CHAPTER 2

2. REVIEW OF LITERATURE

An extensive review of studies in the domain of behavioural finance was conducted.\(^1\) This chapter summarises the findings of the review and presents it under three sections. Section 1 discusses market anomalies observed and empirically validated by multiple researchers from the macro level. Section 2 deliberates on the role of behavioural variables in finance from an investor’s level. Section 3 presents various behavioural dimensions of risk. The chapter concludes by providing an inconclusive list of gaps in the existing behavioural finance literature.

2.1. Behavioral Finance Indicators At the Aggregate Level - Does Rationality Exist? – The Contradictory Evidence

Stock markets have witnessed various financial disruptions over the years, reiterating the claims of behavioural finance researchers regarding presence of market anomalies. Broadly, these stock market anomalies can be described under the labels - Market Reaction or Market Behaviour, Seasonality, Prediction Anomalies, Response to Events, among others. Figure 2.1 lists the anomalies under each of the above descriptive labels. A review of the same is presented in the following section.

2.1.1. Aggregate Market Reaction or Behavior

2.1.1.1 Volume and Volatility

A trade executed on any day translates into the phenomenon that opposing buy and sell bid were placed on the share at the same price. Interestingly, it indicates that investors had contrary expectation of price movement, given that these rational investors had identical information. Hence, trading activity or volume challenges rationality hypothesis of traditional models and supports that investors operate under realms of bounded rationality, where they have personal interpretations of the market movements. Daily volume, intra-day volume, abnormal change in

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volume, volume of small trades are some important aspects of trading volume which have been widely investigated in behavioral finance literature. These volume variables have been studied in relation with changes in recommendations issued by market experts (Irvine et al., 2007; Juergens and Lindsey, 2009), investor attention and corporate earnings announcements (Pevzner et al., 2015), ex-dividend trading day behavior (Rantapuska, 2008), share price on the last day of a quarter and price-reversals on the following day of the next quarter (Ben-David et al., 2013), and as an indicator of information regarding future returns (Hvidkjaer, 2008; Schneider, 2009; Pan and Poteshman, 2006). Other correlational studies have explored unusually high trading volume to be associated with market pessimism and optimism (Tetlock, 2007), investor overconfidence and self-attribution bias (Chui et al., 2010; Statman et al., 2006).

Figure 2.1: Does Rationality Exist? – The Contradictory Evidence
Volatility refers to intermittent oscillation in the share price within a high-low price band. Larger the changes in price and higher the spread of variations, higher will be the volatility of a security. Traditional finance theory postulates that intrinsic value of a stock is the sum of present value of future inflows of dividends and capital gains. According to modern portfolio theory, markets are informationally and transactional efficient, where the current share price fluctuates only when new information dissipates in the market, i.e, at any given point in time, the price has completely absorbed all available information and adjusted accordingly (Fama, 1970). Any subsequent change is the price is dependent on additional information, which is aligned with efficient market hypothesis. Behavioural finance researchers argue that fluctuations in share prices are much higher than what can be explained by the traditional and modern theorists and therefore require additional descriptions. They question the validity of these rational explanations and suggest that volatility is a proxy of current macroeconomic setting (Apergis et al., 2015) and investor activity (Goddard et al., 2015).

2.1.1.2 Market Shocks, Market Inertia and Bubbles

Various studies examine market behaviour after a shock or a bubble and argue that markets lack informational and transactional efficiency. Some of the shocks studied are patent shocks (Hsu 2009), shock to information quality (Savor, 2012; Illleditsch, 2011; Epstein and Schneider, 2008), productivity shocks (Garleanu et al., 2012), liquidity shocks (Greenwood and Thesmar, 2011; Bali et al., 2014), sentiment shocks (Mendel and Shleifer, 2012), liquidity shocks (Arif and Lee, 2014) and demographic shocks (Love, 2010).

Miralles-Marcelo et al. (2014) demonstrate the importance of positive shock as compared to negative shock in reducing pessimism in a bearish market. Hong et al. (2012) theorize that trading activity by arbitrageurs increases the scale and intensity of shocks particularly for shares with high short selling. Other researchers argue that aftermath of financial instability witness lower consumption and increased leverage in the market (Barrella et al., 2006), or delayed information dissipation of sub-prime shock across other economies (Rapach et al., 2013).

Researches also explore behavioural drivers of these positive and negative shocks, bursts and bubbles. Like, enthusiastic outlook of naive households due to recent price increase of the
residential real estate market induces an asset bubble (Scherbina and Schlusche, 2012), or that additional infused liquidity by new generation leads to bubbles, while exit of old generation leads to asset bursts (Deck et al., 2014).

2.1.1.3 Financial Contagion, Psychic Distance, Wake-up Call Hypothesis

Financial contagion can be understood like a domino effect originating in one country and extending beyond borders to more than one country. The inter-dependence owing to trade partnerships between these world economies is the primary reason why an economic crisis spreads across countries.

Multiple studies have investigated mechanisms which initiate contagion and the response or reaction of financial contagion by other economies. Zhu and Yang (2008) argue the role of psychic distance amid economies as a plausible foundation aggravating the reaction of contagion. Psychic distance has been defined as a comprehensive behavioural parameter combining topographical distance, common language, level of trade partnership and understanding between the economies. Accordingly, smaller the psychic distance, stronger will be the reaction of contagion and herding behavior. In another study, heterogeneity of fundamental information of the stock has been identified as a reason for contagion (Pasquariello, 2007).

Macro-shock in one economy is a wake-up call for the other economies. The quality of economic fundamentals reduces the severity of this macro-shock (Bekaert et al., 2014), where stock market focuses on country-specific features. The response to the wake-up call is diverse between different country-pairs categorized based on country-specific characteristics during non-crisis and crisis time (Mobarek et al., 2016). Though, D’Ecclesia and Costantini (2006) argue that strong co-movements are observed amid major stock markets internationally.

2.1.1.4 Over-reaction or Under-reaction

Over-reaction refers to uncharacteristic increase in price changes after an information release. While, under-reaction refers to periods of low activity in the market after an information release. Both, over-reaction and under-reaction violate informational efficiency hypothesis of modern finance theories.
Multiple studies examine the reasons for overreaction in stock market as overly hopeful predictions (Hovakimian and Saenyasiri, 2014), embedded subjective information in press releases (Cicon et al., 2014), accuracy of information published in media (Ahern et al., 2014), tone of the article in such publications (Hillert et al., 2014), investor overconfidence (Durand et al., 2013), personality (Durand et al., 2013), disposition (Corzo et al., 2014), representative and conservative heuristics (Lam et al., 2012), events catching strong market-wide attention (Yuan, 2015) and managerial optimism in offer price (Shu et al., 2012). Reasons for market under-reaction have been identified as investor inattention (Hirshleifer et al., 2009) and absence of news and other related information (Giglio and Shue, 2014).

2.1.1.5 Momentum and Magnet Effect

Momentum refers to ex-post extension of the event response into the future. A category of investors called as momentum traders prefer shares with longer and higher momentum. Multiple studies have identified stocks which appeal to the momentum traders like new economy stocks which generate higher momentum due to their distinct features (Muga and Santamaria, 2007), or stocks which have doubled in recent time (Foerster, 2011) though they eventually lead predictable regret. Behavioural studies investigate the role of investor disposition (Kubińska et al., 2012), while demographic studies examine the role of cross-country cultural differences on the returns of momentum traders (Chui et al., 2010).

The magnet or gravitational effect is the force that pushes the stock price towards the circuit breaks in rule-based trading markets. Some investors place advance bids in such a market situation further pushing the price (Abad and Pascual, 2007). Rationality of these investors and the price behavior in the market has been studied as an anomaly.

2.1.1.6 Herding and Noise Trading

Herding is macro-phenomenon instigated due to micro elements forming a contagion in the stock market. Herding is also understood as inter-dependent trader reaction (Prechter Jr. and Parker, 2007; Barber et al., 2009) caused due to behavioural factors like overconfidence (Corzo et al., 2014), managerial intentions (Holmes et al., 2013), social influence, change in risk preference (Fenzl and Pelzmann, 2012), investor’s psychological dynamics (Fenzi and Pelzmann, 2012) and
exogenous informational indications whether weak or strong (Luchtenberg and Seiler, 2013).

Other causes of herding studied in the literature include revisions in the composition of the benchmark index (Walter and Weber, 2006), unexpected revisions in the recommendations by the analysts away from the predominant consensus (Jegadeesh and Kim, 2010), unanticipated market shock (Hott, 2009), cascade of asymmetric information (Messis and Zapranis, 2014) on a macroeconomic variable or cascade of false information resulting in a contagion (Seiler, 2012). These behavioural studies argue that herding and drivers of herding are not explained by traditional models.

Another phenomenon studied by behavioural finance researchers is noise trading. Investors whose basis of buy and sell decision is beyond fundamental analysis and data are categorized as noise traders. Different studies provide diverse description of noise traders. Mendel and Shleifer (2012) suggest that uninformed rational investors are noise chasers, while Foucault et al. (2011) define retail investors as noise traders. Noise traders display long memory recall and induce positive feedback trading in futures market (Antoniou et al., 2011). Trading activity of noise traders leads to price fluctuations moving prices away from the equilibrium (Bloomfield et al., 2009), hence suggesting a market anomaly.

2.1.2. Prediction Anomalies

2.1.2.1 Past Performance

Assessing past performance of the share is perhaps the first step before evaluating other fundamentals. Traditional researchers argue that past performance may not necessarily extrapolate into the future, yet we see many investors following this investment strategy by deducing from the past returns. Behavioural finance researches explore reasons for this return-chasing behavior of the investors which contradict rationality paradigm. Hüsser and Wirth (2014) report that extrapolation bias hinders rational decision making amongst investors and they believe that past performance is a precursor of future performance. He and Shen (2010) report similar findings regarding expectations of the mutual fund investors and suggest that their decision making is influenced by fund’s performance.
2.1.2.2 Judgement Errors – Investors’ Judgment, Analysts’ Forecasting Bias

An investor performs comprehensive analysis of all available information before the final decision. There are various subjective mediators which influence this cognitive process and constrain rational processing. One of them being discussed here is erroneous judgement of information by the investor or forecasting bias by the analyst.

Investor sentiment mediates the ability of an investor to rationally judge risk and return (Shefrin, 2015) in an investment decision influencing share prices. Other qualitative factors which influence investor decision making abilities include experience and relevant knowledge (Victoravich 2010), over-confidence or subjective confidence (Gloede and Menkhoff, 2014; Du and McEnroe, 2011; Peterson et al., 2015), decision objective (Young, 2009), social stimulus or influence (Andersson et al., 2014), sources of information or unexpected information spreads (Hovakimian and Saenyasiri, 2014), or anticipated quality of information (Kwag, 2014).

Analyst’s over-optimism triggered forecasting bias (Jones and Johnstone, 2012), their assessment of reliability of corporate disclosures and basis of their trend analysis and forecast (Ashton and Cianci, 2007) are some other factors which drive rational evaluation of market information and investor decision making. Researchers have explored the connection between variation in the analysts’ forecasting and stock performance in consequent time-period (Li and Wu, 2014).

2.1.3. Response to Events

2.1.3.1 Related Events - Financial Crisis, Macro-economic Surprises, Inflationary and Deflationary Nominal Shocks

Behavioural finance researchers argue that modern theories of finance were unable to predict the events of extreme financial meltdowns and crisis. They attribute behavioural interplay of variables like incorrect assessment of risk (Muradoglu, 2010), presence of naïve investors in real estate segment (Scherbina and Schlusche, 2012), role of momentum traders for extending the effects of the shock (Noussair et al., 2012) and over-reacting to the market shock (Miralles-Marcelo et al., 2014) as plausible drivers to amplify the shock wave. Harju and Hussain (2011) also contend that financial markets are interrelated, where volatility of European markets increases when US market opens.
Post-crisis market behaviour witnesses behavioural drift in investment strategies (Prorokowski, 2011), where investor age and income level affect his/her choice of retirement benefit products (Bateman et al., 2011). Financial crisis induces period of low sentiments (McLean and Zhao, 2014) where investors display risk aversion (Davis and Madura, 2012). The role of apex authorities and institutions is also explored and their limited presence debated considering far-reaching impact of financial crisis (Gordon, 2014), where enhancing the scope of regulatory bodies is also proposed (Avgouleas, 2009).

2.1.3.2 Unrelated Events - Terrorist Attack and Earthquake

Researches also explore the effect of unrelated events on share market and ex-post market behavior. The events studied include terrorist attack in the country, or earthquakes, or any other natural disaster. Bollerslev and Todorov (2011) measure investor fear during such rare events and report that fear induces higher risk premium. Chen et al. (2012) investigated the role of these economic disasters on the stock market prices. In another study, Brounen and Derwall (2010) record that share prices readjust to their equilibrium level within a week of this rare event. Studies also explore the effect of far-reaching natural disaster on banking industry (Klomp, 2014).

2.1.4. Seasonality

2.1.4.1 Calendar Anomalies

Calendar anomalies refer to cyclical variations in the stock returns over a long period of time. Some of the calendar anomalies studied in the behavioural finance literature have been listed below:

- *January Effect* – Mean January monthly returns are higher than other previous and subsequent monthly returns. Some reasons cited are false hope syndrome (Anderson et al., 2007; Ciccone, 2011) or tax-loss selling hypothesis (Starks et al., 2006)

- *Day-of-the-week Effect* – Average performance of the shares is recorded to be lower on Mondays, first day of the trading week, and lower on Friday, last day of the trading week (Chaouachi and Douag, 2014)
• **Month-of-the-year Effect** – It is like January Effect expect that instead of January, some other month records higher average returns in few stock markets. This is due to dissimilar accounting calendar followed in that economy (Chaouachi and Douag, 2014)

• **Semi-Month Effect** – Average returns of first half of the month are higher when compared to the second half of the same month (Chaouachi and Douag, 2014)

• **Friday, the 13th Effect** – Tetra-phobia or fear of number four has been studied for few Asian countries. Philippines records significantly positive Friday the 13th effect, South Korea records opposite effect, while emerging economies do not have any (Auer and Rottmann, 2014).

• **Intra-Day Effect** – Intraday volatility of European stock market increases when US markets open. This has been referred to as Intraday seasonality or effect (Harju and Hussain, 2011).

• **Seasonal Affective Disorder** – Stock analysts’ assessments and estimates follow seasonality, with higher pessimism and risk aversion in fall and winter season compared to rest of the year (Dolvin et al., 2009)

• **Pay-Day Effect** – Specifically in the share broking or investment companies who hire people for trading, the employees trade higher on the last working day of the pay cycle in anticipation of increased compensation for the month (Garvey and Wu, 2010)

2.1.5. **Others**

2.1.5.1 **Equity premium puzzle, Annuity puzzle**

A noteworthy observation is that higher returns are grossed by equity shares compared to other asset classes. The puzzle is that though equities fall under high risk category, yet the longitudinal return earned surpasses the fundamentals of capital asset pricing model. Studies argue that risk alone cannot define 7% differential equity return assessed on YoY basis. Multiple studies investigate the drivers of equity puzzle from behavioural perspective and report some of the plausible reasons as poor quality of publically available information (Al, 2010) and higher speculative activity by risk averse investors (David, 2008). Polk et al. (2006) argue that higher
return is compensation for higher risk while, Routledge and Zin (2010) claim that changes in risk aversion lead to higher equity prices.

2.1.5.2 Size premium, Small-firm effect

The prices of smaller companies fluctuate much more than larger companies. Behavioural finance researchers study these small companies and report that they earn superior returns, record higher performance compared to high-priced shares (Guin, 2005), have delayed time lags in information dissipation (Hou, 2007) and react strongly to atypical optimistic news (Gurun and Butler, 2012). The set of these phenomena is an anomaly termed as size premium or small-firm effect.

2.2. Behavioral Finance Mediators of Investor Decision Making

Behavioural interplay in investor decision making has been widely studied. Specifically, three broad categories have been identified under which these studies can be classified. They are Information, Demographics and Cognitive Biases. Additionally, instances of psychological mediation in development of investment strategy and philosophy have also been identified. Figure 2.2 illustrates this pictorially.

2.2.1. Information

Availability, content, quality and trustworthiness of company’s information affects investor’s trading decision. Evans and Lyons (2008) report that macro news explains about 30% of stock market fluctuation. While Fernandes and Ferreira (2008) argue that cross-listing tends to increase asymmetry in informativeness, though positively in developed markets (Foucault and Gehrig, 2008) and negatively in developing. Ambiguity in the information also influences investor decision making. Broadly, sources of information in the market are corporate disclosures and media/institutional releases.

2.2.1.1 Corporate Disclosures

Any releases or disclosures made by the company as per the norms of the country or otherwise will come under this category. Some of the disclosures are risk disclosures, quarterly results, disclosures pertaining to corporate governance, earning disclosures, dividend and disposal announcements or any other announcement as deemed necessary. These information signals
influence risk perception of investors (Walia and Kiran, 2012) and trading activity, price fluctuations and volatility of the stock (Zhang et al., 2015). Frequency of disclosures reduces negative sentiment (Pitre, 2007) and improves post-issue performance (Jo and Kim, 2007).

2.2.1.2 Media and Institutional Releases

Media releases, whether print, tele or online, constitutes as a significant information source. Analysts and experts of different depository participants and investment banking companies regularly publish sell, buy and hold recommendations of the companies. Other institutions like credit rating agencies also release fundamental analysis reports of different companies and sectors, easily available through the online portal. Apart from these institutional releases, other informal information sources like word-of-mouth communication and social microblogs also provide immense material about the companies.

An investor is flooded with the information feed from these sources, making it impossible to perform a comprehensive analysis prior to taking a decision. This is aligned with one of the arguments proposed by Simon’s (1957) bounded rationality theory. Further, the investors are also effected by the media tone or slant used in the coverage (Gurun and Butler, 2012; Tetlock et al., 2008). Even market volatility is effected due to media news items (Bystrom, 2016). Specifically, in mutual fund industry, media encouraged diversification impacts flow of funds (Solomon et al., 2014) and glamour and value stocks have a lopsided reaction to positive and negative news (Duong et al., 2014).

2.2.1.3 Ambiguity in Information

Information quality directly improves the significance of the information in the mind of the decision maker. That is, informative-ness of the analysts’ equity report is important for an investor (Arand et al., 2015). However, unrelated news or information about a company induces investor inertia and excess volatility in the market (Illeditsch, 2011). Other factors causing ambiguity are irregularity in information dissipation, use of red flag phrases and inconsistency in earnings announcements.
2.2.2. Demographic Factors

The role of demographic variables on investor decision making has been studied under three descriptive categories, that is, socio-economic factors, socio-cultural factors and biological factors. Additionally, demographic change is also analysed as the fourth category. These are discussed henceforth.

2.2.2.1 Socio-Economic Factors

Several socio-economic factors have been studied by the researchers in the context of investor decision making. These range from age, income, wealth, size of the family, financial literacy, social status of the investor, investor habitat, survival rate, experience, training, knowledge to size of the economy, industry affiliation and community participation in stock markets.

The studies have investigated the moderating or mediating role of these variables on different aspects of investment process. To list a few studies, Sundali and Guerrero (2009) examine effect of investor age on the risk-taking abilities; while Brunetti and Torricelli (2010) extend the findings by arguing that investors have a hump-shaped age and risk-taking profile. McCannon (2014) report the role of financial literacy on social preference and subsequent investor behavior. Nofsinger and Varma (2014) present that portfolio diversification is effected by investor age, experience and wealth, while Ackert et al. (2010) state that training, knowledge, and experience influence investor decision making. Some other causal relationships studied are role of wealth and household age on portfolio diversification (Roche et al., 2013), income level on overconfidence (Tekçe and Yilmaz, 2015), role of size of family on investment in mutual fund (Gill et al., 2011), industry affiliation of the investor and earnings (Eiling, 2013), survival rate on learning aptitude from investment experience (Seru et al., 2010) and geographical locale and info dissemination (Bernile et al., 2015). Investors in lower income bracket prefer lottery-type stocks, with investors displaying similar socio-economic characteristics like that of players of lotteries (Kumar, 2009).
Figure 2.2: Behavioural Finance Dimensions
2.2.2.2 Socio-Cultural Factors

Studies investigate the role of socio-cultural factors like gender diversity, religion, rituals, psychological gender, culture and investor attachment style in investor decision making. In an experiment, Durand et al. (2013) explored the role of psychological disposition, psychological gender and risk-taking propensity on investment decisions. Allen et al. (2015) examine causal relationship between religion, culture and ritual on investor faith, while Abdussalam (2014) study role of religion on investor trust. It is argued that social norms restrict ethical companies in buying sin shares or shares of companies dealing in tobacco, gaming or alcohol (Hong and Kacperczyk, 2009). Further, variables like gender diversity within a team (Bogan et al., 2013), corporate culture and corporate behavior (Hillary and Hui, 2009) and composition of a board room (Hickman 2014) are explored in context of investment (group) decision making. Country-specific characteristic like culture influences investor trading (Eun et al., 2015).

2.2.2.3 Biological Factors

The behavioural interplay of biological elements like genetic variations, hormone level, IQ and creative intelligence have been explored in the context of investor decision making. Some interesting causal relationships investigated include role of hormone level on investor’s risk-taking appetite, where the relationship is moderated by gender and time of the day (Oran and Akyatan, 2012), role of genetic variations on portfolio diversification (Cesarini et al., 2010) and investor’s behavioural biases (Cronqvist and Siegel, 2014). Frydman et al. (2014) pronounce that neuro-activities are proxy for assessing investor’s behaviour, while investor’s intelligence quotient (IQ) refines market participation and portfolio diversification (Grinblatt et al., 2011) and creative intelligence benefits the company in investment.

2.2.2.4 Demographic Change

Earlier section discusses the role of individual demographic variables on the investor decision making. Interestingly, one study investigated the role of demographic change in age as an antecedent of demand of pharma medicines (Ammann et al., 2011). The findings of this study indicate a possible role of change in demographic characteristics of the investor population in macro phenomenon.
2.2.3. Cognitive Biases and Heuristics

Cognitive biases are methodical departure from the standards or wisdom in judgment, where the corollaries about the occurrences are interpreted in an irrational way. The individuals construct their personal idiosyncratic reality based on their perception. Heuristics approach to problem solving is based on pragmatic learnings or experience earned, with sub-optimal yet satisficing solution. Broadly, there are six categories of cognitive biases and heuristics as listed under - belief biases, decision making biases, memory errors, heuristics, sentiments and others. Figure 2.3 portrays this classification.

**Figure 2.3: Cognitive Biases and Heuristics**
Sentiments – are emotions and feelings of an investor. They interplay with the cognitive abilities/processes and dissuades an investor from rational decision making/analytical thinking.

Belief Biases – Set of predispositions or preconceived notions about investor beliefs developed with experience.

Memory Errors – acts as either a limiting agent in restricting recall or a boosting agent in assisting recall of an event.

Decision Making Biases – Prejudices in investment behaviour due to recurrence of similar situations.

Heuristics – directory of what-to-do in a situation (can be understood as rule of thumb) prepared over time with related experience in the domain assuring instant adequate gratification. Stock market investors defend their decision of following heuristics owing to limiting constraints of bounded rationality.

2.2.4. Investor Strategies

The decision-making strategies evolved due to interplay of behavioural variables has been discussed under three categories here - investor philosophy, operational approaches and qualitative assessment. These

2.2.4.1 Investor philosophy

Social Responsible Investing – Studies highlight the significance of corporate governance disclosures on the market behaviour. The investors credit importance to socially responsible behaviour of the company (Rubaltelli, 2010) and other individual and environmental factors (Glac, 2012). Accordingly, their mental frames are modulated, the evidence of which is reflected in higher fund values and investment activity.

Positive Feedback Trading – When an investor tracks the market sentiments and follows the trend already prevailing, he/she is said be engaged in positive feedback trading. It is due to this category of investors that the trend extends even after an event, that is, a falling market falls to a further low and a rising market rises to a new high. It, thus, increases volatility of the market. Antoniou et al. (2011) show that noise traders have a sharp recall and therefore they engage in positive feedback trading in future derivative segment.
Momentum and Contrarian Strategy – Momentum traders hold long position on shares whose price has been increasing and short position on shares whose price has been decreasing, that is, they follow the prevailing market trend. Foerster (2011) empirically investigated that momentum traders follow a basic rule of thumb to buy shares which have doubled in recent past, hoping that the history will repeat and they will earn from subsequent increase. On the other hand, contrarian traders hold long position on shares whose price has been decreasing and short position on shares whose price has been increasing. The trading strategy of contrarian is opposite to the prevailing market trend. A contrarian investor is effected more by disposition effect compared to a momentum investor (Kubińska et al., 2012)

2.2.4.2 Operational Approaches

A review of small to medium term investment decision making heuristics, protocols and operating approaches of investors and the interplay of behavioural dimensions is presented here.

Limit Orders – Limits orders check the amount of loss which an investor may bear due to fluctuations in share prices. With informationally inefficient market structure, only insiders can earn high returns, while uninformed investors make regular market returns and average investors lose with market orders and limit order (Stockla and Kirchlera, 2014).

Lump-sum investing Vs. Dollar Cost Averaging – Some investors choose consolidated investment outflow (lump-sum investing) over periodic annuity of outflow (dollar cost averaging). The benefits of dollar cost averaging are that regular investment cycle provides flexibility in shifting portfolio (Dichtl and Drobetz, 2011).

Others - Anderson (2007) estimated performance of a portfolio as a function of cross-sectional fluctuation, while Muradoğlu and Sivaprasad (2012) argued for investment in firms with low leverage. Some investors opt for retirement benefit instruments with lower risk, mainly in conservative assets (Lee et al., 2013), while others evaluate the size of choice set and then invest (Kida et al., 2010). Few investors adopt sector rotation strategy for portfolio rebalancing across economic cycles (Beber et al., 2011).
2.2.4.3 Qualitative Assessment

Decision makers usually assess the subjective acceptability of a choice preferring satisfactory alternative instead of looking for optimal one. This approach to alternative selection, consistent with the proponents of bounded rationality, is referred to as *satisficing*. Studies experimentally investigate the selection process under satisficing reviewing its behavioural interactions in the choice process, especially when he/she becomes aware of the same (Guth et al., 2008).

2.3. Behavioural Elements of Financial Risk

Behavioural finance researchers have also assessed the subjective elements in investment risk. The current section reviews these qualitative or subjective elements of financial risk.

*Risk Perception* – An investor’s subjective assessment about the character of risk, plausible expected reward of risk, the tentative time of return and severity involved in the investment is referred to as risk perception. This comprehensive assessment comprises of understanding product characteristics and estimating chances of capital loss or of lower returns or deviation from expected returns. Risk perception has two sub-categories - inherent risk and handled risk. Inherent risk, or latent risk, is the risk associated with a specific asset class; for example, inherent risk of equities is higher than debt. And, involuntary treatment or handling of inherent risk by investor’s cognitive processes, effect of information and default risk assessment induces handled risk.

*Risk Premium* – Risk premium is like a reimbursement for the risk taken by the investor, that is, investor expects additional return for every extra unit of risk. Studies explore relation of risk premium with investor pessimism/optimism and with expected cost of equity.

*Risk Neutral* – An investor who is concerned with the returns of an investment and does not bother about the risk of the underlying asset is classified as a risk neutral investor.

*Risk Tolerance* – is the maximum threshold acceptable by an investor. It is the level of emotional comfort or feeling of psychological well-being with risk. Risk tolerance includes risk capacity, a financial element, and risk attitude, psychological element. Risk capacity defines the amount of risk an investor can afford to assume in a situation, while risk attitude defines the willingness of the investor. Risk profile describes the subjective evaluation of the risk appetite and risk preference.
Risk Aversion – is the inclination of the investor to evade any uncertainties related to returns.

Risk-taking/ Risk-taking propensity/ Risk Seeking/ Willingness to take risk / Risk proneness / Risk Preferences – is the inclination to assume risk in the hope of future returns. These words have similar meaning, but have been used interchangeably in behavioural finance literature.

Risk Judgment/ Risk Measure – is the qualitative assessment of riskiness of the underlying asset. The evaluation may be diverse owing to investor’s bounded rationality.

Riskiness/ Risk Level – Risk level or riskiness is the measure or scale for comparative evaluation between multiple investments.

Risk Appetite – Ability or risk-bearing capacity.

Prediction risk / Risk of lower-than- expectation return – Forecasting error related risk owing to subjective predictions.

Risk Associated with Information Asymmetry – Any irregularity and inconsistency in information about the underlying investment creates risk.

Risk Framing – comprises of contextual assessment and description of risk.

Risk-as-feelings hypotheses – It refers to behavioural modelling based on feelings. The genesis of this model is that stress during decision making acts as a stimulus for investor expectancy and accordingly guides the behavioural pattern.

Risk-as-value – Value in risk assessment refers to comprehensive evaluation of quantitative data (risk-as-analysis methodology) along with behavioural interplay (risk-as-feelings methodology).

Risk Processing – This is the cognitive process of perceiving, evaluating and understanding risk.

2.4. Research Gaps

Review of the existing studies in behavioural finance provides multiple evidences or observations which contradict the basic assumption of rationality of the traditional and modern finance models. These have been discussed in detail in the first section of this review under aggregate market anomalies. Behavioural mediators of investor decision making have also been reviewed and key insights narrated subsequently. Further, subjective elements of risk have also been examined and their role assessed in investor decision making. This section illustrates gaps in the existing behavioural finance studies and addresses some emerging areas which needs further exploration.
**Behavioural Decision-Making Models** – Existing portfolio models are based on concept of maximization of returns. Whereas, extant literature in behavioural finance contradicts the proponent of maximization of expected utility in favour of satisficing. Satisficing is understood as a cognitive heuristic to evaluate options till an acceptable level is achieved. This is also aligned with the concept of bounded rationality (Simon, 1957). Current decision-making models ignore this subjective interplay in the processes. A comprehensive model which incorporates interaction of behavioural variables in the decision-making processes and system elements needs to be developed. To add to this, behavioural dimensions of risk also need to be captured.

**Systems View** – The existing theories fail to incorporate the exogenous vectors beyond the boundaries of the decision-making system. Uncertainties are captured as a function of probabilities to estimate expected returns. Optimization techniques incorporate uncertainties in assessing a set of options within pre-defined list of constraints. Accordingly, they estimate expected returns and then rank the possible options. However, other extraneous variables can be incorporated only when the model adopts a system’s view with sub-systems, qualitative and quantitative elements, their interplay and limiting constraints. This needs further research.

**Consciousness in Decision Making** – Consciousness embodies a sense of awareness with attention to detail. Increased awareness improves holistic review of data and develops intuition for relatively swift decisions, even with incomplete information. Attention faculty ensures no details are missed and assists in involuntary extrapolation and interpolation of data. Assuming a bounded rationality framework, an investor will rely on knowledge earned over the years (or experience), rule of thumbs developed (or heuristics) and intuition for decision making. Hence, role of consciousness necessitates further examination from an investor’s viewpoint.

**Investor Classifications** – Existing behavioural finance studies examine role of qualitative variables, usually for specific investor types like active and passive investors, naïve and information investors, sophisticated and noise investors, attentive and inattentive investors. Peer group influence, group decision making, interpretation of market behaviour by different investor types are few areas which need more research.
**Other Behavioral Variables** – From a psychological perspective, decision-making comprises of appraising choices in the context of needs, preferences, feelings and emotions (Swami, 2013). It has been established that behavioural interaction is a significant influencer in investment decisions. Though, multiple studies examine various qualitative variables, however, mindfulness, religiosity have still not been explored. Yet, there is evidence of the role of these variables in corporate decision-making. Neuro-scientists report the role of mindfulness meditation in improving executive decision-making capabilities (Zeidan et al., 2010). Additionally, it has been reported that religion impacts emotional balance, decision and frame of reference due to association between transcendent and ultimate truth (Fernando and Jackson, 2006). A detailed analysis of the role of mindfulness and religiosity needs to be carried out to explore their role in investor decision making.

### 2.5. Concluding Remarks

The chapter presents extensive literature review reinforcing the relevance of behavioural mediation in financial decision making. At the aggregate market level, behavioural interplay manifests in the form of market anomalies, indescribable and unexplainable, by the financial rational models. At an investor’s level, different dimensions of the behavioural interaction in decision making are described. Further, the subjective understanding of financial risk is presented. The chapter concludes by providing an inconclusive list of gaps in the existing behavioural finance literature. This provides a basis for conceptualizing the research framework in the following chapter. The gaps identified through extensive review of behavioural finance literature necessitates the present study, which has been discussed, in detail, in the subsequent chapters.