

REVIEW ARTICLE

Risk Perception in Respect of Equity Shares: A Literature Review and Future Research Agenda

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The purpose of this paper is to systematically review the literature published on various aspects of risk perception about equity investment. It also aims to raise specific questions for future research. A comprehensive and systematic literature review is done to get the insights of the available literature with an objective to identify the determinants of equity-share-related risk perception and identify its impact that influences equity investment behavior. The study found that risk perception can be measured mainly by using the axiomatic approach, socio cultural group approach, emotional reactions, marketing mix approach, and psychometric approach. It is also found that the main determinants of risk perception are demographic factors, emotional reactions, economic crisis, framing effects, loss aversion, heuristics, etc., which leads to some impact on investment behavior such as good portfolio choice, market-linked investment, entrepreneurial success, and retirement planning. A better understanding of risk perception will help the policymakers to improve the risk perception level of investors, which in turn will help in improving the investment culture of the nation.

Keywords: risk, risk perception, equity investment, risk aversion, risk propensity

JEL Classifications: D03, D14, G19, G30

Risk is a concept that denotes a potential negative impact to an asset or some characteristic of value that may arise from some present process or future event. Risk involves the chance that an investment's actual return will differ from the expected return. Risk includes the possibility of losing some or all of the original investment.

According to Lopes (1987, p. 255), “risk refers to situations in which a decision is made whose consequences depend on the outcomes of future events having known probabilities.”

$$\text{Risk} = \text{Consequences} \times \text{Probability}$$

Another viewpoint of risk is expressed by Kalpan and Grrick (1981) in the following manner:

$$\text{Risk} = \text{Uncertainty} + \text{Damage}$$

This perspective demonstrates that risk involves a factor of uncertainty and a potential loss that might be incurred. In essence, risk is the potential for recognition of unwanted, undesirable consequences to human life, health, wealth, or the environment.

An additional perspective on risk is reproduced in Elmiger, Kim, and Berman (2003), who define the term *risk* by translating it from Chinese characters that mean

$$\text{Risk} = \text{Danger} + \text{Opportunity}$$

A fundamental idea of finance is the relationship between risk and return. Various financial analysts have examined the relationship between risks and return in the stock market and found that the greater the amount of risk an investor is willing to take, the greater is the potential return and vice versa. Generally, the human decision-making process is also composed of risk and return (Hunjra, Azam, Niazi, Butt, Rehman, & Azam, 2011). However, the investors cannot evaluate risk and return objectively; rather, they behave emotionally while making decisions; that is, their decisions are the results of their perception towards risk and expectation towards return (Azwadi, 2011). The risk-and-return tradeoff is the balance between the desire for the lowest possible risk and the highest possible return.

Unser (2000) finds that measures of risk are more important than the variance of returns. In line with this, it is observed that in the behavioral finance literature, investors are more sensitive to losses than to gains. Knetsch, Thaler, and Kahneman (1990) and Tversky and Kahneman (1992) show that losses are weighted about twice as strongly as gains.

Investment in equity shares involves a certain degree of risk as the return from equity share is not certain. While going for investment in shares, people try to make proper tradeoffs between risks and return (Fischer & Jordan, 2006). In a particular situation, individuals who are risk seekers and are concerned about high returns are likely to have low risk perception, whereas those who are risk averse have high risk perception, thus influencing their investment behavior (Jyothilingam & Kannan, 2011; Karmakar, 2001; Rana, Murtaza, Noor, Rehman, & U-din, 2011).

Perception towards risk is always viewed in respect of some object or asset. Equity is an asset class in respect of which risk perception is attempted to be studied in this paper.

An asset is a resource with economic value that an individual, corporation, or country owns or controls with the expectation that it will provide a future benefit. Equity shares are issued by the companies to raise capital for their business. The equity shares thus issued are subscribed to by the investors. Thus, it becomes an asset for those who have invested in it because it has some economic value for the investors. In the books of account of investors, the investment made in equity shares of other companies appears on the asset side of the balance sheet. It is valued at the cost price and market value, whichever is lower. Stock analysts also used to assign value to the equity shares. In this respect, some of the models such as the dividend growth model, capitalization of future cash flows model, Capital Asset Pricing Model, arbitrage pricing model, etc., are worth mentioning. It has also got the potential to provide future benefit either in terms of giving dividend or by appreciation in the value of shares. However, investment in equity shares involves a certain degree of risk as the returns from equity shares are certain. Investors make proper tradeoffs between risks and return while investing in equity shares (Fischer & Jordan, 2006). Their investment in equity share depends upon the level of their risk perception (Deb & Singh, 2016).

Risk perception is a subjective judgment that people make about the characteristics and severity of a risk. Risk perception examines the opinions of people when they are asked to evaluate hazardous or risky activities, substances, and technologies (Slovic, 1987). Risk perception involves peoples' beliefs, attitudes, judgments, and feelings as well as the wider social and cultural values and dispositions. Risk perception is an idiosyncrasies process of interpretation, a process of making sense of a complex world in order to plan, choose, and act in that world. It plays a prominent role in the decisions people make and so is the case with the decision to invest in equity shares (Pidgeon, Hood, Jones, Turner, & Gibson, 1992).

Farrelly and Reichenstein (1984, p. 6) cited the results of studies by Laughhunn, Payne, and Crum (1981), Cooley (1977), and Godding (1975) and concluded that "these studies portray risk perception as a complicated psychological process. The amount

of risk perceived and the consequent nature of investment behavior vary from individual to individual and can depend upon such conditions as how much the particular investors feel that they control their environment, the prior existence of a specific share in the investor's portfolio at the time of purchase, and the relationship of expected return to the investor's determined target."

An important factor that influences the investment in equity is risk perception of investors (Lennart, 2002; Milliman & Weber, 1997; Singh & Bhowal, 2009a; Slovic, 1987). Risk perception can be managed if the investors are aware of their level of risk perception (Bhowal & Singh, 2008). It is believed that a high degree of risk perception leads to lower equity investment and vice versa (Lennart, 2002; Roszkowski, 2010; Veeramani & Karthikeyan, 2014).

Firer, Oliver, and Farrelly (1986) argued that investors consider total risk in their share assessments. The study also evidenced that there were no significant differences in the risk perception of investors versus those of analysts. Byrne (2005) stated that risk propensity and risk perception are found to be negatively correlated; however, deposit accounts are selected for investment irrespective of how risky a respondent considered them to be. Risk perception and expected return are positively correlated for all assets apart from property. Further, it is found that experts exhibited positive correlation in risk return judgments but novices showed no correlation.

Bernstein (1995) opined that the perception of risk throughout history has reflected the temper and times in each society as the emphasis has swung to gut to measurement and back to gut. As long as people sense they had no control over their futures, chance explained the entire outcome of risk-taking. Then, there will be experimentation, exploration, demonstrating that choice is a valid human activity and that risk is something to be taken as well as faced.

The literature on risk perception in respect of equity share is somewhat fragmented. However, in recent years, researchers have begun to integrate approaches into models to identify different dimensions of risk perception in respect of equity shares and the relationships among them. The literature on risk perception ranges from its theoretical development to factors affecting risk perception, impact of risk perception, measurement of risk perception, and so on. The limited availability of literature on risk perception

in respect of equity shares has motivated the authors to review relevant literature on different aspects of risk perception in the context of equity shares. Besides, the recent regulatory push in different countries towards development of capital market makes it imperative to study the concept of risk perception in detail. Therefore, the objective of the present study can be given as follows:

- To identify the theories in respect of risk perception and to check if these theories work equally in respect of risk perception towards equity shares
- To study different methods of measuring equity-related risk perception
- To identify the factors affecting risk perception in respect of equity shares
- To study the impact of risk perception on equity share investment

The rest of the paper is organized as follows: Section 2 discusses the research methodology adopted in the study, Section 3 deals with the theories of risk perception, Section 4 highlights the literature on measuring risk perception about equity investment, Section 5 throws light on determinants of risk perception, Section 6 presents the literature on the impact of risk perception on equity investment, Section 7 highlights the conclusion and policy implications section, and finally Section 8 discusses the future research agenda.

METHODOLOGY OF THE STUDY

The process of literature review and the methodology adopted will be discussed in this section. The study is based on secondary data collected primarily through review of existing literature from various sources such as books, journals, working papers, reports, etc. All such studies related to risk perception about equity investment among retail investors in particular and risk perception in general have been reviewed. After the review, all those literatures have been classified into different groupings considering the nature of their findings. The study also uses logical reasoning and discussion to arrive at various findings. A comprehensive literature review was done in the area of risk perception. The systematic and comprehensive literature review is based on the steps given by Dubey,

Gunasekaran, and Papadopoulos (2017) and Tranfield, Denyer, and Smart (2003). The process of systematic review was carried out using Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher, Liberati, Tetzlaff, Altman, & The PRISMA Group, 2009). The database for literature search was selected on the basis of the quality of academic journals listed in the database. The literatures were drawn from Web of Science, Science Direct, and Emerald Insight. Particular keywords such as *risk perception* and *equity shares* were used to get the results. The keywords were searched independently on Web of Science, Science Direct, and Emerald Insight using the “OR” and “AND” operators between the two keywords. The search syntax is shown in Table 1. The first-stage search resulted in 40 journal articles when searched with the keywords *risk perception* and *equity shares* in the Web of Science database on September 23, 2019, since the foundation of the topic in the year 1997 till the given date. In the second database, that is, Science Direct, three results were obtained with the same keywords in the same time period. The same search was conducted on Emerald Insight, which yielded 850 responses. So, a second-level search was done by adding and placing keywords like *measurement* and *determinants*, which finally ended up in 554 prospective results. Then, non-duplicate citations were screened in the Mendeley Reference Manager for all the databases merged. This resulted in 184 non-duplicate citations. The next step was to apply inclusion and exclusion criteria at this point of evaluation. The initial inclusion criterion was that the articles must be written in the English language, and the keywords searched must be present in the title and abstract of the articles. This led to the exclusion of 891 articles. The second inclusion and exclusion criteria were to screen the articles that examine the

determinants for measurement of risk perception in their theoretical or empirical studies.

This led to the exclusion of unpublished research comments, meta-analyses, dissertations, and master’s theses. These articles have been reviewed to understand the work done in these areas. Finally, 101 articles were of relevance to the study and were taken into consideration. The results can be copied in their respective databases and cross-checked to provide the results, but as these databases are dynamic and actively updated, the results may vary in the number of documents (Gupta, Altay, & Luo, 2019). So, these research papers were studied for identification of the determinants that play a role in risk perception. The entire process adopted in searching the relevant literature is shown in Figure 1.

THEORIES OF RISK PERCEPTION

There are various theories of risk perception that have evolved over a period of time and have been propounded by various scholars. Some of the theories are briefly mentioned below. It should be noted that these theories are originally developed in some other field, but in this paper, we have tried to translate them, with the help of existing literature as was done by Singh and Bhattacharjee (2019), in the context of equity share investment.

- 1. Protection Motivation Theory:** According to protection motivation theory, people are more likely to protect themselves when they anticipate negative consequences, have the desire to avoid them, and feel they have the ability to take preventive measures. Sheeran, Harries, and Epton (2014) found that enhancing the elements of risk appraisal (such as risk perception and perceived security)

Table 1. Search Syntaxes on Various Digital Database Sources

Data Sources	Keywords	
	(risk perception AND equity shares)	(risk perception AND equity shares) AND (measurement OR determinants)
Web of Science	40	7
Science Direct	3	1
Emerald Insight	850	546

Source: Compiled by the authors.

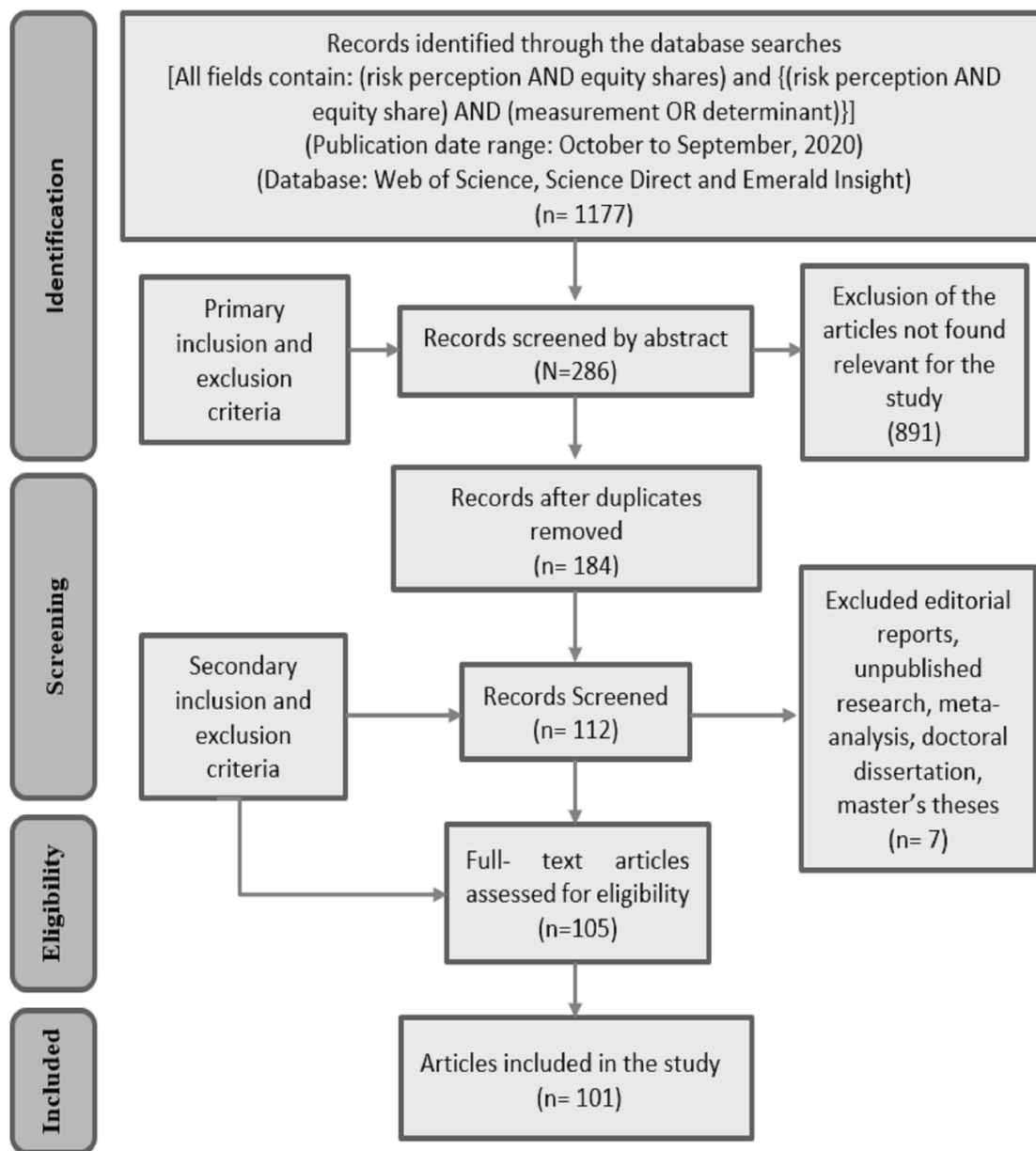


Figure 1. PRISMA flow diagram of literature included in the study. Source: Compiled by the authors.

has a combined positive effect on changing intensions and behavior towards safety. In the context of equity investment, the practices of putting “stop loss” by the equity traders/investors can be explained by this theory. A stop loss order is an order where a trader can make important decisions about cutting losses.

2. **Risk Compensation/Risk Homeostasis Theory:** Risk compensation or risk homeostasis theory states that people tend to take more risks when they feel a greater sense of security. In

other words, individuals adjust their level of risk-taking behavior depending on the safety measures that are in place (Wilde, 1994). It is observed in the stock market that the financial advisors advise young people who have a secure family background to have more equity exposure. This phenomenon can be explained by risk compensation theory.

3. **Situated Rationality Theory:** Situated rationality theory makes the argument that it is erroneous to presume that safe behavior is

inherently rational and high-risk behaviors are inherently irrational. In other words, there is likely a rational justification for why people choose to take risks that is more explanatory than assuming that a risk taker is simply crazy or thrill seeking. If the reward of risk-taking is too great, it is often considered rational to take risks. As Finucane, Slovic, Mertz, Flynn, and Satterfield (2000) note, the greater the perceived benefit of an activity, the lower the perceived risk. The fact that a vast majority of Indian households prefer to invest their money in bank deposits while less than 10% choose to invest in mutual funds or stocks (SEBI, 2015) testifies to this theory.

4. **Habituated Action Theory:** Habituated action theory argues that engaging in high-risk behavior many times without a negative outcome often decreases the perceived risk associated with this behavior. Those who repeatedly perform a high-risk action without an adverse consequence eventually become desensitized to the risk (Kasperson et al., 1988; Weyman & Kelly, 1999). For example, it is observed that people who play on margins in equity investments and have not faced any loss will keep on increasing their margin.
5. **Social Action Theory:** Social action theory states that people take risks because of peer pressure or a general community perception that an activity is low risk. Propensity towards risk can be affected by coworkers' expectations. Individuals conform to group norms to avoid sanctions (e.g., teasing, bullying) and start to identify with the group and accept group perceptions and behavior (Cooper, 2003; Harding & Eiser, 1984). For example, the Muslim community follows Shariah law for investment.
6. **Social Control Theory:** Social control theory was first introduced by Hirschi (1969) and stated that the connectedness to organizations promotes behavior conformity, which can reduce the probability of high-risk behavior. For example, it is often viewed that people prefer to buy stocks of the companies where they work such as employees of Oil and Natural Gas Corporation (ONGC) prefer to buy ONGC shares, employees of Oil India

Limited (OIL) prefer to buy OIL shares, and so on).

7. **Bounded Rational Theory:** Bounded rational theory was coined by Simon (1955) and is the idea that in decision making, the rationality of individuals is limited by the information they have, the cognitive limitations of their minds, and the finite amount of time they have to make a decision. For example, an investor needs to sell off his or her stocks immediately due to immediate financial requirement. So, it might not be possible for him or her to wait for stock price to be conducive enough to yield him or her optimum results due to time constraint.

MEASURING RISK PERCEPTION

Different paradigms have studied subjective risk perception, with the goal of explaining individual and group differences in perceived risk (Weber, 2001). Studies related to measuring risk perception are summarized as follows:

1. **Axiomatic Studies:** In these, researchers have focused on the way in which people subjectively transform objective risk information (i.e., possible consequences of risky choice options such as mortality rates or financial returns and their likelihood of occurrence) in ways that reflect the impact that these events have on their lives (Palmer, 1996; Weber, 2001). The conjoint-expected risk model, for example, allows for the possibility that upside variability in financial returns has a different and usually smaller effect on perceived riskiness than downside variability (Luce & Weber, 1986). Studies have shown that intuitive risk measures such as subjective risk perception can better proxy for investors' intuition about financial risks than variance and standard deviation (Klos, Weber, & Weber, 2005; Weber, E. U., Shafir, S., & Blais, A. R., 2004). More general risk-return frameworks such as Sarin, Rakesh, and Weber (1993) and Jia, Jianmin, Dyer, and Butler (1999) allow for the incorporation of these more appropriate measures of perceived risk so that the investment decision may be decomposed as follows:

Risk-Taking = f(Perceived Return; Risk Attitude; Risk Perception)

2. **Socio cultural Group:** In these, researchers have examined the effect of group- and culture-level variables on risk perception (Douglas & Wildavsky, 1982).
3. **Emotional Reactions:** Research within this paradigm explicitly addresses people's emotional reactions to risky situations. It shows that these psychological/affective risk dimensions strongly influence judgments of the riskiness of physical, environmental, and material risks in ways that go beyond their objective consequences (Fischhoff, Solvic, & Lichtenstein, 1978; Lichtenstein, Fischhoff, & Solvic, 1984).
4. **Marketing Mix Approach:** Singh and Bhowal (2009b) have measured risk perception using the concept of elements of marketing mix. Singh and Bhowal(2011)have further extended the similar study and measured the risk perception of the employees in respect of equity shares from the perspective of elements of marketing mix and ascertained the degree of influence of elements of marketing mix on equity-related risk perception. Singh and Bhowal (2010b) have used the same measurement to measure the difference in the risk perception of employees between the shares of their own companies and other companies' shares. Singh (2012) has studied the risk perception of investors using the similar tool in respect of initial public offerings.
5. **Psychometric Approach:** The psychometric approach was also used to investigate investment risk perception. In their studies, Berry, MacGregor, Slovic, and Evensky (1999)and Koonce, McAnally, and Mercer (2005) asked financial experts to rate the risks of various types of investments. Moreover, participants had to assess various other aspects of the investment situation and the investment product, both economic and psychological features. The results of these two studies were comparable and in line with each other: quantitative aspects (probability of loss and volatility) and qualitative aspects (such as worry and anxiety and knowledge)

were both significant predictors of perceived risk. In both studies, worry was the predictor with the highest predictive power. These findings were of particular interest since all participants were professionals whose risk judgments were expected to be based on quantitative information only. The second approach includes the studies comparing risk perceptions of experts and ordinary people in the financial domain. Only three studies have raised this question; two of these studies have been undertaken within the psychometric approach, and they are the study of Diacon (2004) and the study of Olsen (1997). Olsen (1997) applied the results of his qualitative study to construct items for a survey with which he compared risk perceptions of professional and individual investors. Ratings on the risk aspects were used to predict the perceived overall risk. All aspects had significant predictive power in explaining the variance of the risk judgment. The best predictor was control, the second was loss of capital, the third was returns below expectations, and the last one was knowledge. Furthermore, no differences between professionals and ordinary people were observed, however, this harmony between the risk perceptions of experts and ordinary men can be attributed to the selection of the participants. Olsen (1997) only asked experienced and wealthy private investors, and financial risk perception might differ according to the degree of experience that can range from very low to very high.

6. **Experimental Approach:** The experimental approach means to ask participants to invest a given amount of hypothetical money into some imaginary investment options, which differ from each other regarding their risk features. These options are usually presented with full information about probabilities and volumes of gains and losses. Moreover, participants have to rate the risk of the investment options. Results of studies using this experimental approach consistently reveal that potential losses arise larger than volatility of outcomes for both explaining risk judgments and predicting investment decisions (Duxbury & Summers, 2004;Klos, Weber, & Weber,

2005;Nosic & Weber, 2010;Veld & Veld-Merkoulova,2008).

From Table 2, it is found that most of the researchers use the axiomatic approach to measure risk perception of an investor followed by the psychometric and experimental approach.

DETERMINANTS OF RISK PERCEPTION

There are various determinants of risk perception. The following are the determinants of equity-share-related risk perception, identified from the review of relevant literatures:

1. **Gender:** Numerous studies show differences in risk perception between men and women, thus making gender an important variable in deciding the risk perception of investors (Blais, Betz, & Weber, 2002; Chen & Tsai, 2010; Deb & Singh, 2017; Finucane, Slovic, Mertz, Flynn, & Satterfield, 2000; Flynn, Slovic, & Mertz, 1994; Lascu, Babb, & Phillips, 1997; Loibl & Hira, 2007; Slovic, 1987). Grable and Lytton (1999) found that gender is not significant in comparison to other factors of risk perception.
2. **Age:** Age differences in risk preference, risk perception, and risky decision making do not have consistent evidence that young investors are less risk adverse than the conservative investors (Gardner & Steinberg, 2005). Different ages among investors determine risk perception for investment decision (Deb & Singh, 2017; Junkus & Berry, 2010; Singh & Bhattacharjee, 2010a, 2010b). Grable and
3. **Education:** Most of the research showed that there is a positive correlation for education (Chen & Tsai, 2010; Sung & Hanna, 1996). Better education provides an understanding of the risk perception in the stock market (Junkus & Berry, 2010). Grable and Lytton (1999) and Bhattacharjee and Singh (2017) found that there is a positive relationship between educational level connected with risk perception and tolerance and claim.
4. **Marital Status:** Chen and Tsai (2010) in their studies found that unmarried investors are more risk tolerant than the married ones, because the married people have more social risks and responsibilities toward their family. There is another interesting fact regarding the marital status, that the decision of the married investor may reflect the couples' risk preference to some degree.
5. **Emotional Reactions:** Much evidence from cognitive, social, and clinical psychology demonstrates that risk perceptions are influenced by association- and affect-driven processes as much as or more than analytic processes (Loewenstein, Weber, Hsee, & Edward,

Table 2. Number of Citations Regarding Measuring Risk Perception of Investors in This Study

Impact	Citations
Axiomatic studies	7
Socio cultural group	1
Emotional reaction	2
Marketing mix	4
Psychometric approach	4
Experimental approach	4

Source: Compiled by authors from various sources.

2001). In cases where the outputs from the two processing systems disagree, the affective, association-based system usually prevails. Even in seemingly “objective” contexts, such as financial investment decisions, subjective and largely affective factors have been shown to influence perceptions of risk. For example, Holtgrave and Weber (1993) showed that both affective variables (e.g., dread) and cognitive-consequentialist variables (e.g., outcomes and probabilities) are necessary to predict people’s perception of risk in the financial and health/safety domain. Chira and Thornton (2008) and Iman (2011) in their studies found that decisions could be influenced by unavoidable psychological and emotional factors. Better understanding of these factors will help the investors to select better investment decisions and to avoid repeating their mistakes in the future by making conscious decisions in extracting the best investment option.

6. **Culture:** Noone (2000) found that investors’ cultural background bears a heavy impact upon their attitude towards risk perception. Hence, when analyzing an individual investor’s risk attitude, one should think of their ethnic and religious background as well as family context to understand their risk attitude (Bordoloi, Singh, Bhattacharjee, & Bezborah, 2020). In this era of globalization, several social researchers conducted research across the boundaries and determined that individual investors show different behavior in their investment in different types of culture and society (Majid, 2016; Ricciardi, 2004).
7. **Knowledge:** Information about risk can increase risk perception. Psychology shows changes in the level of a person’s knowledge result in an adjustment in their risk perception of a specific risk activity. Fischhoff, Solvic, and Lichtenstein (1978) found that risk perception arises from a combination of uncertainty (i.e., lack of knowledge) and seriousness of consequences. Slovic (1993) suggests that pervasive distrust is strongly linked to the perception of risk in a particular activity. Risk perceptions are exaggerated when vulnerable consumers believe that their lack of knowledge will be used against them. In such cases, distrust

is vested not only in the firm or institution providing the product or service but also in the experts, regulators, and government officials who monitor the activity or market. Sachsea, Jungermann, and Beltingb (2012) focused on effects of individual characteristics on financial risk perception. Only financial literacy (measured by means of a knowledge test) proved to be relevant in a regression analysis. Ricciardi (2004) and Bhattacharjee and Singh (2017) stated that the level of knowledge might influence an investment professional’s risk perception. According to Pellinen, Tormakangas, and Rajas (2011), risk perception increases when investors gain more knowledge.

8. **Information Asymmetry:** Perceived risk determines not only the sources of information consulted but also the type of information used by the investor. The same behavior could be observed as well in the stock market because information is a means allowing limiting uncertainty surrounding the investment situation. According to Lu, Chen, and Liao (2010), information asymmetry refers to a situation where financial investors have a set of unequal information; that is, people existing in the stock market do not all have the same information; rather, some are more informed than others—that is, informed investors have some private information, while others have only public information (Chang, D’Anna, & Wee, 2008). Nwezeaku and Okpara (2010) indicate that the level of information asymmetry can be characterized by the risk of investing with a privately informed investor. Thus, the less the investors share the same information, the more will be the level of risk perception towards their decisions in the stock market (Mahmood, Ahmad, Khan, & Anjum, 2011). Moreover, Wang, Shi, and Fan (2006, p. 772) specify that “good quality of information disclosure i.e. transparency, timely release, integration and authenticity could reduce investors’ risk perception.” MacCrimmon and Wehrung (1990) conducted a study to know the characteristics of risk-taking executives, and it was found that the most successful executives are the biggest risk takers and most mature

executives are the most risk averse. Lion and Meertens (2005) suggested that risk avoiders and risk takers differ in the extent to which they focus on the worst and best outcomes of a risky activity. By implication, risk avoiders and risk takers should also differ in their risk information preferences. Specifically, as risk avoiders focus more on the worst outcomes, it was hypothesized that they would prefer negative information about the risk. In contrast, as risk takers focus more on the best outcomes, it was hypothesized that they would prefer positive information about the risk.

9. **Content Domain:** Klos, Weber, and Weber (2005); Has-seldine and Diacon (2007); and Vrecko, Klos, and Langer (2009) document that the presentation format affects risk perception and, consequently, also impacts risk-taking. Rettinger and Hastie (2001); Blais, Betz, and Weber (2002); and Baucells and Rata (2006) illustrate that differences in risk-taking over various content domains, such as the financial domain (e.g., investment decision) and the health domain (e.g., seat-belt usage), can mainly be explained by differences in risk perceptions. More precisely, these studies show that risk perceptions vary substantially between different content domains.
10. **Economic Crisis:** Caracota and Mihalascu (2009) and Samsi, Yusof, and Cheong (2018) found that risk perception may be influenced by the environment, like in a period of global economic crisis, when investors might be more pessimistic and might extensively curtail their costs and investment programmers in order to become more resilient to any further deterioration of their business environment. Roszkowski (2010) stated that the economic crisis of 2008 had been said to lower the risk tolerance of the investors. The study also concluded that risk tolerance and risk perception influence investors' behavior.
11. **Capacity of Investor:** Veeramani and Karthikeyan (2014) and Singh, Roy, and Pandiya (2020) found that investors' perception on the total investment risk and return predominantly decides the capacity of investors.
12. **Framing Effects:** A framing effect is the tendency to avoid risks when decisions are framed in terms of possible gains and to accept risks when they are framed in terms of possible losses (Edwards, Elwyn, & Mulley, 2002; Singh, 2012).
13. **Loss Aversion:** Vlaev, Chater, and Stewart (2009) found that people overweigh small probabilities, so if a decision is framed in such a way as to indicate a small probability of having losses, then these small probabilities will loom larger and will also be additionally magnified by loss aversion.
14. **Heuristics:** Slovic, Kahneman, and Tversky (1984) noted that when individuals are faced with a complex judgment such as a statistical probability, frequency, or incomplete information, various subjects utilize a limited number of heuristics that reduce the decision to a simple task. Heuristics are simple and general rules a person employs to solve a specific category of problems under conditions that involve a high degree of risk-taking behavior and uncertainty.
15. **Overconfidence:** Overconfidence is another characteristic that influences a person's risk perception. Daniel and Titman (1999) and Singh (2011b) observed that overconfidence is one of the most documented biases. Broihanne, Merli, and Roger (2014) found that professionals are overconfident in both general and financial domains. Barber and Odean (2001) stated that men are more overconfident than women.
16. **Familiarity:** People prefer things that are familiar to them. Familiarity bias has been a subject of inquiry within the risk perception literature. Shavit, Lahav, and Rosenboim (2016) found that familiarity reduces perceived risk. Singh and Bhowal (2010a) highlighted that the risk perception of the employees for the shares of their own company as well as the indirect investment in equity shares is relatively lower than the risk perception for the shares of the companies other than their own companies. Agarwalla, Singh, and Choudhury (2018) have also found the people prefer to invest in the physical form of gold because it is familiar to them rather than buying gold Exchange Traded Fund (ETF) because of its unfamiliarity.
17. **Expert Knowledge:** The risk perception studies in behavioral accounting by Hodder,

Koonce, and McAnally (2001) and Koonce, McAnally, and Mercer (2005) documented that changes in the level of a person's knowledge can result in an adjustment to their risk perception for a specific activity or situation.

- 18. Influence of Worry:** The level of financial worries can influence the risk perception where investors tend to worry that their investment could have a loss (Hira & Mugenda, 1999). Perceived risk is judged greater that investors might worry about their investments (Ricciardi, 2004). Grable and Joo (1999) studied the financial-worry influence of experiencing an investment loss. Berry, MacGregor, Slovic, and Eversky (1999) studied the relationship between worry and risk perception and found that worry is a significant indicator of risk perception.
- 19. Neurofinance:** Neurofinance analyzes financial markets by applying neuro technology to observe and understand the trading behaviors of market participants. The major goals of neurofinance are to gain better understanding of financial markets by identifying some physiological traits affecting trading behavior and trading results, to associate these traits with trading results, and to develop methods, technology, and proper training to improve trading performance. Frydman, Barberis, Camerer, Bossaerts, and Rangel (2013) defined the field of neurofinance as seeking to characterize the computations undertaken by the brain to make financial decisions and to understand how these computations map to behavior. Morse (2006), in his paper, stated that the more active the primeval, risk-anticipating brain area, the more risk reluctant the investors are. Stenstrom and Saad (2011), in their analysis on testosterone, risk-taking, and betting, establish that high-testosterone investors have a higher craving for monetary risk-taking and are more probable to surrender to definite impulsivity-related pathologies. Kuhnen and Kuntson (2011) found that a positive emotional state induces people to take risks and to be confident to evaluate investment options, whereas negative emotions, like anxiety, reduce the propensity to take risks.

From Table 3, it is found that most of the scholars have identified gender as the most important determinant of risk perception followed by content domain, information asymmetry, knowledge, and age. Marital status, capacity of investor, and familiarity were found to be the least significant determinants of risk perception.

IMPACT OF RISK PERCEPTION ON EQUITY INVESTMENT

Risk is a vital factor that influences investors' investment decisions because it is the risk that determines an investor's probable return (Yang & Qiu, 2005). Risky decision-making behavior is influenced by risk perceptions (Riaz, Hunjra, & Azam, 2012; Weingart & Sitkin, 1995). Numbers of studies have been conducted regarding the impact of risk perception on investment behavior. Some of the impacts are as follows:

- 1. Portfolio Choice:** Prabhakaran and Karthika (2011) found that an investor with a low risk perception level shows a higher likelihood to make their investment decision on portfolio choices. They also found that a male investor demonstrates much preference on portfolio choices with higher percentage of total return.
- 2. Volume Investment in Market-Linked Products:** Singh and Bhowal (2009a) found that there is an inverse relationship between risk perception and equity investment. In line with this, Deb and Singh (2016) found that risk perception and volume of investment in mutual fund are inversely related. There is a relationship between risk tolerance and investment decision (Raheja & Dhiman, 2019).
- 3. Entrepreneurial Success:** Panda (2001) and Singh (2011a) have seen that there is an inverse relationship existing between level of risk perception and entrepreneurial success.
- 4. Retirement Planning:** Weber (2003) found that due to high risk perception, people fail to allocate the attention resources to the retirement planning and retirement saving maintenance that they deserve, based on their financial importance to our lives.

The various determinants of risk perception with respect to equity shares and its impact on investors are depicted through the diagram present in Figure 2.

CONCLUSION AND POLICY IMPLICATIONS

The study presents a systematic literature review of equity-share-related risk perception of the investors. The relevant literatures for the study were identified using the PRISMA model. There are several important insights from the study. First, it gives a theoretical framework of the risk perception towards equity shares. The second insight is the summarization of studies related to measuring risk perception in respect of equity shares. The study has presented a comprehensive detail of the approaches used to measure the risk perception such as axiomatic, socio cultural group, emotional reactions, marketing mix, psychometric approach, and experimental approach.

The third contribution of the study is the identification of the factors that affect risk perception of the investors towards investment in equity shares. The study has identified 19 factors that influence the risk perception of investors towards equity shares. It was found that factors such as demographic factors, emotional reactions, culture, knowledge, information asymmetry, content domain, economic crisis, capacity of investors, framing effects, loss aversion, heuristics, overconfidence, familiarity bias, expert knowledge, worry of investors, and neurofinance are the main determinants of risk perception of investors.

Most of the previous research regarded demographic factors such as gender (Blais, Betz, & Weber, 2002; Chen & Tsai, 2010; Finucane, Slovic, Mertz, Flynn, & Satterfield, 2000; Flynn, Slovic, & Mertz, 1994; Lascu, Babb, & Phillips, 1997; Loibl & Hira, 2007; Slovic, 1987), age (Gardner & Steinberg, 2005; Grable & Joo, 1999; Junkus & Berry, 2010), education (Chen & Tsai, 2010; Junkus & Berry, 2010; Sung & Hanna,

Table 3. Citations Regarding Determinants of Risk Perception in This Study

Determinants	Citations
Gender	9
Age	8
Education	5
Marital status	1
Emotional reaction	4
Culture	4
Knowledge	6
Information asymmetry	7
Content domain	6
Economic crisis	3
Capacity of investors	2
Framing effects	2
Loss aversion	1
Heuristics	1
Overconfidence	4
Familiarity	3
Expert knowledge	2
Influence of worry	4
Neurofinance	4

Source: Compiled by authors from various sources.

Table 4. Citations Regarding Impact of Risk Perception on Equity Investment in this Study

Impact	Citations
Portfolio choice	1
Volume investment in market-linked product	3
Entrepreneurial success	2
Retirement planning	1

Source: Compiled by authors from various sources.

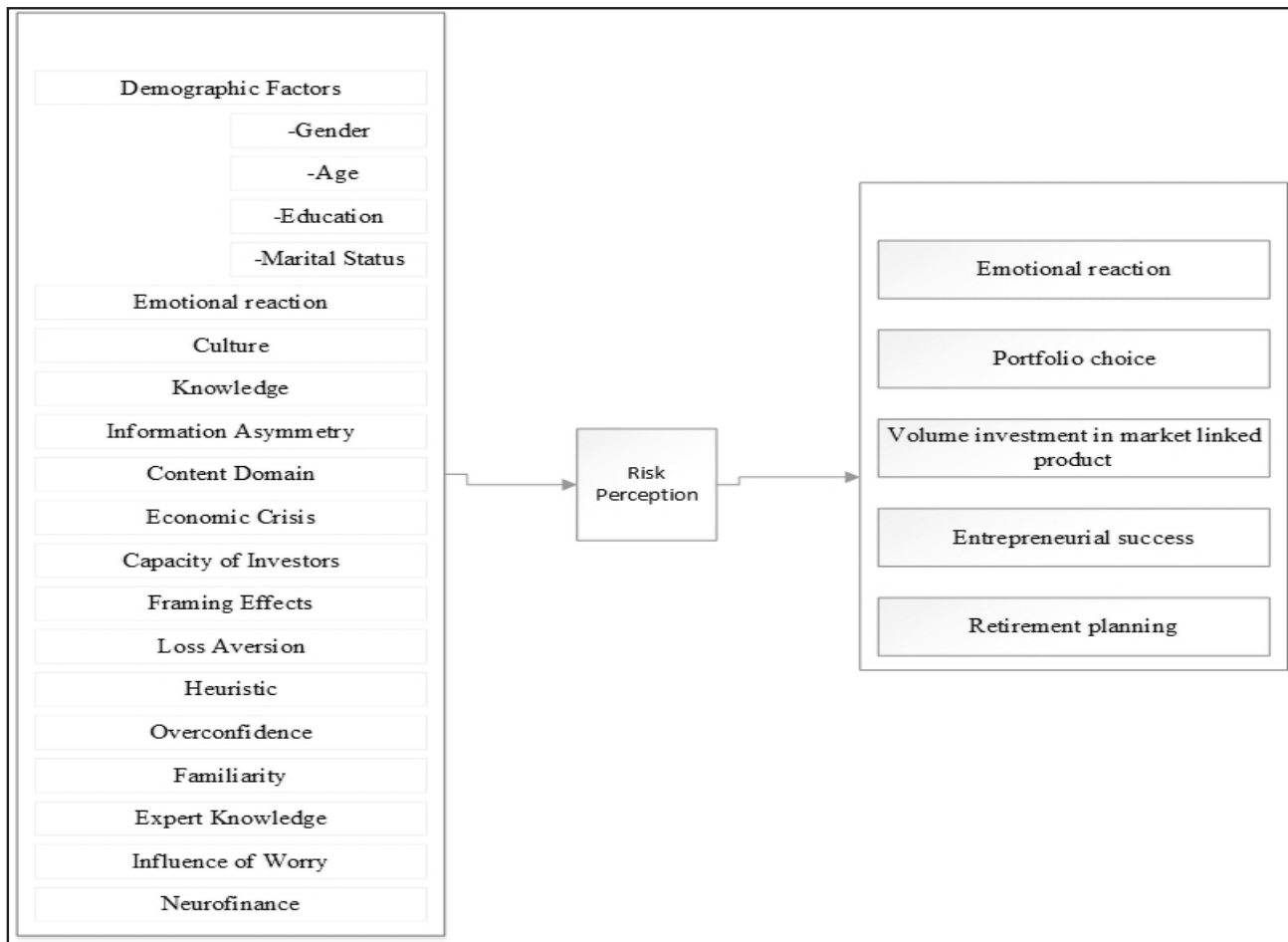


Figure 2. Determinants and impact of risk perception. Source: Authors’ own creation

1996), and marital status (Chen & Tsai, 2010) as the most influential factors in the case of risk perception. However, gender was reported to be main demographic factor in most of the past literatures. It was found that the emotional reaction of the investors is the result of cognitive, social, and clinical psychology (Loewenstein, Weber, Hsee, & Edward, 2001). Emotional reaction influences not only the financial decisions of the investors but also the related factors

in the concerned area; for instance, differences in the investment pattern of males and females are also a result of differences in their respective psychology. Economic crisis was found to be the most important situational factor. The COVID effect is the most recent example of an economic crisis. Such a crisis lowers the risk tolerance of a large segment of investors (Roszkowski, 2010). Therefore, an umbrella policy that could reduce the fear of financial loss among

the investors is needed. The stock exchanges should provide a larger window to enable the investors to sell and buy the equity shares. Information asymmetry influences different investors differently (Lion & Meertens, 2005). A risk avoider usually focuses more on worst outcomes. It was observed that knowledge of investors can be related with information asymmetry as the risk avoiders generally think that their lack of knowledge may result in losses. It was found that risk perception varies substantially between different content domains. Neurofinance, which is relatively a new concept, has also been regarded as an important determinant in the study. The major goals of neurofinance are to gain better understanding of financial markets by identifying some physiological traits affecting trading behavior and trading results, to associate these traits with trading results, and to develop methods, technology, and proper training to improve trading performance. Better understanding of risk perception by the individual investors will lead to better management of risk perception and effective handling of risk (Singh & Bhowal, 2008).

Efforts should be made to bring the people with high risk perception to a low risk perception category or train them to handle or manage a high-risk scenario. Once they are brought to the very low risk perception category or trained to handle and manage the high-risk scenario, then it will be easier for the government to promote equity investment culture amongst the people, and the same people will act as entrepreneurship-culture initiators and adaptors (Singh, 2011).

The study reviews the literature in respect of impact of risk perception on equity shares. It was found that portfolio choice, volume of investment, entrepreneurial success, and retirement planning are the impact of risk perception of the investors. Deb and Singh (2018) also found that risk perception and portfolio choices are interlinked. The lower the risk perception, the higher is the volume of investment as identified by Singh and Bhowal (2010b). Singh and Bhowal (2009c) have worked extensively on inculcating the entrepreneurial culture among people by motivating them to invest in equity shares. Some of the initiatives of the government of India such as giving tax concessions to the taxpayers for their investment in equity share fall in similar lines. With the introduction of the New Pension Scheme in India, the onus of a person's retirement planning falls on the individual, and the individual himself/herself

is responsible for the wealth to be accumulated at the time of his or her retirement. Therefore, a proper assessment of a person's risk perception is essential to have an effective retirement planning because a part of the contribution towards a retirement fund is invested in equity as well.

Thus, by understanding the risk perception of individual, policy makers can take steps to improve their risk perception for the better investment culture. There is also a need for imparting investment education that should focus on the youths, which will support youth entrepreneurial undertakings (Gozun & Rivera, 2017). Furthermore, there is a need for empowering resource stewardship and risk management skills at the household level, which requires a credible source of information. The policy makers should address this issue (Perez, Alarcon, & Umali, 2017).

SCOPE OF FUTURE RESEARCH

This study is based on the review of existing literature. In order to test the validity of the findings in a local context, an empirical study can be undertaken. Additionally, the empirical research to determine the equity-share-related risk perception is very limited and fragmented; thus, there is scope for more empirical research in the concerned area. More proficient research is needed to measure the relative importance of each factor affecting the equity-share-related risk perception among the investors. The identified factors should be investigated individually in future research; for instance, an empirical study could be conducted to measure the impact of demographic factors on equity-share-related risk perception. The identification of the relative importance of each would help in the categorization of the factors into the most influential and least influential factors. Such categorization would help in establishing the suitable approach to deal with the problem of risk perception among investors.

The authors faced some difficulties while identifying the impact of risk perception on investors' behavior because of the non availability of distinct literature on the topic. In the past literatures, various approaches, such as axiomatic, socio-cultural, emotional reaction, marketing mix, and psychometric approaches, were used to measure the risk perception. All the approaches have some advantages and disadvantages over other approaches. The study suggests the development of a new comprehensive approach to measure the risk

perception. Future research may try to apply more than one approach at the same time to measure the risk perception. Additionally, there is a need to redesign the analytical tools used to measure the risk perception. The identified analytical tools have been developed in different time dimensions. The dynamic nature of the stock market forces investors to behave differently in different market conditions. The dynamic nature of the stock market makes it difficult to analyze the investors' behavior using only a single old analytical tool. Therefore, the authors encourage researchers to develop a new hybrid analytical tool. Development of a hybrid analytical tool will help in identifying the investors' behavior both empirically and theoretically. Apart from this, a cross-sectional and longitudinal study can also be taken up as the risk perception about equity investment is dependent upon factors that are continuously changing.

As mentioned earlier, the literatures on measuring the equity-related risk perception among investors are limited; the study encourages future researchers to conduct empirical and review studies for different investment-related areas. The future research is needed to identify the factors affecting the risk perception among the investors towards high-volume investment in the stock exchange, portfolio management, portfolio diversification, initial public offering, etc. A similar kind of research can be undertaken for the investment decisions that involve low or nominal risk such as National Pension System (NPS), retirement planning, and mutual-funds-related investments.

The studies on risk perception reviewed in this paper are about the stock market as a whole. There can be a difference in the risk perception in respect of industry as well as in respect of company. There is a need to study risk perception for a specific industry as well as for a specific company, for which a specific tool needs to be designed. Investment in shares also depends upon the service quality of the intermediaries, which may also influence risk perception, and therefore, a study on perception towards the service quality as done by Singh and Choudhury (2017) is required.

The present study, like any other study, is no exception to the limitations. The study has included only published articles extracted from three electronic databases. However, the literatures extracted from Web of Science and Science Direct was limited, and therefore, lack of relevant literature on the topic might be a major issue. The study might have missed some

relevant research work, and thus, the identified matter and approaches are by no means comprehensive. The identified factors may not have the same impact on the investors belonging to different social and cultural backgrounds. Additionally, the identified factors have not been tested empirically, and therefore, the degree of impact was not considered in the study. Further, the moderating effect of the relationships between the variables has not been examined separately. The study encourages the researchers to consider empirical studies along with conceptual papers in any future review.

REFERENCES

- Agarwalla, D., Singh, R., & Choudhury, M. (2018). Investment preference for physical and Nonphysical form of gold: A study on Marwari businessmen in Guwahati City. *Pacific Business Review International*, 10(12), 85–91.
- Ali, A. (2011). Predicting individual investors' intention to invest: An experimental analysis of attitude as a mediator. *International Journal of Human and Social Sciences*, 6(1), 876–883.
- Barber, B., & Odean, T. (2001). Boys will be boys? Gender, overconfidence and common stock investment. *Quarterly Journal of Economics*, 116(1), 261–292.
- Baucells, M., & Rata, C. (2006). A survey study of factors influencing risk taking behavior in real world decisions under uncertainty. *Decision Analysis*, 3(3), 163–176.
- Bernstein, P. (1995). Risk as a history of ideas. *Financial Analysts Journal*, 51(1), 7.
- Berry, M., MacGregor, D., Slovic, P., & Evensky, H. (1999). Perception of financial risk: A survey study of advisors and planners. *Journal of Financial Planning*, 12 (8), 68–86.
- Bhattacharjee, J., & Singh, R. (2017). Awareness about equity investment among retail investors: Akaleidoscopic view. *Qualitative Research in Financial Markets*, 9(4), 310–324.
- Blais, A.-R., Betz, N., & Weber, E. (2002). A domain-specific risk-attitude scale: Measuring risk perceptions and risk behaviors. *Journal of Behavioral Decision Making*, 15(4), 263–290.
- Bordoloi, D., Singh, R., Bhattacharjee, J., & Bezborah, P. (2020). Assessing the awareness of Islamic law on equity investment in State of Assam, India. *Journal of Islamic Finance*, 9(1), 001–012.
- Broihanne, M. H., Merli, M., & Roger, P. (2014). Overconfidence, risk perception and risk taking behavior of finance professionals. *Finance Research Letters*, 11(2), 64–73.

- Byrne, K. (2005). How consumers evaluate risk in financial products? *Journal of Financial Service Marketing*, 10(1), 21.
- Caracota, M. D., & Mihalascu, R. (2009). The impact of investments in global financial crisis. *Economia. Seria Management*, 12(2), 19–25.
- Chang, M., D'Anna, G. W. I., & Wee, M. (2008). Does disclosure quality via investors relations affect information asymmetry? *Australian Journal of Management*, 33(2), 375–390.
- Chen, S., & Tsai, C. (2010). *Investment preference, risk perception and portfolio choices under different socio-economic status*. Chiayi, Taiwan: Department of Finance, Nan Hua University.
- Chira, I., & Thornton, B. (2008). Behavioral bias within the decision making process. *Journal of Business and Economics Research*, 6, 8–11.
- Cooley, P. (1977). A multidimensional analysis of institutional investor perception of risk. *The Journal of Finance*, 32(1), 67–78.
- Cooper, D. (2003). Psychology, risk and safety: Understanding how personality and perception can influence risk taking. *Professional Safety*, 39–46.
- Daniel, K. D., & Titman, S. (1999). Market efficiency in an irrational world. *Financial Analysts Journal*, 55(6), 28–40.
- Deb, S., & Singh, R. (2016). Impact of risk perception on investors towards their investment in mutual fund. *Pacific Business Review International*, 1(2), 16–23.
- Deb, S., & Singh, R. (2017). Influence of demographic and socio-economic variables on investors' risk perception towards mutual fund: A study on bank employees of Tripura. *Bank Parikrama*, 42(1 & 2), 94–116.
- Deb, S., & Singh, R. (2018). Risk perception dynamics of mutual fund investment decisions. *Iranian Journal of Management Studies*, 11(2), 407–426.
- Diacon, S. (2004). Investment risk perceptions. Do consumers and advisers agree? *The International Journal of Bank Marketing*, 22(3), 180–198.
- Douglas, M., & Wildavsky, A. B. (1982). *Risk and culture: An essay on the selection of technological and environmental dangers*. Berkeley, CA: University of California Press.
- Dubey, R., Gunasekaran, A., & Papadopoulos, T. (2017). Green supply chain management: Theoretical framework and further research directions. *Benchmarking: An International Journal*, 24(1), 184–218.
- Duxbury, D., & Summers, B. (2004). Financial risk perception. Are individuals variance averse or loss averse? *Economics Letters*, 84(1), 21–28.
- Edwards, A., Elwyn, G., & Mulley, A. (2002). Explaining risks: Turning numerical data into meaningful pictures. *Accounting Horizons*, 15(1), 49–70.
- Elmiger, G., Kim, S. S., & Berman, E. (2003). *Risk grade your investments: Measure your risk and create wealth*. Hoboken, NJ: John Wiley and Sons.
- Farrelly, G. E., & Reichenstein, W. (1984). Risk perception of institutional investors. *The Journal of Portfolio Management*, 10(4), 5–12.
- Finucane, L., M., Slovic, P., Mertz, C. K., Flynn, J., & Satterfield, T. A. (2000). Gender, race, perceived risk: The 'white male' effect. *Health, Risk, & Society*, 2(2), 159–172.
- Firer, C., Oliver, M. C., & Farrelly, G. (1986). Risk perception of individual vs. institutional investors: A comparison based on the Johannesburg Stock Exchange. *The Journal of Applied Business Research*, 5(4), 5–14.
- Fischer, D. E., & Jordan, R. J. (2006). *Security analysis and portfolio management*. New Delhi: Prentice Hall.
- Fischhoff, B., Slovic, P., & Lichtenstein, S. (1978). How safe is safe enough? A psychometric study of attitudes towards technological risks and benefits. *Policy Sciences*, 9, 127–179.
- Frydman, C., Barberis, N., Camerer, C., Bossaerts, P., & Rangel, A. (2013). Testing theories of investor behavior using neural data. *Journal of Finance*, 96(2), 907–946.
- Flynn, J., Slovic, P., & Mertz, C. (1994). Gender, race, and perception of environmental health risks. *Risk Analysis*, 14(4), 1101–1108.
- Gardner, M., & Steinberg, L. (2005). Peer influence on risk taking, risk preference and risky decision making in adolescence and adulthood: An experimental study. *Developmental Psychology*, 41(4), 625–635.
- Godding, A. E. (1975). Quantification of investors' perception of common stocks: Risk and return dimension. *The Journal of Finance*, 30(5), 1301–1316.
- Gozun, B. C., & Rivera, J. P. R. (2017). Role of education in encouraging youth employment and entrepreneurship. *DLSU Business & Economics Review*, 27(1), 72–88.
- Grable, J., & Joo, S. (1999). Financial help seeking behavior: Theory and implications. *Financial Counseling and Planning*, 10(1), 13–24.
- Grable, J., & Lytton, R. H. (1999). Financial risk tolerance revisited: The development of a risk assessment instrument. *Financial Services Review*, 8(3), 163–181.
- Gupta, S., Altay, N., & Luo, Z. (2019). Big data in humanitarian supply chain management: A review and further research directions. *Annals of Operations Research*, 283(1), 1153–1173.
- Harding, C., & Eiser, J. R. (1984). Characterizing the perceived benefits of some health issue. *Risk Analysis*, 4(2), 131–141.
- Has-seldine, J., & Diacon, S. (2007). Framing effects and risk perception: The effect of prior performance presentation

- format on investment fund choice. *Journal of Economics Psychology*, 28(1), 31–52.
- Hira, T. K., & Mugenda, O. (1999). The relationships between self worth and financial beliefs, behavior and satisfaction. *Journal of Family and Consumer Sciences*, 91(4), 76–82.
- Hodder, L., Koonce, L., & McAnally, M. (2001). SEC market risk disclosures: Implications for judgement and decision making. *Accounting Horizons*, 15(1), 49–70.
- Holtgrave, D., & Weber, E. U. (1993). Dimensions of risk perception for financial and health risks. *Risk Analysis*, 13, 553–558.
- Horschi, T. (1969). *Causes of delinquency*. Berkeley, CA: University of California Press.
- Hunjra, A. I., Azam, M., Niazi, G., Butt, B., Rehman, K., & Azam, R. (2011). Risk and return relationship in stock market and commodity prices: A comprehensive study of Pakistani markets. *World Applied Sciences Journal*, 13(3), 470–481.
- Iman, Z. (2011). Study of effectiveness models in optimal portfolio of shares. *Middle East Journal Scientific Research*, 10(2), 239–246.
- Jia, J., Dyer, J. S., & Butler, J. C. (1999). Measures of perceived risk. *Management Science*, 45(4), 519–532.
- Junkus, J. C., & Berry, T. C. (2010). The demographic profile of socially responsible investors. *Managerial Finance*, 36, 474–481.
- Jyothilingam, K., & Kannan, K. (2011). Investor attitude towards investment avenues: A study in Namakkal District. *International Journal of Innovative Research and Development*, 2(2), 57–68.
- Kahneman, D., & Tversky, A. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *The Journal of Risk and Uncertainty*, 5 (4), 297–323.
- Kalpan, S., & Grrick, J. B. (1981). Quantitative definition of risk. *Risk Analysis*, 1(1), 11–27.
- Karmakar, M. (2001). Investment behavior of household sectors: A study of a rural block in West Bengal. *Journal of Commerce*, 54(1), 1–2.
- Kasperson, R., Renn, O., Solvic, P., Brown, H., Emel, J., Goble, R., et al. (1988). The social amplification of risk: A conceptual framework. *Risk Analysis*, 8(2), 177–187.
- Klos, A., Weber, E., & Weber, M. (2005). Investment decisions and time horizon: Risk perception and risk behavior in repeated gambles. *Management Science*, 51(12), 1777–1790.
- Knetsch, J. L., Thaler, R. H., & Kahneman, D. (1990). Experimental tests of the endowment effects and the Coase Theorem. *The Journal of Political Economy*, 98(6), 1325–1348.
- Koonce, L., McAnally, M., & Mercer, M. (2005). How do investors judge the risk of financial items? *The Accounting Review*, 80(1), 221–241.
- Kuhnen, C. M., & Kuntson, B. (2011). The impact of affect on beliefs, preferences and financial decisions. *Journal of Financial and Quantitative Analysis*, 46, 605–626.
- Lascu, D. N., Babb, H. W., & Phillips, R. W. (1997). Gender and investment: The influence of gender on investment preferences and practices. *Managerial Finance*, 23(10), 69–83.
- Laughhunn, D. J., Payne, W., & Crum, R. (1981). Managerial risk perceptions for below target returns. *Management Science*, 26(12), 1238–1249.
- Lennart, S. (2002). The allegedly simple structure of experts' risk perception: An urban legend in risk research. *Science, Technology and Human Values*, 27(4), 443–459.
- Lichtenstein, S., Fischhoff, B., & Solvic, P. (1984). Modeling the societal impact of fatal accidents. *Management Science*, 30 (4), 464–538.
- Lion, R., & Meertens, R. M. (2005). Security or opportunity: The influence of risk-taking tendency on risk information preference. *Journal of Risk Research*, 8(4), 283–294.
- Loewenstein, G. F., Weber, E. U., Hsee, C. K., & Edward, W. (2001). Risk as feelings. *Psychological Bulletin*, 127, 267–286.
- Loibl, C., & Hira, T. K. (2007). New insights into advising femal clients on investment decisions. *Journal of Financial Planning*, 20(3), 68–75.
- Lopes, L. L. (1987). Between hope and fare: The psychology of risk. *Advances in Experimental Social Psychology*, 20, 255–295.
- Lu, C. W., Chen, T. K., & Liao, H. H. (2010). Information uncertainty, information asymmetry and corporate bond yield spreads. *Journal of Banking and Finance*, 34(9), 2265–2279.
- Luce, R. D., & Weber, E. U. (1986). An axiomatic theory of conjoint, expected risk. *Journal of Mathematical Psychology*, 30(2), 188–205.
- MacCrimmon, K. R., & Wehrung, D. A. (1990). Characteristics of risk taking executives. *Management Science*, 36(4), 422–435.
- Mahmood, I., Ahmad, H., Khan, A. Z., & Anjum, M. (2011). Behavioral implications of investors for investments in stock market. *European Journal of Social Sciences*, 20(2), 240–247.
- Majid, M. S. A. (2016). Dynamic interactions between the Islamic stock prices and macroeconomic variables: Evidence from Malaysia. *DLSU Business & Economics Review*, 26(1), 92–100.
- Milliman, R. A., & Weber, E. U. (1997). Perceived risk attitudes: Relating risk perception of risky choice. *Management Sciences*, 42(2), 123–144.
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D.G., & The PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA

- statement. *PLoS Med*, 6(7),e1000097. doi:10.1371/journal.pmed.1000097
- Morse, G. (2006, January). Decisions and desire. *Harvard Business Review*, 84 (1), 42.
- Noone, J. (2000). Cultural perspectives on contraception: A literature review. *Clinical Excellence for Nurse Practitioners*, 4, 336–340.
- Nosic, A., & Weber, M. (2010). How riskily do I invest? The role of risk attitudes, risk perceptions, and overconfidence. *Decision Analysis*, 7(3), 282–301.
- Nwezeaku, N. C., & Okpara, G. C. (2010). Stock market volatility and information asymmetry: Lessons from Nigeria. *Interdisciplinary Journal of Contemporary Research in Business*, 2(1), 67–79.
- Olsen, R. (1997). Investment risk: The expert's perspective. *Financial Analysts Journal*, 53(2), 62–66.
- Palmer, C. G. (1996). Risk perception: An empirical study of the relationship between world view and the risk construct. *Risk Analysis*, 16(5), 717–723.
- Panda, T. K. (2001). Entrepreneurial success and risk perception among small scale entrepreneurs of Eastern India. *Journal of Entrepreneurship*, 11(2), 173–190.
- Pellinen, A., Tormakangas, K. U., & Raijas, A. (2011). Measuring the financial capability of investors: A case of the customers of mutual funds in Finland. *International Journal of Bank Marketing*, 29(2), 107–133.
- Perez, J. A., Alarcon, D. C., & Umali, M. A. S. (2017). Determining the credit risk factors in accessing debt financing for entrepreneurial activities. *DLSU Business and Economics Review*, 27(1), 89–96.
- Pidgeon, N., Hood, C., Jones, D., Turner, B. A., & Gibson, R. (1992). *Risk perception*. London: The Royal Society.
- Prabhakaran, K., & Karthika, P. (2011). A study on risk perception and portfolio management of equity investors in Coimbatore City. *Journal of Management and Science*, 1(2), 1–13.
- Purkayastha, S. (2008). Investor profiling and investment planning: An empiric study. *The Icfaiian Journal of Management Research*, 7(12), 17–40.
- Raheja, S., & Dhiman, B. (2019). Relationship between behavioral biases and investment decisions: The mediating role of risk tolerance. *DLSU Business & Economics Review*, 29(1), 31–39.
- Rana, H. M., Murtaza, S., Noor, F., Rehman, K., & U-din, I. (2011). Effects of demographic factors on risky decision making behaviors. *European Journal of Social Sciences*, 25(3), 69–76.
- Rettinger, D. A., & Hastie, R. (2001). Content effects on decision making. *Organisational Behavior and Human Decision Processes*, 85(2), 336–359.
- Riaz, L., Hunjra, A., & Azam, R. (2012). Impact of psychological factors on investment decision making mediating by risk perception: A conceptual study. *Middle-East Journal of Scientific Research*, 12(6), 789–795.
- Ricciardi, V. (2004). *A risk perception primer: A narrative research review of the risk perception literature in behavioral accounting and behavioral finance*. New York: Golden Gate University.
- Roszkowski, M. J. (2010). Risk perception and risk tolerance changes attributable to the 2008 economic crisis: A subtle but critical difference. *Journal of Financial Service Professionals*, 64(4), 42–53.
- Sachsea, K., Jungermann, H., & Beltingb, J. M. (2012). Investment risk – the perspective of individual investors. *Journal of Economic Psychology*, 33, 437–447.
- Sarin, R. K., & Weber, M. (1993). Risk-value models. *European Journal of Operational Research*, 70(2), 135–149.
- Samsi, S. M., Yusof, Z., & Cheong, K. C. (2018). The effect of global financial crisis on ASEAN growth: Evidence from stock market analysis. *DLSU Business & Economics Review*, 28(1), 1–33.
- SEBI. (2015). *SEBI Investor Survey*. Mumbai: Security Exchange Board of India.
- Shavit, T., Lahav, E., & Rosenboim, M. (2016). Don't fare risk, learn about it: How familiarity reduces perceived risk. *Applied Economics Letters*, 23(15), 1069–1072.
- Sheeran, P., Harries, P., & Epton, T. (2014). Does heightening risk appraisals change people's intentions and behavior? A meta-analysis of experimental studies. *Psychological Bulletin*, 142(2), 511–554.
- Simon, H. A. (1955). A behavioral model of rational choice. *The Quarterly Journal of Economics*, 69(1), 99–118.
- Singh, R. (2011a). Equity investment culture and entrepreneurship-culture initiation and adaptation. *Pacific Business Review International*, 4(1), 66–71.
- Singh, R. (2011b). Overconfidence in financial decisions: A critical review. *IASMS Journal of Business Spectrum*, 4(2), 105–114.
- Singh, R. (2012). Risk perception of investors in initial public offer of shares: A psychometric study. *Asia Pacific Journal of Risk and Insurance*, 6(2), 1–5.
- Singh, R., & Bhattacharjee, D. (2010a). Equity investment decisions: Are demographic variables really significant? *Paradigm*, 14(1), 7–11.
- Singh, R., & Bhattacharjee, D. (2010b). Impact of demographic variables on indirect equity investment: An empirical study. *Indira Management Review*, 4(1), 4–11.
- Singh, R., & Bhattacharjee, J. (2019). Measuring equity share related risk perception of investors in economically backward regions. *Risks*, 7(1), 12.
- Singh, R., & Bhowal, A. (2008). Risk perception: The theoretical kaleidoscope. *Vanijya*, 18, 54–63.
- Singh, R., & Bhowal, A. (2009a). Risk perception dynamics and equity share investment behavior. *Indian Journal of Finance*, 3 (6), 23–30.

- Singh, R., & Bhowal, A. (2009b). Marketing mix driven measure of risk perception in respect of equity shares. *Pacific Business Review*, 2(2), 1–12.
- Singh, R., & Bhowal, A. (2009c). Developing entrepreneurial culture by inculcating the culture of equity investment. *Business Vision*, 5(1), 87–99.
- Singh, R., & Bhowal, A. (2010a). Risk perception of employees with respect to equity shares. *Journal of Behavioral Finance*, 11(3), 177–183.
- Singh, R. & Bhowal, A. (2010b). Risk perception and equity investment decisions of employees: A study of volume dimension. *Sinhghad Business Review*, 1(1), 1–5.
- Singh, R., & Bhowal, A. (2011). Development of marketing driven measures of risk perception. *The Journal of Risk Finance*, 12(2), 140–152.
- Singh, R., & Bhowal, A. (2012). Marketing dimension of equity related risk perception of employees: Own company's shares vs other company's shares. *Management Insight*, 6(2), 22–36.
- Singh, R., & Choudhury, M. (2017). Measuring customers' perception in bancassurance channel using psychometric scale. *DLSU Business & Economics Review*, 26(2), 67–86.
- Singh, R., Roy, S., & Pandiya, B. (2020). Antecedents of financial inclusion: Evidence from Tripura, India. *Indian Journal of Finance and Banking*, 4(2), 79–92.
- Slovic, P. (1987). Perception of risk. *Science*, 236(4799), 280–285.
- Slovic, P. (1993). Perceived risk. Trust and democracy. *Risk Analysis*, 13(6), 675–682.
- Slovic, P., Kahneman, D., & Tversky, A. (1984). Judgment under uncertainty: Heuristics and biases. *Journal of Forecasting*, 3(2), 235–239.
- Stenstrom, E., & Saad, G. (2011). Testosterone, financial risk-taking, and pathological gambling. *Journal of Neuroscience, Psychology, and Economics*, 4(4), 254–266.
- Sung, J., & Hanna, S. (1996). Factors related to risk tolerance. *Financial Counselling and Planning*, 7, 11–19.
- Tranfield, D., Denyer, D., & Smart, P. (2003). Towards a methodology for developing evidence-informed management knowledge by means of systematic review. *British Journal of Management*, 14, 207–222.
- Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty. *The Journal of Risk and Uncertainty*, 5(4), 297–323.
- Unser, M. (2000). Lower partial moments as measure of perceived risk: An experimental study. *Journal of Economic Psychology*, 21(3), 253–280.
- Veeramani, G., & Karthikeyan, M. (2014). An analytical study on risk perception and return for individual investment. *Asia Pacific Journal of Research*, 1(14), 4–13.
- Veld, C., & Veld-Merkoulova, Y. (2008). The risk perceptions of individual investors. *Journal of Economic Psychology*, 29(2), 226–252.
- Vlaev, I., Chater, N., & Stewart, N. (2009). Dimensionality of risk perception: Factors affecting consumer understanding and evaluation of financial risk. *Journal of Behavioral Finance*, 10(3), 158–181.
- Vrecko, D., Klos, A., & Langer, T. (2009). Impact of presentation format and self-reported risk aversion on revealed skewness preferences. *Decision Analysis*, 6(2), 57–74.
- Wang, X., Shi, K., & Fan, H. X. (2006). Psychological mechanisms of investors in Chinese stock market. *Journal of Economic Psychology*, 27(6), 762–780.
- Weber, E. U. (2001). Personality and risk taking. In N. J. Smelser and P. B. Baltes (Eds.), *International Encyclopedia of Social and Behavioral Sciences* (pp. 11274–11276), Amsterdam: Elsevier.
- Weber, E. U. (2003). *Who's afraid of a poor old-age? Risk perception in risk management decisions*. Philadelphia: Pension Research Council.
- Weber, E. U., Shafir, S., & Blais, A. R. (2004). Predicting risk sensitivity in humans and lower animals: risk as variance or coefficient of variation. *Psychological review*, 111(2), 430.
- Weingart, L., & Sitkin, S. (1995). Determinants of risky decision-making behaviour: A test of the mediating role of risk perceptions and propensity. *The Academy of Management Journal*, 38(6), 1573–1592.
- Weyman, A., & Kelly, C. (1999). *Risk perception and risk communication: A review of literature*. Sheffield, England: HSE Books.
- Wilde, G. (1994). *Target risk: Dealing with the danger of death, disease and damage in every decisions*. Toronto, Canada: PDE Publications.
- Yang, J., & Qiu, W. (2005). A measure of risk and a decision-making model based on expected utility and entropy. *European Journal of Operational Research*, 164, 792–799.