was found to be significantly influenced by brand affinity. Since corporate reputation plays a key role in promoting permanency in a firm's competitiveness and positive financial performance, firms can utilise the information provided in this study about brand affinity to enhance the reputation of their brand. As much as the effects of brand affinity have been explored by many researchers (Walsh et al., 2013, Worthington et al., 2009), limited studies had positioned its imperativeness in business investor relations from a B2B perspective. Specifically, this study considered the invert trail by service and product quality to brand affinity as a key attribute to enhancing the brand value and replacing the traditional consideration of investor value with investor satisfaction as well as introduction of a personal relationship construct in brand affinity from the investor's perspective (Siala, 2013). This study examined whether developing a personalised relationship between business organisations and their investors influences investor choices. This study established that brand affinity as cultivated by brand reputation influences investor loyalty. In addition, this study found out that the reputation of an investor can be influenced by service and product quality. These outcomes have various managerial implications with regard to management of investor relationships.

According to the findings derived from this study, it is vital for business managers to understand how investors perceived their firm. Besides, organisational management needs to consider the significant factors that convert investors into loyal investor (Walsh et al., 2013). Also, investor loyalty and satisfaction is a powerful weapon for marketing of a firm's services and products as it positions the firm as an investment destination hence very attractive in the market to both investors and customers (Townsend and Shu, 2010, Abrahams, 2008). As it is evident, the perception of the investor in specific companies depends heavily on how they perceive the firm's competitors in the market. Therefore, it is important for organisational management to recognise the various ways for value addition as well as understand the power of

external stimuli on investor perceptions and the general reputation of the firm.

Additionally, the positive effect of quality on investor satisfaction and brand reputation results in significant implications for organisational management to capture with the superior branding of the firm in B2B context (Aspara et al., 2009).

Consequently, by developing a better understanding of the effects of price-quality relationship on investor satisfaction and in turn investor satisfaction and loyalty that has been illustrated in this study, it is viewed as a strength indication for the management to focus on quality-based pricing strategy of its products and services as a way of convincing its investors of the viability of its products in the market (Búrcio, 2015, Abrahams, 2008). More so, it is established that firms need to focus its investments in the realisation of strong brand affinity through producing high-quality products, which eventually offer the firm higher prices. This allows organisations to explore financial trade-offs and implications in investing corporate reputation and product quality reputations vis-à-vis product pricing.

7.2.3 BRAND ASSOCIATION AND INVESTOR RESPONSE

Business organisations are currently focused on the development of brands as the key aspect of their marketing strategy. The formation of a brand by an organisation suggests communicating a specific brand image such that the company's target groups link, the brand with specific associations, which drive brand affinity (Búrcio, 2015, Florek, 2013). Research in brand equity as illustrated by Chan et al. (2009) and Bloom et al. (2006) is founded on cognitive psychology and is focused on the target cognitive processes. Consequently, various perspectives positioned by brand equity as key to the implications of this research. In particular, brand equity perspectives affirm that a brand creates value for the firm and its consumers. In particular, brand value from the firm's perspective is founded on the value generated by the consumers and the brand association between a brand and the consumers forms key attributes of brand equity

establishment and management (Zerrillo and Thomas, 2007, Knewton and Sias, 2010).

Based on this perspective about brand equity as viewed from the customer's perspective, this study was able to position the investor as a target customer that can be equally perused with the same strategies that work for conventional customers. Based on the perspective presented in this research study, the concept of brand equity emerged as a significant area of investor management. This study examined brand affinity based on benefits and functions that the investor associates with the brand. The focus was on to position the influence of these functions on definite aspects of investor response capable of generating competitive advantages of an organisation in terms of investor interests (Masud, 2013). This study established that it is vital for businesses to examine different dimensions that position brand affinity. Each of the dimensions examined is known to present unique incidence on the investor responses that position the advantages that a brand offers an organisation. Specifically, the association of a brand with guaranteed function is known to favour recommendation of a firm among investors obtaining strong investment incentives, which promote brand extension to other product categories and hence organisational growth (Burmam et al., 2009). More so, the social identification role is known to offer a positive impact on brand quality and enhances investor acceptance of brand extension (Kreppel and Holtbrügge, 2013). Status function and personal identification, on the other hand, influences extension and recommendation respectively. These positions offer various managerial implications related to brand affinity.

To begin with, an organisation that plans to extend its brand to additional product categories needs to pay a distinctive focus on all brand associations that are linked to functions of status, social identification, and guarantee as they are the main attributes the investors in the firm look for when expanding their investments (Keller, 2008).

Moreover, a company that intent to apply a price premium on its product lines, it is vital for the management to promote investor associations related to function of social identification and guarantee to mitigate the risk of investor withdrawal due to the fear of the failure of the firm in the market (Burmann et al., 2009, Johansson and Carlson, 2014). Considering approaches of stimulating investors in a firm to recommend the company to others, it is fitting to resort to the functions of personal identification and guarantee. The advancement of these attributes provides an organisation an opportunity for generating positive communications among investors towards the firm as a brand hence enhancing its brand affinity among investors. Just as illustrated above, the process of recommending a brand to other investors is determined by the investor's own perception towards the brand and not the social prestige or image of the brand (Simmons, 2009).

The success of these implications is rooted in not limiting the interpretation of the consequences to a perception that business organisations should promote specific functions and ignore others in using brand affinity to attract and retain investors (Robinson, 2008). It is important to consider the existence of a causal relationship that was not sufficiently verified in this study, the indirect impact of the relationship of these attributes with additional brand functions. Hence, the organisations should integrate the diverse brand functions while prioritising some specific dimensions while at the same time ensuring an effective balance between all the brand functions are maintained (Simmons, 2009, Bornemann et al., 2015). Based on this perspective, another contribution of this study is related to brand functions where variables that mirror a firm's competitive advantage in terms of investment growth such as recommendation of the firm to others, acceptance of the need for the firm to expand and profitability of the firm (Aspara and Tikkanen, 2011). Therefore, this study offers an appraisal of the incidence of the brand investor functions from both short and long run. In particular, the data explored in this study points to social identification and guarantee as key functions

that offer business organisations opportunities for profitability and growth by enhancing its attractiveness to investors while the status and personal identification functions guarantees a firm's growth advantages from investors perspective.

7.2.4 BRAND AFFINITY AND BRAND VALUE

The concept of branding is mainly founded on distinguishing a business entity from its rivals in the market. The modern day business environment has transitioned for a simple focus on brand marks to brand positioning and affinity. As much as branding has mainly been viewed as strategy for positioning a brand as the most valuable to the consumers, the role of investors as key stakeholders in brand development and expansion has resulted in the need of branding a firm with the need of enhancing its attractiveness not only to the consumers of its products and services but also to the investors (Aspara and Tikkanen, 2011, Johansson and Leigh, 2011).

As earlier mentioned, globalisation has created steep competition in the market where organisations have been forced to build economies of scale as a way of positioning their competitiveness in the market. Building economies of scale require significant investments by the firms, which forces the organisations to depend on investors for growth and sustainability. The growing importance of investors in the sustainability of business organisations has resulted in the increasing powers of investors in the market (Papasolomou et al., 2010). This has positioned organisations in unique situations that force them to develop brands that are attractive and promising from the investors' perspective (McFadden, 2010). This study established that in the process of mitigating organisational risks associated with investor management, organisations need to build affinity through focusing on investor experiences and investor loyalty, and then investors' retention will emerge automatically. Chances are that most business organisations are loaded with loyalty programs, but the ability of the existing loyalty programs to positively impact on investor retention is not well positioned (Oberecker

and Diamantopoulos, 2011, Papadopoulos, 2011). This study emerged with five key attributes of successful investor attraction and retention programmes. Firms need to appreciate the growing importance of investors in their growth and sustainability plans and hence formulate dedicated investor management function at the organisational level. This is essential to ensure an organisation integrates their investor retention programmes into the overall branding strategy and the process of cultivating brand affinity in the market.

Furthermore, the emphasis needs to be on investor experience. In this respect, firms with effective investor retention programs that are rooted to branding target specific programs or initiatives aimed at managing as well as improving the overall investor experience such as engaging with investors from organisational strategic planning and outcomes (Kylander and Stone, 2012). Personalisation of rewards for individual investors emerged as the key attribute for promoting and maintaining investor loyalty and interests. Effective investor loyalty programmes are rooted to not only promoting customer loyalty but also personalising the relationship between the firm and the investors that is founded on mutual benefits and offers (Oberecker and Diamantopoulos, 2011). Firms should incorporate various constituents such as personalised recommendations and investor-specific offerings. Social media was also found to be an influential tool for cultivating and maintaining investor relationships. By being social media savvy, firms demonstrate effective loyalty programmes for both the customers and investors (Provost et al., 2009). Specifically, following up on individual investors who raise concerns about the firm's business operations and publicly responding to investor queries on social media demonstrates a company's focus on the long-term sustainability of their investments rather than just seeking short-term profits (Deepa and Chitramani, 2013). Finally, the analysis of data is a core component of any investor management programme. By cultivating a data-driven culture at the organisational level, firms are able to maximally utilise customer data to lure more

investors into their business activities as well as reassure existing investors of the safety of their investments.

7.2.5 BRAND AFFINITY AND ETHICS

As much as branding generally positions an organisation as a profit driven which exposes the organisations to the risk of compromising their ethical values, the concept of brand affinity can be positively utilised to position a firm as ethically viable hence attractive to investors (Burmam et al., 2009). Specifically, by focusing on brand affinity is effective in enhancing the visibility of a firm and also key in driving an organisation's mission from a broader perspective. This study, therefore, positions brand affinity as a promising approach to luring investors in an organisation from an ethical perspective (Deepa and Chitramani, 2013). Specifically, organisational leaders need to cultivate brand affinity attributes that are related to building and sustaining their social impact and ultimately serving their mission by staying true to the culture and values of an organisation. Specifically, an inverters' approach to organisational branding is rooted in affinity, ethics, democracy, and integrity as it focuses on convincing the investors that the firm is economically, environmentally, and socially sustainable (Land and Taylor, 2010).

7.3 SUMMARY

In summary based on the position taken by this research study, brand integrity can be cultivated by positioning a public image of the firm that is effectively aligned with its mission. Brand democracy on the other hand is achievable by an organisation demonstrating its confidence and trust in its stakeholders to communicate the core identity of the firm without focusing on centralised control of how the brand is presented in the market (Dimofte et al., 2008). Brand ethics is founded on establishing a brand that reflects the culture and core values of the company. Finally, brand affinity is based

on positioning a brand that effectively attracts and communicates the interests of collaborators and partners. By focusing on these attributes of branding, a brand can emerge as a good team player that works effectively among other brands sharing credit and space generously and promoting collective rather than individual interests, which is the fundamental interest of investors. By positioning a brand as ethically viable, brand affinity is essential to attract business partners through lending value to them without exploiting them (Davis, 2009).

Generally, this study established that by cultivating a high brand affinity, a firm is considered to have managed and shaped its brand such that it aligns smoothly and liberally with its coalition members and partners. Certainly, business firms with the highest brand affinity are able to promote the brand of their partners in a similar manner as they promote their own brand (Balmer and Liao, 2007). This highlights the prospect of brand affinity promoting collaboration and mergers and acquisition for the betterment of business performance in the competitive market environment.

8 CONCLUSIONS

This chapter provides readers with an overview of what has been accomplished during the research. The premises of the research, as well as results, are summarized in such a manner that a clear connection between objectives and final results is made. It is continued by present contributions and management implications of this research and, finally readers are presented with limitations, as well as ideas for the future work on investigating this topic.

8.1 THESIS OVERVIEW – REVIEWING THE RESEARCH OBJECTIVES

As defined in Chapter One of this thesis, the aim of this research was to provide a new paradigm that accurately measures the effect of brand affinity on stock (equity) prices when faced with a choice between companies in the same industry. The research aim was formulated in such way that it provides a clear guide for the research, from the data needed to the methods used for data analysis. As it will be outlined later in this chapter, each step of the research that was conducted was adding value to the final research product – a new model and market simulator developed based on the data obtained through primary and secondary research. Even fusion of these two different types of data had a purpose of creating a strong background for the model development. The research aspiration can also be summarized in a one very simple question: how does brand affinity effect investor stock choice?

As the literature review confirmed, answering this question was not trivial. Numerous theories have been developed in order to provide an explanation for the decision-making process that takes place when it is necessary to make an investment decisions. First theories, such as traditional neoclassical economic theories, adopted a view that today may seem naïve based on the rationality of a man. The underlying concept in these theories is that people always seek to maximize their utility and any

emotionality in a decision equates to irrationality. Another theory that also gives an overly simplified view of the situation is the efficient market hypothesis that states that the market is always efficient, reflects all relevant information, and stocks always trade at their fair value. Neither of these theories showed success in explaining the differences between company valuations reflected in the stock price.

One step further towards a more satisfying explanation was made by the introduction of economic choice theories that are grounded in psychology research (behavioural economics). The field of psychology recognized humans' inability to be completely rational due to the impact of heuristics, biases and numerous subconscious mechanisms. These newer theories provided researchers with an opportunity to investigate investors' behaviour and to explain it and predict it more accurately. This kind of approach allows for behaviour evaluation and prediction that takes into account the dynamic nature of the market (which heavily influences stocks value).

This thesis took it one step further as it identified a construct called corporate brand affinity and recognized its influence on both investors' decision making and value of stocks. This approach is supported by various academic and viable sources that confirm that strong and differentiated brands have been shown to enhance significantly firm performance (Colucci et al., 2008, Warlop et al., 2005). This statement is also supported by the fact that investors, in general, prefer companies that are characterized by high brand recognition. In order to investigate the complex role of brand affinity in a decision-making process, three relevant areas were taken into account: positive (descriptive) microeconomics, choice theory within the field of cognitive psychology, and branding within the field of marketing.

Before proceeding with discussing conclusions, achievements, contributions, and limitations of this thesis, one should be reminded of the research objectives that were posed at the beginning of this thesis:

- To investigate, for current individual retail investors of U.S. stocks, the factors involved in the decision to choose one stock over another in same industries when financial factors are controlled.
- To understand what relationship, if any, exists between investor choice of stock (dependent variable) and their level of brand affinity (independent variable).
- To develop a predictive model of relationships between brand affinity, company financial performance metrics, and investor stock choice and/or stock price premiums.
- Based on the above model, to develop a market simulator for practitioners that can be used to predict behaviour and pricing based on simulated market choices.

The essential element of the thesis was a Choice-Based Conjoint analysis (CBC) study; a variant of conjoint analysis (CA) that was selected as the optimal data gathering methodology. Conjoint Analysis is a multivariate research methodology that can help in sorting out the relative significance of an item's multidimensional properties (McFadden, 1991), which was necessary to fulfil research objectives.

8.2 SUMMARY OF FINDINGS

The results from CBC analysis showed that brand affinity plays a significant role when it comes to investors' decision-making process. Not only that it is an important factor, but also it has been identified as the most important factor that influences investors. These results provide support for my interest in this topic and the value of the research. Apparently, traditional neoclassical theories failed in explaining how investors make decisions. In contrast, brand affinity proved to be a concept of practical value. Results of the primary and secondary research conducted throughout this study confirmed the two propositions and two hypotheses:

- P1: Investors do not rely exclusively on rationality when choosing stocks within the same industry with similar risk profiles.
- P2: Investors do not rely exclusively on expected utility when choosing stocks within the same industry with similar risk profiles.
- H1: There is a direct positive correlation between brand affinity and investor stock choice.
- H2: There is a direct positive correlation between higher levels of brand affinity and stock price when compared to other companies within the same industry.

These two hypotheses and propositions also summarize answers to the research objectives and questions introduced in the previous section of this chapter. Based on the existing literature and the conducted research, it can be claimed that brand affinity is the factor that influences investors' choice in situations when financial factors are under control. Furthermore, investors tend to choose (dependent variable) companies that they have a stronger brand affinity for (independent variable).

The third and fourth research objective directed research work towards creating a predictive model of relationships between brand affinity, company financial performance metrics, and investor stock choice and/or stock price premiums and a market simulator for practitioners that can be used to predict behaviour and pricing based on simulated market choices. The simulator represents the greatest practical contribution of this thesis, which will be discussed in the following section.

The market simulator was a product of Sawtooth Software and as a final product it can be used for simulating market choices. The market simulator has been shown to have validity in terms of predicting behaviour when based on a direct experiment using simulation (Sterman, 1987). Underlying concepts of this simulator are aligned with the already mentioned suppositions about the complex human behaviour and various effects on our decision-making process. One advantage of the simulator is that it

recognizes the value of simplicity when it comes to the results presentation. Graphical data presentation is more intuitive for understanding and allows users to easily detect patterns in the complex data. Still, the simulator is far from being perfect, and its faults and potential for improvement will be introduced in section Limitations and Ideas for future research.

8.3 CONTRIBUTIONS (PRACTICAL, THEORETICAL, METHODOLOGICAL)

The previously described market simulator and model represent the biggest practical contribution of this thesis. Implementations of the model and market simulator are numerous including they can be used in other research projects, which could explore this topic in greater depth. It can be also utilised by companies that want to predict the behaviour of potential investors. As mentioned in the Results section, model and simulator can be also used at an aggregated market level for company stock prices and valuations. Prediction models are highly valued by the business community as they present a basis for decision-making at higher levels. This model may be used for determining, for example, which level of brand affinity is necessary to attract desired investors in a certain market niche. Such approach to the problem reflects changes in the business strategy. Awareness about the importance of brand affinity can direct managers to work on increasing brand recognition in the market with an emphasis on investor segment. Channelling energy and resources into this task is more justifiable when there are numbers supporting the cause. Of course, investment management also may profit from the model and simulator. In this field, knowing if and how much a stock carries a price premium due to aggregate levels of positive brand affinity can assist investors and financial planners avoid overvalued stocks in their portfolio allocations and make better comparisons between similar stocks. At an individual level, investors would be more aware of elements that influence their decision-making.

Although this may not always result in changing the behaviour, it may shed some light and prevent investors from making judgments that are not rooted in facts.

Model development also has theoretical values. Aggregating models and theories about relevant constructs make progress in almost every discipline. In this case, brand affinity, stock value, and decision-making are grouped together. There are no many attempts to do so, so this thesis may be one of the initiators of this stream of thinking. Understanding the connections between concepts that seem to be a bit far-fetched is necessary, as it is much closer to the real world than using linear models connecting concepts from the same area. In the flexible and volatile markets, psychology, economic, finance and marketing are connected, and this is somewhat recognized in the existing models. In this research, attention was directed towards a very specific situation – making an investment decision and that is the characteristic that makes it theoretically important – investigating one smaller segment to understand the bigger picture. Findings compiled in previous chapters together with the primary data collected through the research can be a valuable academic basis for someone who would like to explore this topic further and to approach it from a different angle.

A secondary but valuable contribution from this thesis is the effective use of the brand affinity construct as favourability construct within quantitative research. The lack of a holistic company-wide brand affinity construct has been identified in literature and left a gap that can be filled with this research. Additional research leveraging the brand affinity construct will additionally serve to reinforce the findings from this research.

Methodologically, mostly existing methods and techniques were leveraged. However, use of Choice-Based Conjoint analysis is not very common in research combining financial and marketing variables, and that is a small contribution made by this research. There are a large number of methodological procedures, which are of great value, and their implementation in new research situations just adds to it. Secondly,

the use of social media, such as LinkedIn, Facebook, and Twitter to gather data is a rather novel approach for targeting and approaching research subjects that shows ongoing promise both for lowering research costs and identifying and reaching hard to reach target segments.

8.4 LIMITATIONS AND IDEAS FOR FUTURE RESEARCH

The reliability and validity of the research allows for the researcher to draw data from the sample and understand the representative sample. Through the collection of data from one particular organization or segment, the researcher drawing from the representative sample ensures that the data collected is representative of the entire population of interest (Kumar, 2010). In this case, it means that, ideally, a randomized sample of participants would be drawn for the research to be sure that the results obtained are not biased.

While the research was focused on and gathered from U.S. investors, the results are generalizable to other countries and investors where active public markets for equities exist. Financial metrics as factors of investor decision-making are not unique to the U.S. and would be found in other countries with public equity markets. While Brand affinity may be influenced by cultural factors, investors' choice of stocks of companies they favour would still be effected by brand affinity bias.

While there are known limitations of these methodologies, combining different methodologies is one option to address this issue. Academic researchers and literature recognize that mixed methods is more compatible with complex research subjects and projects, which gives greater freedom to the researcher to explore the topic of interest. There is also a methodological reason for choosing a mixed method, which is the combination of different methodologies maximises their strengths and minimizes their weaknesses thereby creating a very powerful tool for data collection (Kumar, 2010).

One of the suggestions for future researchers is methodological, the introduction of interviews in the research design. It is my belief that this method would certainly help get additional insight into the process of decision-making and maybe it could uncover some relevant aspect of which we are not aware at the moment. Interviewing is another very popular form of research methodology. Interviews can be classified based on several criteria. They can be structured, semi-structured, or without any structure at all. This classification is based on the degree of freedom interviewer has during the conversation. When it is not much known about the subject of the research than unstructured interviews can be the best solution as it allows gathering as much information as it is possible to get from our respondent. Interviews can be characterized by synchronous or asynchronous communication. Interviews can be conducted face to face, via telephone, email, or any other mean of communication. In this case, interviewing participants using semi-structured form could yield greatest results.

Advantages of face-to-face interviews are that it is easy for realization, and there is real-time interaction between two parties, the interviewer can follow both verbal and non-verbal messages, which is highly valued. Its main disadvantage is that non-verbal messages sent by the interviewer can affect interviewee's answers (Opdenakker, 2006). Other forms of interviews are more convenient in situations when we want to interview people from different places, members of populations that are hard to reach for face-to-face interviews, or when we want to investigate sensitive topics when people do not feel comfortable to discuss them in person (Opdenakker, 2006). Of course, lack of social cues is a greatest disadvantage of these forms of interviews, as well as lack of appropriate expression of emotions, especially in case of email or paper-based interviews (Opdenakker, 2006). In this case, a face-to-face interview could be a great place to start with gathering additional information.

It was already brought to the attention that the simulator developed in this research is not an ideal. An ideal market simulator is the one in which all the respondents are gathered in one place for making decisions regarding the stocks concepts in different competitive situations. The stock concepts are defined in terms of the variables and conditions used in the conjoint study. In simulations when numerous stock options are available for each market niche, it is possible to create an environment very similar to the one investors operate in. Competitiveness of different companies must be included in the model in order to reflect the real market situation. The gain of money by one company is the loss of a share by a correlated company than by a less similar competitor in the same situation. Simulation is a powerful tool for exploring effects of different variables. Changing the scenarios may help investors and companies realize some unexpected consequences of their actions and decisions. When the aim is to maximise the profit from the stock, offering low prices for stocks of higher brand affinity is the trivial solution. The market simulator allows calculating the profitability of the shares and its behaviour with time given the information about its price.

Why is it important to update the model and simulator and to recognize the complexity of business environment? It is clear that national and international environment is radically changing in the way that business is conducted. Companies are seeking innovative strategies to achieve higher valuations as they continue to experience the pressure of volatile global economies and increasing competition.

Companies increasingly have to compete on a global scale with both emerging and dominant players that provide increasing levels of rivalry, which put pressures on budgets and greater emphasis on industry cooperation and relationships. Companies are expanding beyond their domestic national base for markets, operations and employees. Meanwhile, domestic pressure is requiring firms and management to

become more agile internally and externally to increase their valuations (Fischer and Boynton, 2005).

Position of management has changed under the influence of recent economic recessions. It is getting harder to make good managerial decisions, as they depend on a large number of external factors. Companies are no longer creating strategies that will only make them more competitive in comparison with others in the same sector. The element of innovation is paramount, and the progress must be made before others get the same idea. There is a nice quote that vividly explains the current situation in the market:

Profound uncertainty also amplifies the importance of making decisions when the time is right—that is to say, at the moment when the fog has lifted enough to make the choice more than a crap shoot, but before things are clear to everyone, including competitors. (Bryan, 2009)

This is also applied to investors and their position in the market. Having all of this in mind (instability, flexibility, increased number of options, etc.) successful prediction of an outcome of business decisions is an enormous source of competitive advantage. Further development of brand affinity influence over stocks and decisions made by investors may contribute to creating a competitive advantage based on knowledge others may not have.

8.5 CHAPTER CONCLUSION

This chapter was a summary of the findings, their relation to objectives and their practical, theoretical and methodological value. Based on all materials presented in this work, there is no doubt that brand affinity is a very potent factor that influences two different variables – outcome of the decision-making process and value of a company's stock. As stated at the very beginning of this thesis, a complex approach is necessary

to assess the relationships between marketing, psychology, economics and finance. It was achieved, to a satisfactory extent. While there is always a place for the improvement, a basis is given to other researchers interested in this topic to use the model and the simulator and to test it. Probably the best test of its usability would be the scenario in which companies utilize the simulator. In that case, it would be possible to compare outcomes of the simulation and real-life situations. Such comparison would be a final proof of the quality of this research and rich guide for the further improvement of the model developed.

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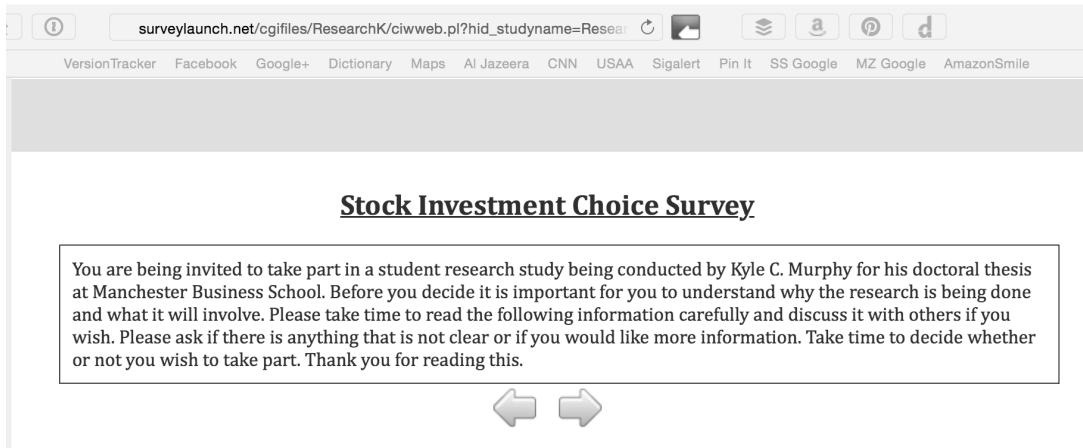
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APPENDICES

APPENDIX A – ONLINE SURVEY SCREEN CAPTURES

Page 1



surveylaunch.net/cgifiles/ResearchK/ciwweb.pl?hid_s=Af8AAB-tq3X_O

VersionTracker Facebook Google+ Dictionary Maps Al Jazeera CNN USAA Sigalert Pin It SS Google MZ Google AmazonSmile

What is the aim of the research?

The aim of the research is to understand how different variables effect investors choice of equities for investment, within the same industry.

Why have I been chosen?

Participants for this survey are selected at random and participation is voluntarily.

What would I be asked to do if I took part?

You will be asked a series of questions about several companies in the same industry and then asked to choose your preferred choice between different hypothetical stock performance situations. The study should take less than 15 minutes to complete.

What happens to the data collected?

All data collected will be used exclusively for the student research study.

How is confidentiality maintained?

All information you provide and survey results will be maintained in a secure database. NO personal identifying information will be collected or stored. Your computer IP address or other electronic tracking information will NOT be collected. Data collected will not be shared with any other party or business outside of the student project.

What happens if I do not want to take part or if I change my mind?

It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw at any time without giving a reason and without detriment to yourself.

Will the outcomes of the research be published?

The research will be published in a doctoral thesis, which upon formal University acceptance will be deposited in the University of Manchester's institutional repository, Manchester eScholar, as well the School's Library.

Contact for further information

Please feel free to contact me at kyle.murphy@postgrad.mbs.ac.uk if you have any concerns or questions.

If a participant wants to make a formal complaint about the conduct of the research they should contact the Head of the Research Office, Christie Building, University of Manchester, Oxford Road, Manchester, M13 9PL.

Consent Form

If you are willing to participate, please check the box below and click the "I accept" button to enter the survey.

I confirm that I have read the attached information sheet on the above project and have had the opportunity to consider the information and ask questions and had these answered satisfactorily. I understand that my participation in the study is voluntary and that I am free to withdraw at any time without giving a reason. I agree to take part in the project.

I Accept

← →

APPENDIX B – ONLINE CONJOINT ANALYSIS SIMULATION SCREEN CAPTURES

Example 1

surveylaunch.net/cgifiles/ResearchK/ciwweb.pl?hid_s=Af8AAL3vwG9O

VersionTracker Facebook Google+ Dictionary Maps Al Jazeera CNN USAA Sigalert Pin It SS Google MZ Google AmazonSmile

**Imagine that you have to purchase stocks and these were your only options, which would you choose?
Choose by clicking one of the buttons below:**

(1 of 8)

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Brand	Apple	Amazon	Microsoft	Google	NONE: I wouldn't choose any of these.
Price to Earnings Ratio	19	18	23	15	
EPS Share	\$4	\$6	\$7	\$1	
Return on Equity	10-15%	26-30%	16-20%	21-25%	
Price to Book Ratio	6	3	5	4	
Dividend Yield	2	2.5	1.5	3	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

← →

Example 2

surveylaunch.net/cgifiles/ResearchK/ciwweb.pl?hid_s=Af8AADYzScQ2H

VersionTracker Facebook Google+ Dictionary Maps Al Jazeera CNN USAA Sigalert Pin It SS Google MZ Google AmazonSmile

**Imagine that you have to purchase stocks and these were your only options, which would you choose?
Choose by clicking one of the buttons below:**

(2 of 8)

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Brand	Google	Microsoft	Apple	Amazon	NONE: I wouldn't choose any of these.
Price to Earnings Ratio	24	22	20	16	
EPS Share	\$3	\$2	\$8	\$9	
Return on Equity	26-30%	10-15%	21-25%	16-20%	
Price to Book Ratio	5	6	3	4	
Dividend Yield	3	2.5	1.5	2	
	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

← →

Example 3

surveylaunch.net/cgifiles/ResearchK/ciwweb.pl?hid_s=Af8AABGN9UjG

VersionTracker Facebook Google+ Dictionary Maps Al Jazeera CNN USAA Sigalert Pin It SS Google MZ Google AmazonSmile

Please select the alternative with Brand AMAZON

(8 of 8)

	Alternative 1	Alternative 2	Alternative 3	Alternative 4	Alternative 5
Brand	Amazon	Microsoft	Apple	Google	NONE: I wouldn't choose any of these.
Price to Earnings Ratio	18	23	17	19	
EPS Share	\$1	\$10	\$9	\$4	
Return on Equity	10-15%	26-30%	16-20%	21-25%	
Price to Book Ratio	5	3	6	4	
Dividend Yield	1.5	3	2	2.5	
	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

← →

APPENDIX C – SURVEY RESULTS RAW DATA

Resp onde nt ID	Q1: Ge nde r	Q2: Ag e	Q3: Edu cati on	Q4: Mar ital Stat us	Q5: Emp loy ment Stat us	Q7: Do you tra de in sto ck s	Q8: Do you have finan cial advi sor? or sell sto cks ?	Q9: Ho w ofte n do you buy or sell sto cks ?	Q10: Annu al Hous ehol d Inco me	Q11: Port folio Size of Stoc ks	Q12: Ethi citi y Rati ng: App le	Q13: Fav our able Rati ng: Goo gle	Q13: Favo urabl e Rati ng: Micr osoft	Q14: Favo urabl e Rati ng: Ama zon	Q14: Ran king Rati ng: App le	Q14: Ran king Rati ng: Goo gle	Q14: Ran king Rati ng: Micr osof t	Q14: Ran king Rati ng: Ama zon	
7187 1761	2	1	6	2	2	1	1	1	3	1	1	4	4	2	4	3	2	4	1
7187 2489	1	1	5	2	1	1	1	3	5	3	4	4	3	4	5	2	4	3	1
7187 3771	2	1	5	2	3	1	1	2	5	2	1	5	5	5	5	3	2	4	1
7187 5609	2	3	6	4	1	1	1	2	5	2	5	5	5	5	5	4	2	3	1
7187 5877	1	4	6	2	1	1	1	3	4	3	1	3	3	2	2	4	1	2	3
7187 6429	2	3	3	2	3	1	1	2	5	2	1	4	4	4	4	1	4	2	3
7187 6521	2	3	5	2	2	1	1	2	7	5	1	5	5	5	5	3	2	4	1
7187	1	3	3	2	2	1	2	1	3	4	1	5	5	5	5	2	3	4	1

7247																			
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7187 9641	2	1	5	1	1	1	2	2	4	1	5	5	5	4	4	1	2	4	3
7188 0471	2	1	5	2	1	1	2	3	5	2	5	5	5	5	5	1	2	4	3
7188 0677	2	2	4	1	1	1	1	3	7	3	1	5	5	5	5	2	1	3	4
7188 1961	2	1	5	1	3	1	1	2	5	2	1	5	5	5	5	2	4	3	1
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7189 4225	2	3	5	2	1	1	1	1	4	1	1	5	4	4	5	1	4	3	2
7189	2	2	5	1	1	1	2	3	3	1	1	5	5	5	5	3	2	1	4

5053																			
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7189 5707	2	1	6	2	1	1	1	2	4	1	1	4	4	5	4	2	1	3	4
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7189 6585	1	2	5	2	1	1	2	3	4	2	2	5	5	5	5	4	1	3	2
7189 7539	2	2	2	1	5	1	1	2	3	1	1	5	4	4	5	2	1	4	3
7189 7657	2	3	5	2	1	1	1	2	3	2	1	5	5	4	5	1	2	4	3
7189 8255	2	2	5	2	3	1	1	2	4	2	1	4	4	5	5	4	3	2	1
7189 9143	2	2	5	2	1	1	1	2	6	3	1	5	5	5	5	4	3	2	1
7189 9307	2	1	2	1	4	1	1	2	5	2	1	4	4	4	4	1	3	4	2
7190 0341	2	1	4	1	1	1	1	2	6	2	1	5	5	5	5	2	3	4	1
7190 0429	2	1	5	2	1	1	2	1	4	1	1	5	5	4	5	3	1	4	2
7190 1611	2	1	6	2	1	1	1	1	3	1	1	5	5	2	5	3	2	4	1
7190 2077	1	4	4	4	1	1	2	1	3	1	1	4	4	5	5	4	3	1	2

7190 3287	2	2	5	2	1	1	2	1	6	2	5	4	4	4	4	3	1	2	4
7190 4095	1	2	5	2	1	1	1	3	4	3	1	4	5	5	5	4	2	1	3
7190 4619	1	1	5	2	1	1	1	1	5	1	5	4	4	5	5	4	2	3	1
7190 5499	2	3	3	2	5	1	2	2	5	1	1	4	4	5	4	4	2	1	3
7190 5701	1	3	4	2	1	1	2	2	4	1	1	5	5	5	5	3	2	4	1
7190 5713	2	2	3	2	1	1	1	2	3	1	1	5	5	3	4	1	2	4	3
7203 4803	2	2	6	1	1	1	1	2	4	3	5	5	5	5	5	3	1	4	2
7203 7215	2	1	5	1	1	1	2	1	3	1	1	5	5	5	5	1	2	4	3
7203 7457	1	2	2	2	1	1	2	4	4	1	5	5	5	4	5	1	3	4	2
7203 8127	2	1	4	4	5	1	2	2	4	1	1	4	5	5	4	4	2	1	3
7203 8143	2	3	5	2	3	1	2	1	4	1	1	5	5	5	5	1	4	3	2
7203 8161	2	4	5	1	1	1	2	2	4	3	1	4	2	4	5	3	4	2	1
7203 8179	1	1	6	2	1	1	1	4	8	5	1	5	4	5	3	3	1	2	4
7203	2	2	5	2	5	1	2	1	8	1	1	1	3	3	4	4	3	2	1

9139																			
7203 9249	1	1	6	2	1	1	1	1	8	3	1	4	4	4	4	1	2	4	3
7204 0613	2	2	6	1	1	1	2	2	4	1	3	4	4	4	4	2	4	3	1
7204 0709	2	3	5	4	2	1	1	1	3	1	1	5	5	5	5	1	4	2	3
7204 2299	2	2	6	2	5	1	1	1	3	1	1	4	4	4	5	4	2	3	1
7204 2641	2	3	3	2	3	1	2	2	3	1	1	4	5	4	4	4	1	2	3
7204 2775	1	1	5	2	1	1	2	2	5	2	1	5	5	5	5	1	2	4	3
7204 2803	2	2	5	2	1	1	1	2	6	1	1	5	5	2	4	1	2	4	3
7204 2819	2	1	3	2	5	1	2	1	5	1	1	5	5	5	5	3	4	1	2
7204 3183	2	2	5	2	5	1	2	1	6	4	1	5	4	3	4	1	3	4	2
7204 3335	2	2	5	2	1	1	1	2	6	1	1	4	4	4	4	3	4	2	1
7204 3347	1	3	5	2	1	1	1	3	4	2	1	4	4	4	4	1	3	4	2
7204 3701	1	2	5	2	1	1	2	1	4	1	1	2	5	3	5	4	2	3	1
7204 3769	2	1	6	2	1	1	2	2	5	3	1	5	5	4	4	1	2	3	4

7204 4137	2	2	2	2	3	1	2	1	3	1	1	5	5	5	5	3	1	4	2
7204 5485	2	1	5	2	5	1	2	1	4	1	1	5	5	4	4	2	1	3	4
7204 6369	1	2	6	4	1	1	1	1	4	1	1	3	5	4	5	4	2	3	1
7204 6579	1	2	2	2	1	1	2	2	3	2	1	3	4	5	5	4	3	1	2
7204 6931	2	1	5	2	1	1	1	2	4	1	5	4	4	4	4	2	1	3	4
7204 7001	2	1	3	2	2	1	1	1	3	1	1	5	5	5	5	3	1	4	2
7204 7133	1	2	5	2	1	1	1	2	4	2	1	4	4	4	4	2	3	4	1
7204 7627	2	3	4	4	1	1	1	2	4	1	1	4	5	4	5	4	2	3	1
7204 9065	2	3	3	2	1	1	1	2	4	2	1	5	4	5	5	2	4	3	1
7204 9535	2	1	5	2	1	1	1	3	5	1	2	5	4	4	5	1	3	4	2
7204 9995	2	1	3	2	1	1	1	2	3	1	5	4	5	5	4	3	1	2	4
7205 0457	2	2	5	4	1	1	2	1	5	1	1	4	4	3	5	2	3	4	1
7205 1065	2	3	5	2	1	1	2	1	4	1	1	5	5	5	4	2	1	3	4
7205	1	4	3	2	1	1	1	2	4	1	1	5	4	4	4	1	4	2	3

1217																			
7205 1589	1	3	2	1	1	1	1	4	4	2	1	4	5	5	5	4	3	2	1
7205 1859	2	1	4	2	5	1	2	1	3	1	1	4	4	4	5	3	2	4	1
7205 2023	2	1	4	1	1	1	1	3	4	3	1	4	3	5	5	3	4	2	1
7205 2047	2	3	5	2	1	1	1	2	4	3	1	3	4	2	4	2	1	4	3
7205 3153	1	3	3	2	1	1	1	2	5	5	1	5	5	4	5	1	2	3	4
7205 3287	1	2	5	1	1	1	1	3	4	2	1	5	5	1	4	1	2	4	3
7205 3339	1	3	2	1	1	1	2	3	3	1	1	5	5	5	5	4	2	3	1
7205 7739	1	1	5	2	1	1	1	2	4	2	1	4	5	5	5	4	1	3	2
7205 9489	1	2	5	2	1	1	1	2	3	1	1	5	5	4	5	3	2	4	1
7206 0595	1	2	7	2	1	1	1	2	3	1	5	4	4	4	5	3	2	4	1
7206 2689	1	2	6	1	1	1	1	1	4	2	1	5	4	4	3	1	2	3	4
7206 3953	1	3	3	2	7	1	1	2	4	2	1	5	5	5	5	4	2	3	1
7206 8033	1	4	5	2	1	1	1	2	7	4	1	4	4	4	5	3	2	4	1

7206 9925	1	3	5	2	1	1	2	2	7	2	1	3	3	5	5	4	3	1	2
7207 3383	1	1	4	1	1	1	1	4	6	4	1	5	5	5	5	2	3	4	1
7207 4529	1	1	5	2	1	1	1	2	4	1	3	5	4	4	4	2	3	1	4
7207 5685	1	1	5	2	1	1	1	2	3	2	5	5	4	5	5	1	4	2	3
7207 7043	1	2	1	3	1	1	1	3	3	2	1	5	5	5	5	4	1	2	3
7207 9549	1	4	5	2	1	1	2	1	6	3	1	5	5	5	5	1	2	3	4
7208 1847	1	3	2	4	7	1	2	2	6	1	3	5	5	5	5	2	3	1	4
7208 4659	1	3	2	1	7	1	1	3	3	1	1	5	5	5	4	1	3	2	4
7208 6581	1	1	6	2	1	1	1	1	3	3	1	5	5	3	4	1	2	4	3
7208 7181	1	2	5	2	1	1	2	2	5	1	1	5	4	3	5	2	3	4	1
7208 7771	1	1	5	1	1	1	1	3	3	1	1	5	4	4	5	1	3	4	2
7208 9979	1	2	3	2	1	1	2	3	4	2	1	4	5	4	5	2	4	1	3
7209 0597	1	3	5	1	1	1	1	2	4	4	1	5	4	4	4	1	4	2	3
7209	1	3	5	2	1	1	1	2	3	2	1	5	4	3	2	1	2	3	4

1893																			
7209 5131	1	2	5	2	1	1	1	1	3	1	1	5	5	4	5	2	3	4	1
7209 8757	1	2	6	1	1	1	1	4	5	4	1	3	2	4	4	3	4	1	2
7209 8803	1	2	5	2	3	1	1	3	4	3	1	5	5	5	5	4	2	3	1
7210 2475	1	3	3	2	1	1	2	1	4	2	1	3	3	4	4	3	4	1	2
7210 4775	1	1	5	2	1	1	2	1	5	1	5	4	4	4	4	2	1	4	3
7210 5721	1	1	2	1	1	1	1	2	4	2	1	5	5	5	5	1	3	2	4
7210 5763	1	3	6	1	1	1	2	4	5	2	1	5	3	3	4	1	4	3	2
7210 5837	1	2	6	2	1	1	1	2	5	2	1	5	5	4	5	2	1	4	3
7210 5857	1	2	6	2	1	1	2	4	5	2	1	4	5	4	4	4	1	2	3
7210 7895	1	1	3	1	2	1	1	1	4	4	1	5	5	5	5	2	1	3	4
7210 9315	1	3	6	1	1	1	1	2	5	4	1	5	5	5	5	4	1	2	3
7211 0809	1	3	5	1	3	1	2	1	3	2	1	5	5	5	5	2	1	3	4
7211 1461	1	3	3	2	7	1	2	2	5	2	1	5	5	5	5	1	4	3	2

7211 4021	1	1	4	1	1	1	1	2	5	3	1	1	1	5	5	4	3	2	1
7211 4447	1	1	5	2	1	1	1	3	6	3	1	5	5	5	5	4	3	2	1
7211 6695	1	2	6	2	1	1	1	2	5	3	1	5	5	4	3	2	1	3	4
7211 7089	1	3	3	1	6	1	2	1	4	1	1	2	3	4	3	4	2	1	3
7211 9057	1	2	5	1	1	1	1	2	6	4	1	5	5	5	4	1	2	4	3
7212 0389	1	1	5	1	2	1	1	2	4	1	1	5	5	5	5	1	3	4	2
7212 0883	1	2	7	2	1	1	1	3	3	2	1	4	5	4	5	4	2	3	1
7212 1363	1	1	5	2	1	1	1	2	3	3	1	5	5	3	5	1	2	4	3
7212 1735	1	2	4	2	1	1	1	4	4	2	1	4	5	5	5	4	3	1	2
7212 3145	1	2	5	4	1	1	2	3	3	1	1	5	5	5	5	4	2	3	1
7212 3643	1	1	5	1	1	1	2	1	3	1	1	4	4	4	4	4	1	2	3
7212 6605	1	1	2	1	1	1	1	2	4	2	1	5	4	5	5	1	4	3	2
7212 9171	1	2	6	2	3	1	2	3	6	3	5	5	4	4	4	1	3	4	2
7212	1	1	5	2	1	1	1	2	5	2	1	5	4	5	5	1	4	2	3

9611																			
7213 1317	1	2	2	2	1	1	1	2	3	1	1	5	5	5	5	1	3	2	4
7213 2503	1	2	6	2	1	1	1	2	4	2	5	4	4	4	4	1	2	3	4
7213 2975	1	2	5	2	1	1	1	2	4	2	1	5	4	4	5	1	3	4	2
7213 4013	1	2	5	2	1	1	1	2	4	2	1	5	5	4	5	1	2	4	3
7214 0037	1	3	3	2	3	1	1	1	3	1	5	4	4	4	4	2	4	3	1
7214 6463	1	3	6	1	1	1	2	2	3	1	1	4	5	3	3	2	1	3	4
7214 8483	1	4	5	2	7	1	1	1	3	2	1	4	4	3	3	1	2	3	4
7215 6661	1	3	5	2	1	1	1	2	3	3	1	5	3	5	5	2	4	1	3
7215 7247	1	3	5	4	1	1	2	1	6	5	1	5	5	4	4	1	2	3	4
7215 9859	1	3	2	1	1	1	1	2	3	2	1	1	4	3	5	1	2	4	3
7216 5567	1	3	5	2	1	1	1	2	4	1	1	5	5	5	5	4	2	1	3
7217 3827	1	2	2	2	1	1	1	2	4	3	1	5	4	3	5	3	2	4	1
7217 4257	1	1	5	2	1	1	2	3	3	1	1	4	4	4	4	4	2	3	1

7217 6557	1	3	6	1	1	1	1	3	8	4	5	5	5	5	5	3	4	2	1
7217 7921	1	1	2	2	1	1	2	1	3	1	1	5	5	5	5	2	4	1	3
7218 1475	1	3	5	2	1	1	1	2	6	3	5	4	5	5	4	3	1	2	4
7218 4249	1	1	5	1	1	1	2	4	5	2	1	5	5	5	5	4	3	2	1
7218 6993	1	1	3	2	1	1	2	2	5	1	1	5	4	3	3	1	2	3	4
7218 7605	1	4	2	2	7	1	2	1	3	1	1	3	4	2	3	2	1	4	3
7219 0267	1	4	5	2	7	1	2	3	5	4	1	5	4	3	1	1	3	2	4
7219 1739	1	4	5	3	2	1	1	2	3	2	1	5	4	3	4	1	3	4	2
7219 2069	1	4	5	2	1	1	1	3	4	4	5	5	5	5	5	1	2	3	4
7219 2985	1	5	4	2	7	1	1	2	5	4	1	4	4	4	4	3	2	1	4
7219 5739	1	4	4	2	7	1	1	2	3	3	1	4	2	4	2	1	3	2	4
7219 6043	1	5	6	2	7	1	1	1	3	2	1	5	5	4	5	1	3	4	2
7219 6241	1	4	5	2	1	1	2	3	3	2	1	4	4	4	4	1	3	4	2
7220	1	4	5	2	3	1	1	2	5	2	1	5	5	5	4	3	2	1	4

0635																			
7220 0825	1	5	5	2	7	1	1	1	4	4	1	4	3	4	4	3	4	2	1
7220 1011	1	5	6	2	7	1	1	1	5	5	1	4	4	4	2	3	2	1	4
7221 0177	1	4	5	2	2	1	1	3	3	4	1	4	2	4	4	3	4	2	1
7221 0391	1	5	3	2	7	1	2	1	3	3	1	5	4	2	4	1	2	3	4
7221 3549	1	5	5	2	7	1	1	1	4	3	1	5	4	4	5	1	3	4	2
7221 7689	1	4	5	1	1	1	2	2	4	2	1	4	4	4	4	4	1	2	3
7221 9097	1	2	6	2	1	1	2	1	3	2	1	5	3	5	4	1	4	2	3
7222 0057	1	5	5	2	7	1	1	2	5	4	1	2	5	4	4	4	1	3	2
7222 1127	1	4	3	2	7	1	1	1	3	1	1	5	5	5	5	2	1	3	4
7222 1877	1	4	5	2	1	1	1	3	5	2	5	5	5	5	5	2	3	1	4
7222 4699	1	4	5	2	7	1	1	1	4	3	1	4	5	5	4	4	2	1	3
7222 9689	1	5	6	2	7	1	2	1	4	1	3	5	4	5	4	2	3	1	4
7223 4431	1	3	6	2	1	1	1	2	4	2	3	5	5	5	4	1	3	2	4

7223 5775	1	5	6	2	1	1	1	2	3	1	1	4	4	4	4	2	1	3	4
7223 7719	1	5	4	2	7	1	2	1	3	2	1	1	3	2	4	4	2	3	1
7223 9061	1	5	5	2	7	1	2	1	3	1	1	5	4	4	4	1	2	4	3
7224 1883	1	5	3	2	2	1	1	1	3	3	1	5	5	5	4	3	2	1	4
7225 0713	1	5	3	4	7	1	2	2	3	3	1	4	4	3	3	1	2	3	4
7226 3389	1	5	5	2	7	1	1	1	3	3	1	3	4	3	2	2	1	3	4
7227 0833	1	5	2	2	7	1	1	1	3	2	1	4	4	4	4	3	2	1	4
7228 7483	1	5	6	2	7	1	1	1	3	3	1	4	4	3	5	2	3	4	1
7229 5291	1	5	5	2	7	1	1	1	6	3	1	4	3	4	3	1	3	2	4
7230 8933	1	5	5	2	1	1	2	2	4	1	1	5	5	5	5	2	3	1	4
7231 4493	1	5	6	2	7	1	1	1	3	1	1	4	4	5	4	2	3	1	4
7231 8765	1	5	6	2	7	1	2	1	4	1	1	4	4	3	4	3	2	4	1
7234 5607	1	4	6	2	1	1	2	1	4	3	1	5	2	4	4	1	4	2	3
7235	1	4	5	2	1	1	1	1	5	1	1	5	5	5	5	1	4	3	2

1501																			
7235 2141	1	4	6	2	1	1	1	2	4	2	1	5	5	5	4	1	4	2	3
7235 2269	1	4	6	2	1	1	2	2	5	2	1	4	4	3	4	2	3	4	1
7237 2373	1	4	3	2	1	1	2	1	3	1	1	4	5	3	2	1	3	2	4