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Critical analysis of the relationship between gender and investment decision: Systematic Literature Review (SLR)

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Abstract

This conceptual paper aims to investigate the differences in perception towards investment and strategies based on gender through the study of past literature. Numerous articles were gathered from the Emerald Insight & Science Direct databases using the PRISMA framework, leading to 9 articles being narrowed down and thoroughly scrutinised. Resultant synthesis proved an overwhelming relationship between gender and investment decisions, with some exceptions. The studies found that factors like financial literacy, gender diversity, homophily, and other behavioural traits shape gender orientation toward financial decision-making. These findings would be helpful for various stakeholders like financial advisors, policymakers, and corporate boards to tailor their advice and offerings according to gender needs.

Keywords: Behavioural Finance; Gender Diversity; Investment decision; Risk tolerance; Homophily; Demography

1. Introduction

In financial decision-making, it has traditionally been held that investors or people in general are rational human beings who make sensible decisions. However, the various past events of unexplained market anomalies or crashes, such as the Tulip Bubble of the 1630s, the South Sea Company Bubble of 1711 to 1720, and the more recent Dotcom bubble of the late 1990s to 2000, to the 2008 financial crisis, have drilled holes into this line of thought. It has since been challenged and consequently controverted with the discovery of the groundbreaking paper "Prospect Theory: An Analysis of Decision under Risk" (Kahneman & Tversky,1979), leading to the development of a new theory known as Behavioural Finance. It is a field that integrates psychology and finance and has emerged to challenge this traditional view by demonstrating that human beings, as "homo sapiens," do not always make decisions in a purely rational manner.

Researchers have since discovered that various cognitive biases and emotional factors play a significant role in shaping financial decisions (Vaid & Chaudhary, 2022). Interestingly, a growing body of research has found that the impact of these behavioural biases on financial decision-making may differ based on gender (Sharma & Firoz, 2022). Men and women are found to exhibit distinct patterns in risk tolerance, investment preferences, and financial outcomes. As described by Bajtelsmit & Bernase (1996) and Jianakoplos & Bernasek (1998), among numerous studies that have explored the nuances of gender-specific investment behaviours, have revealed that women tend to exhibit greater absolute risk aversion than men. This is also supported by Baker et al. (2019) which reveals that males tend to be more confident than females in terms of their knowledge of the stock market and trading behaviour (Barber & Odean, 2002). There is the case of financial knowledge, where early research in this field highlighted the persistent gender gaps in financial literacy, with women, on average, performing worse than men on tests of financial knowledge and expressing

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less confidence in their financial skills (Hung et al. 2012). These gender-based differences in overconfidence carry the potential to lead to divergent investment strategies and outcomes (Baker et al. 2019). As inferred from above, these behavioural differences are not only rooted in psychological traits but are also influenced by varying levels of financial literacy and the presence of behavioural biases such as overconfidence, optimism, and loss aversion.

Despite the wealth of research in this area, there remains a need for a comprehensive synthesis of existing studies to provide a clearer understanding of how gender influences investment decisions. This systematic literature review aims to fill this gap by critically analysing and summarising the findings of multiple studies on the relationship between gender and investment decision-making. By examining a range of methodologies, metrics, and results, this review seeks to identify consistent patterns and highlight areas where further research is needed. The significance of this review lies in its potential to inform both academic research and practical applications in finance. Understanding gender-based differences in investment behaviour can help financial advisors tailor their strategies to better meet the needs of male and female investors, as pointed out by Kunnanatt & Emiline (2012). Additionally, it can guide policymakers in developing initiatives that promote financial literacy and equitable investment opportunities for all genders (Seguino, 2016). To achieve these objectives, this review systematically analyses a collection of studies that investigate the impact of gender on investment decisions. The studies included in this review employ diverse methodologies, ranging from survey-based research and experimental studies to empirical analysis of historical data and psychological assessments, and synthesise the results of these studies. This review aims to provide a comprehensive overview of how gender influences investment behaviour and outcomes.

In the following sections, the systematic literature review methodology has been detailed, including the criteria for selecting studies, article inclusion processes, and analytical techniques used. Subsequently, the results have been presented and discussed in the context of existing literature, followed by a conclusion summarising the findings and suggesting future research directions.

2. Methodology

2.1. Review Protocol

Given our topic and the various frameworks available like the Cochrane Handbook for Systematic Literature Reviews of Interventions, GRADE, EPPI-Centre, and JBI Campbell Collaboration Centre, the research was carried out using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Moher et al., 2009) as it ensures a systematic, transparent and reproducible approach, at the same time also minimising bias, strengthening comprehensiveness and structured analysis of the study (Susnjak, 2023; Wicaksono et al. 2022; Harie et al. 2023). According to Carrera and Iglesias (2015)

- The methodology begins by defining clear research questions,
- Then identifying explicit inclusion-exclusion criteria,
- It then aims to assess large swathes of connected literature to make the review as comprehensive and scientific as possible.

Regarding the database, researchers have used Emerald Insight and Science Direct, both well-known indexed databases, to obtain the required data for the review. The rationality behind relying on Emerald is that Emerald, an international publisher, presides over an extensive portfolio of journals and books, thus providing scholars with a wide array of resources and research material for scholars (Ogungbeni et al. 2018). Also, the information provided is authentic and relevant, providing strong integrity to the research. The platform has a user-friendly interface that simplifies the navigation process and allows users to find necessary information without extensive training requirements (Ansari & Raza, 2019). Emerald offers a unique programming language called Emerald that combines aspects of traditional object-oriented and abstract data-type languages, thus providing a flexible and strongly typed system (Raj et al. 1991). Along with the above-given advantages, this database also provides a host of other benefits. On the other hand, the rationale for selecting the ScienceDirect database lies in its extensive coverage of peer-reviewed journals and books across various disciplines, user-friendly interface, and advanced search capabilities Thus, it has an extensive database, diverse subjects, advanced search features, and personalized experience (Harnegie, 2013), giving us comprehensive content access and enhanced tools.

2.2. Research Question Formulation

The research question was formulated using the PICO (T) method, an extension of the original PICO method, which stands for population/ problem, intervention/ exposure, comparison/ comparator, outcome, and adding “T” meaning

time. The interest of research lies in assessing how or whether gender influences investment decisions here, the "retail investor" i.e. male and female, will form our population, the "gender/gender-specific biases" variable will be the intervention, the comparison group will be " gender biases in financial (investment) decision making" studies, as different kinds of literature would be studied in detail to measure the effect of gender on investment, where data permits, the resultant outcome would be "influence of gender on investment decision" i.e. the investment strategies are chosen. Lastly, the time frame is set out for the relationship between gender and investment decisions in the last 10 years. Therefore, keeping the above information in mind, the research question is, "How has gender influenced investment decision-making for retail investors for the past 10 years?"

2.3. Developing a Search Strategy

To map the existing literature using a search strategy, given the research question and criteria for search, certain keywords were identified and established through the method of the study of the keyword(s) used in past similar studies, searching in the dictionary and using a lot of permutations and combinations and amalgamating a lot of search terms, Boolean operators and phrase search operator- a search string suitable for our particular respective databases was finally devised, which was:-

2.3.1. Emerald Insight

("gender bias" OR "gender differences" OR "sex differences" OR "gender-specific" OR "cognitive bias") AND ("investment decisions" OR "investment behaviour" OR "financial decisions" OR "investment choices" OR "risk-taking") AND ("retail investors" OR "individual investors" OR "personal investors")

2.3.2. Science Direct

("gender bias" OR "gender difference" OR "gender-specific") AND ("investment decision" OR "investment behavior") AND ("retail investors" OR "individual investors")

Resulted in the retrieval of A total of 537 papers (Emerald Insight – 393; Science Direct – 144)

2.4. Screening

A thorough screening of literature was done using various criteria, like a year of publication -2014 to 2024, language – English; subject area (for Science direct) -Economics, econometrics, and finance; psychology; social sciences; business management and accounting; decision sciences, journal type – indexed journal, articles and review articles, Unit of analysis – gender, gender behavior and database access to the content. Of the 537 papers identified screened, 57 were excluded as they did not belong to our designed time frame, the remaining 480 were further reduced to 396 as only articles of the said number were found, the remainder were: a) Emerald Insight: early-site articles 48, Book part 21 and case study 1 were excluded; b) Science Direct: 5 review articles and 94 research articles out of 113 were included.

Using the last filter- open access articles- the total number was finally brought down to 53, as the remainder of the 343 articles were beyond the access of both databases. The included leftovers were extracted, and after proper study of the papers, by first analysing the article titles, 23 papers were excluded. The sifted 30 remnant articles were screened manually through analysis of the abstract, resulting in the expulsion of 21 more papers.

2.5. Eligibility

Of the 21 papers, 13 were taken out as many behavioural biases were discussed, but in most cases, gender seemed to be missing. Two papers penned by Nyakurukwa & Seetharam (2022) and Choi (2024), were excluded as the weight of gender as a factor seemed weak. Two more papers written by Giudici et al. (2020) and Cicchiello et al. (2021) were also dismissed, despite focusing on gender and investment decisions, because it is seen through the lens of an entrepreneur, not an investor. An article titled "LGBTQ and finance" (Brahma et al. 2023) was found to be novel; however, our paper, being limited to the gender construct(s) of male/female, had to be excluded as its scope did not align with our research focus. Another paper using Prospect Theory to gauge decision-making under uncertainty (Cortés et al. 2023) seemed promising, but had to be cut out due to a misalignment of objectives. The paper, titled "Disposition, effect, demographics, and risk-taking", authored by Oreng et al. (2021), was eliminated as gender (demographics) seemed weakly related, being just a control variable with no explicit investigation into its impact on investment decision-making. The research paper by Fong (2020) titled "Taking control: Active investment choice in Singapore's nationally defined contribution scheme" did align with our research question, but since it only touches upon gender as a factor and does not investigate the accompanying behavioural biases related to it, it had to be omitted.

After the above analysis and sorting of papers using varied criteria, a total of 9 papers were finally included for data extraction and synthesis.

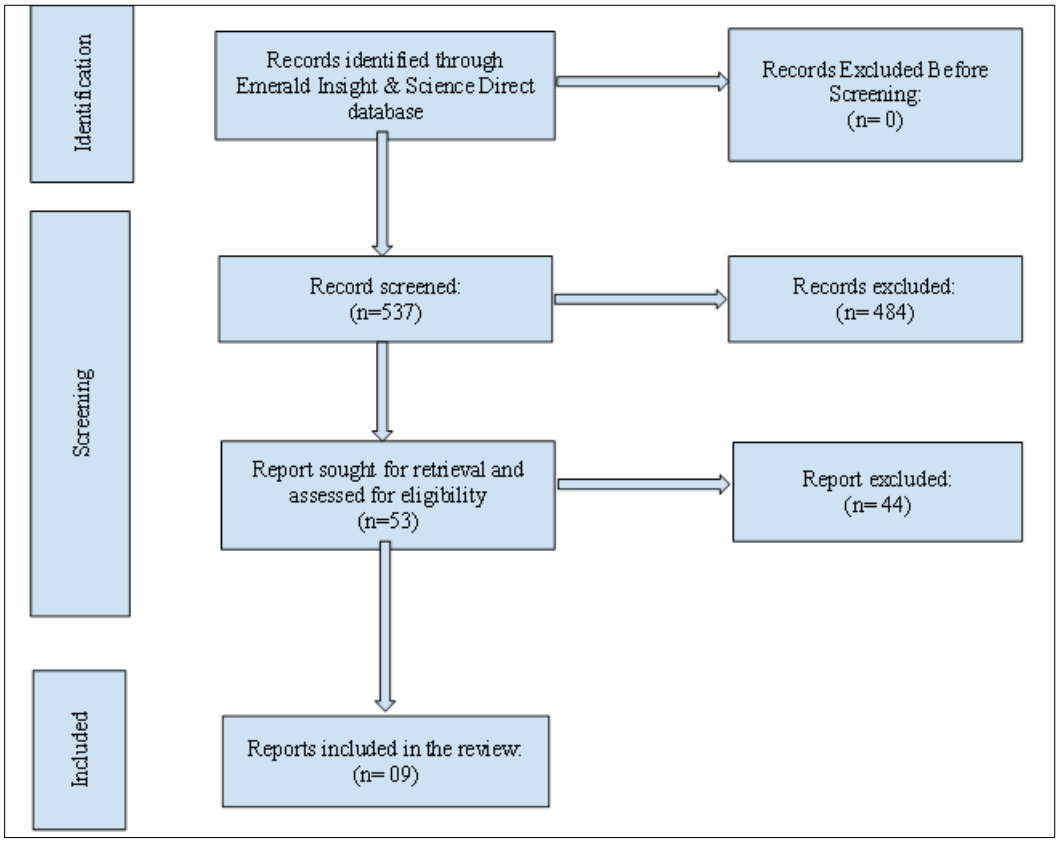

Figure 1 Systematic review process including number of papers reviewed in each phase (Moher et al. 2009)

3. Literature Analysis

A thematic analysis of the synthesis of findings from nine studies revealed a complex and multifaceted interplay between gender and investment decisions. The collected articles span diverse geography sectors and methodologies, but they collectively provide insight into how gender-based behavioural biases influence financial decision-making, risk tolerance, and investment outcomes. Through that, we have discovered several themes, with gender being either the overarching theme or a strong motif, with differing results.

Several papers emphasise the role of financial literacy in shaping investment behaviours, and the effect varies by gender. The paper by Rasool and Ullah (2020) highlights how inadequate financial literacy can aggravate behavioural biases like overconfidence or herding, especially among male investors, which leads to suboptimal investment decisions; it is also to be noted that male investors have greater financial literacy than their female counterparts. They claim that investors with higher financial literacy are less affected by behavioural biases. Adil et al. (2022) argue, contrary to general thought, that both genders are affected by herding and disposition effect, the impact being stronger on the female; this is contradicted by Shandu & Alagidede, (2024), who maintain that the disposition effect affects the male gender more, along with the risk aversion bias. For females, increased literacy plays a pivotal role in reducing the effect of biases, except for herding. Males, on the other hand, do not seem to be affected. On the other hand, Aren and Zengin (2016) imply that higher financial literacy leads to diversified and riskier investment portfolios, while lower financial literacy results in safer investments. Reflecting on risk perception, aversion, and other biases with respect to gender, Van Dolder & Vandenbroucke (2024) reveal what has already been discussed- female investors tend to have higher loss aversion in general, thereby reflecting greater caution in investment decisions. This is further supported by Saivasan & Lokhande (2022), who imply that men tend to exhibit overconfidence, which may lead to overtrading, and women are affected by loss aversion, anchoring bias and familiarity bias, which may lead to suboptimal portfolio choices.

Contrastingly, Bodur et al. (2023), expanding on risk perception and aversion, provide an interesting insight, whereby it is stated that men are 17.6% less likely to exhibit high tendencies compared to women, age is positively associated

with risk-taking behavior, married individuals have a 35% higher chance of indulging in high-risk behavior. They elaborate that socioeconomic factors have a higher bearing than gender. stating that a higher proportion of women with college degrees and lower incomes contribute to risk-taking behaviour, independent of gender.

A stronger play of behavioral bias and gender dynamics is seen in the paper, titled "Disposition effect on South African investor teams" by Shandu & Alagidede (2024) whom as mentioned earlier, which argues that investor teams with few women (a study conducted through the nationwide online based trading game: "JSE University Challenge" at universities in South Africa), exhibit strong disposition effect (although at the same time, accepting that women too are affected by it, it is mitigated due to higher loss aversion bias) thereby arguing for gender diversity as they balance out the men.

These behavioral and gender dynamics, while rocking between behaving in sync with the general theory normally and running contrary to it at other times, when subjected to periods of volatility, like during the times of global financial crisis of 2008, as studied by Lippi & Rossi (2020) - tend to behave conservatively irrespective of gender or socio-economic status. Men, along with wealthier individuals, tone down their tolerance towards risk. It is also to be noted that the appetite for risk decreases with risk. Bodur et al. (2023) added to this by conveying that socioeconomic factors sometimes overpower gender differences as women, controlling for education and income, are more likely to take risks.

Van Dolder & Vandenbroucke (2024), while maintaining gender-bias conformity- stating that women being cautious employ defensive investment strategies in contrast to men who are inclined toward dynamic/very dynamic investment strategies, have also added to this by expanding that age, education along with gender affects investment behavior, highlighting with the confirmation that education is positively correlated with loss aversion. They also introduce the difference between loss aversion and risk aversion concepts, expounding that they are distinct yet complementary in understanding investor preference/behaviour and should be measured independently and incorporated into the investment advisory process.

Lastly, we observe a novel topic- homophily theory used by Cicchiello & Kazemikhasragh, (2021) as their basis for investigating the differences in gender behaviour towards investment. Here, it is observed that women investors tend to prefer female ventures; on the other hand, male investors tend to invest in either male-led or mixed-gender teams/ventures. It becomes important to emphasise that male-led entrepreneurial teams receive higher financial backing. They highlight the need for policies for promoting gender diversity among both investors and entrepreneurs, which could "democratise" access to finance.

4. Conclusion

The collective findings from the literature emphasise the need to understand and address gender-based biases and disparities in investment decision-making. Both genders seem to have differences in risk tolerance, behavioural biases, and financial literacy (with some exceptions), consequently driving contrasting investment behaviours among them. While men tend to exhibit more risk tolerance and are prone to biases like overconfidence or disposition effect, women are more conservative and risk-averse in their approach (Van Dolder & Vandenbroucke , 2024), (Saivasan & Lokhande, 2022), often yielding to better long-term outcomes, particularly in market volatility. Other behavioural biases like disposition effect and overconfidence are also more pronounced among men, with homophily being one of the few exceptions. Now, while gender plays a significant role in shaping investment decisions, it is not the sole factor. Behavioural biases such as overconfidence, loss aversion, and herding affect both genders differently, often moderated by financial literacy and socioeconomic factors like education and income. Gender diversity within investor teams appears to mitigate certain biases. Moreover, societal and structural factors, such as access to education and the homophily effect, also influence investment patterns. Understanding such nuanced distances is crucial for developing strategies to improve financial inclusion and decision-making.

Future research should continue to explore the intersections of gender, behavioural biases, and socioeconomic variables. At the same time, policymakers should focus on promoting gender diversity and financial literacy to create a more equitable investment landscape.

Recommendation

- **Promoting financial literacy, especially amongst women:** Women, in general, seemed to be disadvantaged in terms of financial education, which is also described as the cause of underperforming portfolios. To address this gender gap in investment participation and decision-making, there must be a strong commitment to enhance financial literacy, particularly amongst women. Governments, educational institutions and financial

advisers should focus on developing targeted financial education programs, especially for women, enabling them to make informed investment decisions.

- **Promotion of gender diversity:** The literature shows that certain Activities like investment have a masculine affinity to them and naturally encourage more male participation, reducing the little or scant female voice in the crowd, which negatively intensifies the disposition effect. With the addition of more female members. In terms of both investors and entrepreneurs, this can be balanced out.
- **Designing gender-sensitive investment tools:** Financial advisors and portfolio managers should consider gender-specific biases and advise clients accordingly. Tools that account for women's greater risk aversion and financial conservatism could help them achieve optimal returns without sacrificing their comfort with risk levels.
- **Government policy:** To encourage financial inclusion and more equitable participation in the financial markets. The government should create various programs, workshops, seminars, and financial literacy/education drives that would enable and empower women to participate more actively in our investment market, and since they are roughly half our population and form a considerable part and it would be a positive addition to the market capitalization of various companies

Future Research Directions

- **Longitudinal Studies:** The majority of the papers (barring three) analysed were found to be assessed using cross-sectional data-i.e., focusing on specific points of time. Thus, future research should consider more longitudinal studies to track how gender-based financial behaviours evolve over time, in different life stages, and across different economic cycles.
- **Cross-cultural and cross-country comparisons:** Culture forms a permeable part of gender identity. It has been observed that gender norms, societal rules, and financial systems vary significantly across different cultures, and these factors may moderate how gender impacts investment behaviour. Therefore, there is a need for studies that compare gender-based financial behaviours across different cultural, geographic, and societal contexts to understand the universal versus context-specific aspects of these behaviours.
- **Impact of Technological Advancements:** Gender disparity along with levels of education, in terms of knowledge and access to FinTech or financial technology, is very visible, especially in the underdeveloped and developing economies. Researchers should explore how gender influences the adoption and utilisation of Fintech platforms and Robo Advisors, and assess whether these technologies reduce gender disparities and investment outcomes. Future studies could also analyse whether men and women derive similar levels of trust and confidence from digital financial tools as compared to traditional human advisors.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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