

***Financial Risk Management Strategies for Multinational Corporations:
Hedging Against Currency and Interest Rate Fluctuations***

**Strategi Manajemen Risiko Keuangan untuk Perusahaan Multinasional:
Lindung Nilai terhadap Fluktuasi Mata Uang dan Suku Bunga**

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ABSTRACT

This research explores the application of behavioral finance principles in financial risk management strategies adopted by multinational companies, with a focus on hedging against currency and interest rate fluctuations. Using a systematic literature review (SLR) approach, this study analyzes existing literature to identify how cognitive biases influence hedging decisions and how behavioral finance principles are applied in this context. The main findings show that biases such as overconfidence, loss aversion significantly influence hedging decisions, which often lead to suboptimal decisions. Additionally, the application of these principles varies by industry sector and geographic region. This research identifies the need for more comprehensive theoretical models and analytical tools to address cognitive biases, and suggests further empirical research to quantify the impact of psychological biases on long-term financial performance. The conclusions of this study emphasize the importance of integrating psychological factors in risk management strategies to increase the effectiveness and financial resilience of multinational companies.

Keywords: Behavioral Finance, Financial Risk Management, Hedging Strategy, Multinational Companies

ABSTRAK

Penelitian ini mengeksplorasi penerapan prinsip-prinsip behavioral finance dalam strategi manajemen risiko keuangan yang diadopsi oleh perusahaan multinasional, dengan fokus pada hedging terhadap fluktuasi mata uang dan suku bunga. Menggunakan pendekatan systematic literature review (SLR), studi ini menganalisis literatur yang ada untuk mengidentifikasi bagaimana bias kognitif mempengaruhi keputusan hedging dan bagaimana prinsip behavioral finance diterapkan dalam konteks ini. Temuan utama menunjukkan bahwa bias seperti overconfidence, loss aversion secara signifikan mempengaruhi keputusan hedging, yang seringkali mengarah pada keputusan yang suboptimal. Selain itu, penerapan prinsip-prinsip ini bervariasi berdasarkan sektor industri dan wilayah geografis. Penelitian ini mengidentifikasi kebutuhan akan model teoritis yang lebih komprehensif dan alat analitik untuk mengatasi bias kognitif, serta menyarankan penelitian empiris lanjutan untuk mengukur dampak bias psikologis terhadap kinerja keuangan jangka panjang. Kesimpulan dari studi ini menekankan pentingnya mengintegrasikan faktor psikologis dalam strategi manajemen risiko untuk meningkatkan efektivitas dan ketahanan finansial perusahaan multinasional.

Kata Kunci: Behavioral Finance, Manajemen Risiko Keuangan, Strategi Hedging, Perusahaan Multinasional

1. Introduction

Multinational companies (MNCs) face significant financial risks due to fluctuations in currency exchange rates and interest rates, which can negatively impact profitability, cash flow and overall shareholder value. To reduce these risks, MNCs often use hedging strategies, including financial derivative instruments such as forward contracts, futures, options, and swaps. These instruments are designed to protect companies from potential losses arising from adverse movements in exchange rates and interest rates, so as to stabilize financial performance in various economic conditions (Trang, 2018;

Campello et al., 2011; Fisch & Puh, 2021). The importance of effective hedging strategies is increasingly underscored by various studies showing that MNCs that actively implement hedging can reduce their exposure to financial bankruptcy risk and improve their investment decision making (Campello et al., 2011; Dewenter et al., 2018). For example, the use of financial derivatives has been shown to significantly influence the risk profile of MNCs, enabling them to manage currency and interest rate risk exposures effectively (Trang, 2018; Fisch & Puh, 2021). Moreover, the integration of these strategies into corporate finance practices is critical to maintaining competitive advantage in global markets, especially when MNCs face varying economic conditions in different countries (Dewenter et al., 2018). In addition to traditional financial strategies, the role of behavioral finance is increasingly recognized in the context of risk management. Behavioral finance argues that financial decisions are not only based on rational calculations, but are also influenced by psychological factors, including cognitive biases and emotional stress (Campello et al., 2011; Aabo et al., 2012). This perspective is particularly relevant for MNCs, as decision makers may exhibit biases that influence their perceptions of risk and the hedging behavior they choose. For example, managers may overestimate their ability to predict currency movements, ultimately leading to suboptimal hedging decisions (Aabo et al., 2012).

Furthermore, the dynamic nature of exchange rate fluctuations requires MNCs to remain flexible in their hedging approaches. Research shows that companies often adjust their hedging strategies in response to changing market conditions and geopolitical risks, which can further complicate the decision-making process (Ortiz et al., 2023; Park et al., 2013). This flexibility is very important for MNCs to be able to maintain financial stability and take advantage of opportunities presented by exchange rate fluctuations (Fisch & Puh, 2021; Park et al., 2013). In conclusion, the integration of traditional hedging strategies with insights from behavioral finance provides a comprehensive framework for MNCs in managing financial risks associated with currency and interest rate fluctuations. By understanding the quantitative and qualitative aspects of risk management, MNCs can increase their resilience to global financial uncertainty.

In the context of multinational companies (MNCs) operating in an increasingly integrated global economy, exposure to financial risks, especially those arising from currency and interest rate fluctuations, is much higher compared to companies operating solely in domestic markets. These risks can significantly affect a company's financial stability and threaten the sustainability of its operations. Exchange rate fluctuations can cause substantial changes in cash flows, especially for MNCs that have assets or liabilities denominated in foreign currencies, while interest rate volatility can affect financing costs, especially for companies with large variable-rate debt (Aggarwal & Harper, 2010). To reduce this financial risk, MNCs often use various hedging strategies. Hedging functions as a protective measure against unwanted market fluctuations, using derivative instruments or other financial strategies. Commonly used instruments include forward contracts, which allow companies to lock in exchange rates for future transactions; futures contracts, which are standard agreements to buy or sell assets at a predetermined price; options, which give the right to buy or sell an asset at a certain price; and swaps, which facilitate the exchange of cash flows between two parties, typically converting a fixed interest rate to a floating interest rate (Wong, 2016; Broll et al., 2014; McGowan, 2011). This strategy has been proven to effectively reduce financial risk, although the decision-making process regarding hedging is not always rational or based on mathematical calculations. Behavioral finance provides insight into how psychological factors, such as loss aversion, can influence these decisions, leading companies to tend to prioritize loss avoidance over potential profits (Bodnaruk & Simonov, 2016; Lamptey & Marsidi, 2020).

The intersection between behavioral finance and risk management in MNCs is an interesting area for further exploration. Loss aversion, which refers to the tendency of individuals and companies to focus more on potential losses compared to equivalent gains, can significantly shape risk management strategies. This psychological bias may cause MNCs to adopt hedging strategies that are inconsistent with traditional financial theory, which generally advocates a more measured approach based on maximizing expected utility (Bodnaruk & Simonov, 2016; Lamptey & Marsidi, 2020). Understanding how these behavioral aspects influence the development and implementation of hedging strategies can provide valuable insights into the financial decision-making processes of multinational companies (Broll et al., 2014; Bodnaruk & Simonov, 2016). In conclusion, as MNCs face the complexity of the global economy, the relationship between financial risk and behavioral finance becomes increasingly relevant. The use of hedging strategies is essential to manage the risks associated with currency and interest rate fluctuations, but the influence of psychological factors on these decisions cannot be ignored. Future research should aim to deepen understanding of how behavioral finance influences multinational

companies' risk management practices, which will ultimately contribute to more effective financial strategies in the face of economic uncertainty.

Although much literature has discussed hedging strategies in risk management of multinational companies, the majority of the research focuses on technical and financial aspects, such as the use of derivative instruments to reduce exposure to currency and interest rate fluctuations. These studies tend to assume that financial decisions are taken rationally, based on traditional models that ignore non-rational factors. This approach reflects the view of classical financial theory, which assumes that economic actors always act optimally to maximize profits and minimize risks. However, the behavioral finance approach, which has developed rapidly in recent decades, shows that financial decision-making behavior is not always rational. Factors such as cognitive biases, emotions, and risk perception can influence financial decisions, including decisions related to risk management. On the other hand, the application of behavioral finance principles in managing corporate risk, especially in the context of multinational companies, has not been explored in depth. Research that specifically examines how multinational companies integrate behavioral finance principles in hedging strategies to overcome currency and interest rate risks is still very limited. Although there are some studies that explore psychological factors in financial decision making, most of them focus on individual investors or stock markets, and not on risk management in a global corporate context. In addition, there has been no systematic study that explores how loss aversion, overconfidence, and other psychological factors influence the choice of hedging instruments used by MNCs. Therefore, this research will fill the gap in the literature by providing a more comprehensive understanding of how behavioral finance principles are applied in decision making related to risk management by multinational companies. Specifically, this research will focus on the influence of behavioral factors on the development and implementation of hedging strategies to deal with currency and interest rate fluctuations.

The main objective of this research is to provide deeper insight into how multinational companies integrate behavioral finance principles into their financial risk management strategies, especially in dealing with currency and interest rate fluctuations. This research aims to explore the extent to which psychological and behavioral factors, such as loss aversion, overconfidence, and herding behavior, influence decision making in selecting hedging instruments and in overall financial risk management. Thus, this research is expected to explain the relationship between companies' financial behavior and the hedging strategies they develop. This research also seeks to highlight how behavioral aspects, often overlooked in traditional financial studies, can play an important role in risk management decisions at the global corporate level. The research question in this study focuses on how multinational companies (MNCs) integrate behavioral finance principles in developing risk management strategies related to currency and interest rate fluctuations. Specifically, this study aims to explore how psychological factors influence strategic decisions in hedging, as well as how the use of behavioral finance principles can help MNCs formulate more effective risk management strategies in dealing with market volatility.

2. Methodology

This section explains the research method used in this study, namely the approach Systematic Literature Review (SLR). This method was chosen to provide a comprehensive and structured analysis of the existing literature on principle integration behavioral finance in risk management strategies of multinational companies. SLR ensures that this study is based on a systematic search, selection and analysis process, so that it can identify significant research gaps and provides a strong theoretical foundation for future research.

2.1 Research Design

This research uses a Systematic Literature Review (SLR) as the main approach to examine how multinational companies integrate behavioral finance principles in developing risk management strategies, especially in overcoming the risk of currency and interest rate fluctuations. SLR was chosen because it allows researchers to systematically identify, evaluate, and synthesize a wide range of research relevant to this topic, with the aim of providing a thorough and evidence-based review. The SLR process begins by defining a clear research question, followed by a comprehensive literature search using various credible academic databases, such as Scopus, Web of Science, and Google Scholar. The literature sought includes studies related to hedging, currency risk, interest rate risk, and the application of behavioral finance principles in the context of multinational companies. Keywords used in the search

included: "currency risk management," "interest rate hedging," "behavioral finance," "multinational corporations," and "financial risk strategies."

Thereafter, inclusive and exclusive criteria were set to ensure only relevant and high-quality literature was included in the analysis. Inclusive criteria include articles published in accredited international journals, articles discussing the application of hedging and behavioral finance, as well as articles that specifically highlight multinational companies. Meanwhile, studies that are descriptive in nature, opinions without an empirical basis, or are not relevant to the topic of risk management of multinational companies are excluded from this analysis.

After the selection process, relevant data from each study were extracted and synthesized. The aim of this process is to identify common patterns, reveal differences in the approaches used, and highlight the contribution of each study to our understanding of how behavioral finance principles are applied in risk management strategies in multinational companies.

2.2 Data Sources and Search Strategy

To ensure that the literature analyzed in this study is relevant and of high quality, several leading academic databases were used as data sources. The selected databases include Scopus, Web of Science, JSTOR, Google Scholar, as well as several other specialized financial journal sources recognized in the fields of finance and risk management. This database was chosen because of its credibility in providing access to research articles that have been published in reputable international journals, including the Scopus Q1 journal which is the standard in this research.

The literature search strategy was carried out using a combination of keywords related to this research topic. These keywords were chosen strategically to capture all the main aspects related to risk management of multinational companies and the application of behavioral finance principles in hedging strategies. Keywords used include:

- "Multinational corporations"
- "Behavioral finance"
- "Currency risk"
- "Interest rate risk"
- "Hedging strategies"
- "Currency risk management"
- "Interest rate hedging"
- "Financial risk management"
- "Behavioral biases in risk management"

Each keyword is combined using Boolean operators such as AND and OR to expand or narrow the search according to needs. For example, a search might use phrases like "multinational corporations AND hedging strategies AND currency risk" or "behavioral finance OR overconfidence AND interest rate risk." The search process also included searching literature that had been widely cited by other researchers as well as studies that were considered to have a significant impact in this field. Articles published in the last 20 years (2004-2024) are the main focus to capture recent developments in the literature. However, several older seminal articles considered important are also included to provide historical context.

2.3 Inclusion and Exclusion Criteria

In the literature selection process, inclusive and exclusive criteria are used to ensure that only articles that are relevant and have a significant contribution to the research question are analyzed.

Inclusive Criteria:

- Articles published in recognized international journals and indexed by Scopus, Web of Science, or other leading academic databases.
- Empirical study examining the application of hedging strategies to currency and interest rate fluctuations in multinational companies.
- Articles that combine or explore the application of behavioral finance principles, such as loss aversion, overconfidence, and herding behavior, in financial risk management.
- Literature that specifically discusses risk management in multinational companies.
- Publications published in the last two decades (2004-2024), with a focus on the latest developments in this field.

Exclusive Criteria:

- Descriptive articles that have no empirical basis or that only contain opinions without strong data analysis.

- Studies that discuss risk management in general without focusing on currency and interest rate risks.
- Articles that examine the financial behavior of individuals or investors, not in the context of multinational companies.
- Studies that do not use clear research methods or do not provide data that are relevant to the focus of this research.
- Literature in languages other than English, unless translations are available in trusted sources.

With these criteria, research can ensure that the analysis carried out is truly based on strong evidence and relevant to the research questions asked, as well as contributing to the development of theory and practice in risk management of multinational companies.

2.4 Data Extraction and Synthesis

The data extraction process in this research was carried out systematically and aimed to identify important information from each selected article. After relevant articles were selected based on inclusion and exclusion criteria, data from these articles was extracted to understand how multinational companies apply behavioral finance principles in currency and interest rate risk management strategies. Data extraction is focused on several key elements:

1. Research Objectives – Understand the main focus of each study, especially how previous research examines the application of behavioral finance in the context of financial risk management.
2. Research Methods – Identify methods used in previous studies, including empirical analysis, case studies, or theoretical approaches.
3. Behavioral Finance Factors – Extraction of information about applied behavioral finance principles, such as loss aversion, overconfidence, mental accounting, and herding behavior.
4. Hedging Instruments Used – Identify specific hedging instruments or strategies used by multinational companies to deal with currency and interest rate fluctuations.
5. Key Results and Findings – Distill research results regarding the effectiveness of risk management strategies and how behavioral biases influence risk management decisions.
6. Study Limitations – Note the limitations of each study to understand where the study can contribute to filling existing gaps.

This extraction process is assisted by reference management software and qualitative tools for managing literature and organizing data from various articles. The extracted data is categorized based on main themes such as hedging strategies, behavioral finance, and multinational corporations.

After data was extracted, a data synthesis process was carried out to identify emerging themes, trends in the literature, as well as the main contributions of each study. This synthesis was carried out using a narrative synthesis approach, which involves several steps:

1. Grouping Based on Main Themes: The analyzed articles are grouped based on main themes, such as:
 - Application of Behavioral Finance: A study that examines the influence of financial behavior in hedging decision making.
 - Currency Risk Management: Literature that focuses on strategies for dealing with currency risk.
 - Interest Rate Risk Management: Articles discussing interest rate risk management strategies.
 - Empirical and Theoretical Studies: Group research based on the methodology used, whether it is an empirical or theoretical study.
2. Trend Identification: This process involves tracking key trends in the literature, including recent developments in the use of behavioral finance principles by multinational companies. Examples of trends that might be identified are the increased use of behavioral approaches in risk management decision making or changes in the use of certain hedging instruments.
3. Contribution Evaluation: At this stage, each study is evaluated to understand its main contribution to the understanding of how multinational companies manage financial risk using behavioral finance principles. Studies that make a major contribution in explaining the effects of behavioral biases on hedging strategies are noted and analyzed in more depth.
4. Narrative Synthesis: Once themes, trends, and contributions are identified, the researcher constructs a narrative synthesis that explains the relationships between the various studies and how each study contributes to the overall literature. This synthesis helps to formulate

comprehensive conclusions and details the contribution of this research to the development of financial risk management theory and practice in multinational companies.

With this approach, it is hoped that this research can provide an in-depth and evidence-based analysis of how multinational companies use behavioral finance principles in their risk management strategies, as well as making a significant contribution to the financial risk management literature.

3. Results

This section presents an overview of the studies reviewed in this research. A total of 45 articles were selected and analyzed based on previously established inclusion and exclusion criteria. The selected articles varied based on the year of publication, the journal in which the article was published, and the methodology used. This analysis provides insight into how multinational companies use behavioral finance principles in hedging strategies against currency and interest rate risks.

The articles analyzed were published between 2004 and 2024, with an increase in the number of studies since 2010. This reflects an increasing interest in the use of behavioral finance principles in risk management. The number of articles published by year period is as follows:

Tabel 1. Year of Publication

Year Period	Number of Articles	Percentage (%)
2004 - 2010	8	18%
2011 - 2015	12	27%
2016 - 2020	15	33%
2021 - 2024	10	22%

Source: Processed Data, 2024

From the data above, it can be seen that research on the use of behavioral finance in financial risk management of multinational companies developed significantly after 2010, in line with the increasing challenges of currency and interest rate fluctuations in global markets.

Publication Journal

The selected articles come from various leading international journals in the field of finance and risk management. Some of the main journals that are sources for studies are as follows: Most of the articles analyzed come from journals that focus on risk management of multinational companies and the application of behavioral finance in financial decisions.

Tabel 2. Publication Journal

Journal Name	Number of Articles
Journal of Corporate Finance	9
Journal of International Financial Management & Accounting	7
The Review of Financial Studies	6
Journal of Risk and Financial Management	5
Global Finance Journal	5
Others (Scopus, Web of Science)	13

Source: Processed Data, 2024

Methodology Used

From a methodological point of view, the studies analyzed used different approaches. The majority of articles use empirical methods with quantitative analysis, while some studies adopt case study methods and theoretical studies.

Tabel 3. Methodology Used

Research methodology	Number of Articles	Percentage (%)
Empirical (Quantitative Analysis)	28	62%
Case study	10	22%
Theoretical Study	7	16%

Source: Processed Data, 2024

The dominant empirical approach shows that research related to hedging and behavioral finance in multinational companies tends to use quantitative data to measure strategy effectiveness. Case studies provide in-depth insight into a particular company's experience, while theoretical studies help build a broader conceptual framework.

3.2 Key Themes and Findings

This section summarizes the main findings from the literature review regarding implementation behavioral finance in strategy hedging carried out by multinational companies. The results show that cognitive biases, e.g overconfidence and loss aversion, plays an important role in risk management decisions. In addition, there are significant variations in the application of principles of behavioral finance by industry sector and geographic region.

3.2.1. Cognitive Biases and Their Impact on Hedging Strategies

Cognitive biases play a significant role in influencing the hedging strategies used by multinational companies, especially through the mechanisms of overconfidence and aversion to losses. Overconfidence bias arises when financial managers show excessive confidence in their ability to predict market movements. This often leads to suboptimal decision making, where managers may ignore necessary hedging strategies or engage in riskier financial practices, in the belief that they can accurately predict market changes. Research shows that overconfidence is closely related to risk propensity, which can exacerbate the impact of this bias, resulting in adverse financial impacts for companies (Grežo, 2020; Ranaweera & Kawshala, 2022; Michailova et al., 2017). For example, research by Michailova et al. (2017) show that overconfidence can harm investor wealth, indicating broader impacts on economic stability and growth. Additionally, Ranaweera & Kawshala's (2022) study reinforces the idea that overconfidence significantly influences investment decisions, showing its widespread impact across various markets.

On the other hand, aversion bias towards losses causes financial managers to prioritize loss avoidance over pursuing potential profits. This bias often results in overly conservative hedging strategies, where managers focus more on protecting against large losses than on taking advantage of favorable market conditions. The tendency to avoid losses can limit a company's ability to engage in profitable hedging practices, ultimately limiting the company's financial flexibility and growth potential (Yoga, 2019; Alam & Gupta, 2018). Alam & Gupta's (2018) research supports this view, showing that hedging strategies can increase company value, especially when managers are able to balance risk and reward effectively. Additionally, the interaction between aversion to losses and overconfidence can create a complex decision-making environment, where managers' fear of losses can cause them to reject profitable hedging opportunities due to overconfidence in their predictive abilities (Metawa et al., 2019)

In conclusion, cognitive biases such as overconfidence and aversion to losses play an important role in shaping the hedging strategies of multinational companies. These biases can lead to suboptimal financial decisions, either by encouraging excessive risk taking or by encouraging an overly cautious approach to risk management. Understanding these biases is critical to developing more effective hedging strategies that align with actual market conditions and an organization's financial goals.

The following table shows the role of cognitive biases in hedging strategy decisions:

Tabel 4. Cognitive biases in Hedging Strategy Decisions

Cognitive Bias	Description	Impact on Hedging Strategies
Overconfidence	Excessive confidence in predicting market fluctuations	Greater risk taking, decreased use of hedging

Cognitive Bias	Description	Impact on Hedging Strategies
Loss Aversion	More afraid of losing then gaining	Conservative strategy, focused on protecting against losses

Source: Processed Data, 2024

3.2.2. Variations by Industry Sector and Geographic Region

The implementation of hedging strategies by multinational companies is strongly influenced by two main factors: sector industry and geographical conditions. In the manufacturing sector, companies tend to be conservative due to the volatility of raw material prices which are sensitive to exchange rate fluctuations. In contrast, in the technology sector, companies are more flexible and innovative in using derivative instruments to manage risk, thanks to a greater tolerance for uncertainty.

From a geographic perspective, companies operating in regions with low economic stability, such as Latin America and Southeast Asia, tend to adopt tighter hedging strategies due to higher economic risks. Meanwhile, companies in developed countries with economies Stable economies, such as North America and Western Europe, tend not to see the need to implement hedging aggressively.

Table 5 : Comparison of Hedging Strategies Based on Industrial and Geographic Sectors

Factor	Manufacturing Sector	Technology Sector	Region with a Stable Economy	Regions with Unstable Economics
Hedging Approach	Conservative	Flexible and Innovative	Less aggressive	Very aggressive
Main Reason	Volatility of raw material prices and exchange rate fluctuations	More tolerant of risk and the use of complex derivatives	Supportive economic and currency stability	High inflation rate, unstable monetary policy
Instruments Used	Forward contracts, options, futures	Financial derivatives, such as swaps, options, and futures	Occasional financial derivatives, more focus on other strategies	Forward contracts, futures, opsi
Main Motivation for Hedging	Avoidance of financial difficulties	Protection against market volatility	Low risk management due to economic stability	Protection against currency and inflation risks
Corporate Financial Influence	Increase competitiveness and avoid bankruptcy	Increase financial flexibility and growth	Stabilize financial operations	Maintaining profitability and business sustainability

Source: Processed Data, 2024

Based on the table above, the application of hedging strategies in various industrial sectors and geographic regions shows significant differences. In the manufacturing sector, companies tend to be more conservative in dealing with risk, especially due to the volatility of raw material prices which are often influenced by exchange rate fluctuations. Commonly used instruments such as forward contracts and options aim to avoid financial difficulties. Meanwhile, in the technology sector, companies tend to be more innovative and flexible in risk management, using various derivative instruments such as swaps and options to protect themselves from market volatility. From a geographic perspective, companies operating in regions with stable economies, such as North America and Western Europe, typically do not implement aggressive hedging strategies due to calmer macroeconomic conditions. In contrast, in regions with unstable economies, such as Latin America and Southeast Asia, companies are more aggressive in hedging to protect themselves from higher risks, such as inflation and uncertain monetary policy. These differences reflect how industry factors and geographic conditions play a role in determining a company's risk management strategy.

Implications of the Findings

It is increasingly recognized that multinational companies' financial risk management decisions are influenced not only by quantitative metrics, but also by cognitive biases and the broader market context. This complex approach requires companies to adapt their hedging strategies to take into account sector-specific dynamics, geographic factors, as well as an understanding of the psychological factors that influence financial decision making. The interaction between financial literacy, cognitive biases, and risk tolerance plays an important role in shaping these decisions.

Research shows that financial literacy has a significant influence on investment decisions. Individuals with higher financial literacy tend to behave more financially wisely and make more informed investment choices (Iqbal et al., 2023; Potrich & Vieira, 2018; Seraj et al., 2022). This relationship is increasingly complex due to cognitive biases such as overconfidence and herding behavior, which can lead to less than optimal financial decisions (Kusev et al., 2017; Xu, 2023). For example, overconfident investors often underestimate risks, while following-the-crowd behavior can exacerbate market volatility, ultimately affecting multinational companies' risk management strategies (Kusev et al., 2017; Xu, 2023).

Furthermore, the geographic and sectoral context in which a multinational company operates also influences its risk management strategy. Different regions may exhibit different levels of financial literacy and risk tolerance among their investors, which in turn may influence how companies hedge against currency and interest rate fluctuations (Murhadi, 2023; Pangaribuan, 2023). A deep understanding of these contextual factors is essential for multinational companies to develop effective financial strategies, which can not only reduce risks, but also align with the behavioral trends of their stakeholders.

The literature shows that by recognizing the influence of human behavior on financial risk management, multinational companies can improve their strategies for managing currency and interest rate risks. This includes comprehensive analysis of quantitative data as well as qualitative insights into investor behavior, enabling companies to make more informed decisions, appropriate to the complexity of the financial landscape ("International Financial Markets of the Future: Technological Innovations and Their Impact on the Global Financial System", 2023 ; Widagdo & Sa'diyah, 2023). In conclusion, the integration of cognitive and behavioral insights into financial risk management can significantly improve the effectiveness of multinational companies' hedging strategies. By considering the interactions between financial literacy, cognitive biases, and market context, companies can better address the challenges presented by currency and interest rate fluctuations.

3.3 Role of Behavioral Finance in Risk Management

This section explains how the principles of behavioral finance significantly influence the risk management strategies implemented by multinational companies. The main focus is how decisions are made hedging influenced by psychological factors faced by company management.

3.3.1 Behavioral Finance Principles and Their Influence on Hedging Strategies

Behavioral finance integrates psychological insights into financial decision making, revealing how cognitive biases significantly influence the hedging strategies implemented by multinational companies. This intersection between psychology and finance highlights that decisions are not only based on quantitative data, but are also influenced by various biases, such as overconfidence and loss aversion, which can lead to suboptimal risk management practices. Cognitive biases, particularly overconfidence, play an important role in shaping hedging decisions. Overconfident managers often overestimate their ability to predict market movements, which can lead to a reluctance to use hedging instruments. This tendency may increase exposure to market volatility, as such managers may choose riskier strategies in the belief that they can face uncertainty without adequate protection (Malmendier & Tate, 2005). Research shows that overconfidence can change corporate investment decisions, where managers tend to overinvest when they have abundant internal funds, but at the same time reduce investment when external funding is needed (Malmendier & Tate, 2005). This behavior reflects a broader pattern in which overconfidence undermines rational decision making, especially in volatile markets. In addition, loss aversion bias also plays a role in determining the manager's approach to hedging. This bias drives managers to prioritize protecting assets from potential losses over seeking profit maximization. As a result, companies may adopt conservative hedging strategies, such as purchasing insurance or entering into forward contracts, to protect themselves from large losses, even though such strategies may not be economically profitable (Pramita, 2023; Ahmed et al., 2022). This tendency to avoid losses can lead to

misallocation of resources, where firms engage in hedging practices that are not aligned with their risk-reward objectives (Ahmed et al., 2022).

Furthermore, psychological factors such as market sentiment and social influences also complicate hedging decisions. Managers often react to prevailing market sentiment, which can influence their risk perception and lead to irrational decision making. For example, during periods of economic uncertainty, widespread negative sentiment may encourage managers to adopt overly aggressive hedging strategies, even though historical data suggests that the actual risks may be minimal (Kaban, 2024; Parveen et al., 2021). In addition, external pressure from shareholders or business partners may force companies to adopt certain hedging strategies in order to maintain public trust or meet stakeholder expectations, rather than based on sound financial reasons (Oliver & Mefteh, 2010). These social influences can exacerbate the effects of cognitive biases, ultimately leading to decisions that prioritize image over optimal financial outcomes. In conclusion, behavioral finance principles reveal the complex interactions between psychological factors and hedging strategies in multinational companies. Cognitive biases such as overconfidence and loss aversion, as well as external pressures, significantly shape managerial decisions, often leading to suboptimal risk management practices. Understanding these influences is critical to developing more effective hedging strategies that align with the financial goals and psychological realities of decision makers.

3.3.2. Implementation of Behavioral Finance Principles in Hedging Strategies

The application of behavioral finance principles in hedging strategies is critical for multinational companies looking to improve their risk management practices. This approach involves several key steps that leverage insights from behavioral finance to improve the decision-making process.

1. **Education and Training:** One of the fundamental steps in integrating behavioral finance into a hedging strategy is through manager education and training. By providing training on cognitive biases and their impact on decision making, organizations can reduce the negative impact of these biases. Research shows that financial literacy is associated with increased financial management behavior, which indicates that educational programs can improve decision-making abilities (Korriku, 2023). In addition, understanding cognitive biases can lead to more informed choices in hedging strategies, as managers become aware of the biases they have and how these can influence their decisions (Dhakal & Lamsal, 2023; Khan, 2023).
2. **Application of Calculated Decision Making Models:** The next step involves using a decision-making model that integrates elements of behavioral finance in risk analysis. These models can analyze how cognitive biases and market sentiment influence hedging decisions. Previous research emphasizes that cognitive biases greatly influence investment decision making, which can also be applied in hedging strategies (Dhungana et al., 2022). By integrating behavioral insights into risk assessment models, companies can develop more rational and effective hedging strategies, which take into account psychological factors that influence market behavior (Primayudha, 2023). This approach not only increases the rationality of decisions, but also adapts them to the dynamics of ever-changing market conditions.
3. **Strategy Evaluation and Adjustment:** Regular evaluation of hedging strategies is essential to ensure their effectiveness in the face of changing cognitive biases and risk perceptions. Continuous assessment allows companies to adjust strategies based on empirical evidence and evolving market dynamics. Research has shown that cognitive biases can lead to systematic deviations from rational decision making, underscoring the importance of regular strategy reviews (Sharma & Sarma, 2022; Campbell et al., 2017). By evaluating the impact of hedging strategies on financial performance, organizations can make the necessary adjustments to remain competitive and responsive to market changes (Erol, 2023; Srivastava et al., 2019).

In conclusion, integrating behavioral finance principles into a hedging strategy involves a structured approach, including education, model implementation, and ongoing evaluation. This comprehensive strategy not only improves decision making, but also aligns hedging practices with the psychological realities of market participants.

Implications of Findings

The principles of behavioral finance provide important insights into how psychological factors can influence hedging decisions in multinational companies. By understanding and overcoming cognitive biases such as overconfidence and loss aversion, as well as the psychological impact of market sentiment and social pressure, companies can formulate more effective and rational hedging strategies. Implementing these principles in managerial practice can not only improve risk management but also improve the company's overall financial performance.

This knowledge offers an important contribution to the literature on risk management and hedging strategies, and provides practical guidance for multinational companies in facing increasingly complex global financial challenges.

4. Discussion

This section discusses the implications of the findings as well as the theoretical and practical contributions of this research, especially in relation to how multinational companies integrate behavioral finance principles in the development of currency and interest rate risk management strategies.

4.1 Theoretical Implications

This research makes a significant contribution to risk management and behavioral finance theory by offering a new perspective on how psychological factors influence the hedging strategies implemented by multinational companies. These findings expand understanding of decision making in the context of risk management, with a focus on the integration of behavioral finance principles in the development of risk strategies.

1. Contribution to Risk Management Theory

This research enriches risk management theory by revealing how cognitive biases influence hedging decisions in multinational companies. Cognitive biases such as overconfidence and loss aversion identified in this study not only influence decisions related to managing currency and interest rate risks, but also change the way companies assess and manage risk overall. These findings suggest that hedging decisions are often influenced by psychological factors beyond mathematical models or traditional risk analysis, challenging the assumption that risk decisions are entirely rational and data-based.

2. Contribution to Behavioral Finance

From a behavioral finance perspective, the results of this research strengthen the theory that managerial decisions in risk management are not always rational and can be influenced by psychological bias. These findings expand understanding of how biases such as overconfidence and loss aversion influence hedging strategies, and provide new insights into how behavioral finance principles can be integrated into risk management theory and practice. This highlights the importance of accounting for psychological factors in risk management models, and suggests that a better understanding of cognitive biases can improve the effectiveness of hedging strategies.

3. Expanding Understanding of Decision Making

These findings expand understanding of decision making in risk management in multinational companies by incorporating a behavioral finance perspective. Using behavioral finance principles to understand how managers make decisions regarding risk can help in formulating more effective hedging strategies. By understanding cognitive biases and their impact, companies can design more appropriate approaches to managing currency and interest rate risks, as well as optimize their hedging strategies.

4. Implications for Risk Management Theory Development

This research also contributes to the development of risk management theory by showing that psychological factors can influence the decision-making process more than previously thought. This leads to the need for revisions or adjustments in existing risk models to accommodate psychological factors in risk analysis and hedging strategies. This research encourages academics and practitioners to include elements of behavioral finance in more complex and realistic risk models.

Thus, this research not only provides new insights into how multinational companies integrate behavioral finance principles in their risk management strategies, but also opens up pathways for further research in the development of risk management and behavioral finance theories. This contribution is

important for academic and practical developments in the field of global risk management and provides guidance for companies in formulating more effective and informed risk strategies.

4.2 Practical Implications

The findings of this research offer various practical implications for multinational companies in improving the effectiveness of risk management, especially by considering behavioral factors that influence hedging decisions. Integrating behavioral finance principles into risk management strategies can provide competitive advantages and increase a company's financial resilience in complex global markets. Here are some practical implications and recommendations for financial managers:

1. Increase Awareness and Understanding of Cognitive Biases

Cognitive Biases in Decision Making:

- Companies must be aware that such cognitive biases overconfidence, loss aversion can influence hedging decisions and overall risk management strategies. This bias often leads to suboptimal decisions, such as excessive risk aversion or investment decisions that are too bold.

Training and Education:

- Organizing training programs and workshops for financial managers on cognitive biases and the psychological effects in decision making can help increase awareness and reduce the negative impact of these biases. This training should include techniques for recognizing and overcoming bias, as well as strategies for making more rational decisions.

2. Implementation of a More Informed Hedging Strategy

Psychological Analysis in Decision Making:

- Financial managers must include psychological analysis in the risk decision-making process. This can be done by identifying how cognitive biases influence risk perception and choosing hedging strategies that are more appropriate to market conditions and the company's situation.

Integrated Decision Models:

- Developing and using decision models that integrate behavioral finance factors can help in formulating more effective hedging strategies. These models must consider psychological aspects that influence decisions, as well as quantitative data and traditional risk analysis.

3. Strategy adjustments based on evaluation and feedback

Periodic Evaluation:

- Companies must carry out regular evaluations of hedging strategies and their impact on financial performance. This evaluation should include an analysis of the impact of cognitive biases and other psychological factors that influence hedging decisions. With regular evaluation, companies can adjust their strategies to address changing market conditions and the dynamics of managerial behavior.

Feedback and Adaptation:

- Implement a feedback system that allows managers to assess the effectiveness of their hedging strategies and identify potential cognitive biases influencing decisions. This feedback can be used to adjust and improve hedging strategies on an ongoing basis.

4. Development and Use of Analytical Tools and Technology

Behavioral Finance Analytics Tools:

- Develop or use analytical tools designed to identify and measure cognitive biases in financial decisions. This technology can help in making more data-based decisions and reduce the influence of psychological bias.

Technology for Simulation and Scenario Planning:

- Using technology to carry out risk simulations and scenario planning that includes psychological factors. This simulation can help in understanding how cognitive biases can influence decision outcomes and formulate more adaptive and responsive hedging strategies.

5. Recommendations for Financial Managers

Consultation and Collaboration:

- Work with behavioral finance experts and risk consultants to gain additional insight into how cognitive biases can influence hedging decisions. This collaboration can help in formulating a more holistic and integrated strategy.

Internal Policy Development:

- Establish internal policies that encourage transparency and objectivity in risk decision making. This policy should include procedures for identifying and addressing cognitive biases, as well as mechanisms for ensuring that hedging decisions are based on thorough and rational analysis.

By implementing the above recommendations, multinational companies can increase the effectiveness of their risk management strategies and optimize hedging decisions. Integrating behavioral finance principles into managerial processes not only increases financial resilience, but also allows companies to better adapt to the challenges of ever-changing global markets.

4.3 Limitations and Future Research

Research Limitations

This research, although making an important contribution to the understanding of how behavioral finance principles influence risk management strategies, has several limitations that need to be noted:

1. Limitations in Literature Coverage

- **Geographical and Sectoral Limitations:** This study relies on literature available in leading academic databases, but may not cover the entire global or sector-specific literature. Some research may not be published in indexed international journals or cannot be reached through the databases used. Therefore, the scope of this research may be less representative of all types of multinational companies or certain industries.
- **Reliance on Available Studies:** This research is limited to studies that have been published and are available in the selected databases. These studies may have publication bias, in which positive or significant results are more likely to be published than negative or nonsignificant results. This may influence the conclusions drawn from the literature analysis.

2. Bias in Study Selection

- **Selection Bias:** The process of selecting studies for this systematic review may be influenced by selection bias, such as a preference to select articles with a particular methodology or results that are more in line with the research hypothesis. This bias can affect the representativeness and generalizability of research findings.
- **Methodological Limitations of the Study:** Many of the studies reviewed may use different methodologies in analyzing the application of behavioral finance principles in hedging strategies. These methodological differences may affect the consistency of results and conclusions that can be drawn from the literature review.

Areas for Further Research

To complete and expand understanding of how behavioral finance principles influence risk management strategies, further research could focus on the following areas:

1. Empirical Exploration of the Impact of Cognitive Bias

- **Case Studies and Empirical Data:** Conduct case studies and empirical data analysis to measure the direct impact of cognitive biases on company financial performance in the long term. This research could involve collecting data from multinational companies that implement various hedging strategies and analyzing how cognitive biases influence the outcomes of those strategies.
- **Measuring Strategy Effectiveness:** Examining how cognitive biases affect the effectiveness of hedging strategies in real practice. This research would include longitudinal analysis to evaluate the long-term impact of psychological biases on financial performance and corporate stability.

2. Cross-Industry and Regional Research

- **Sector and Regional Differences:** Investigate how behavioral finance principles are applied in different contexts, including varying industry sectors and different geographic regions. This research can help in understanding whether there are significant differences in the application and impact of cognitive biases on hedging strategies across industries and countries.
- **Local Adaptation:** Analyze how companies in various countries adapt behavioral finance principles in their hedging strategies, and how local cultural and economic factors influence decision making.

3. Development of New Theoretical and Practical Models

- **A Comprehensive Behavioral Finance Model:** Develop a more comprehensive theoretical model that integrates behavioral finance principles with risk management theory. This model must be able to explain the interaction between psychological factors and hedging decisions in more detail.

- **Practical Implementation:** Create practical guidance and tools to help financial managers identify and overcome cognitive biases. This research can produce useful instruments to improve risk decision making in multinational companies.

4. Technology and Analytical Tools

- **New Technology Development:** Investigate how new technologies, such as artificial intelligence and big data analytics, can be used to identify and overcome cognitive biases in hedging decisions. This research can develop better analytical tools to measure and mitigate the influence of psychological bias.

By addressing these limitations and exploring further research areas, academics and practitioners can gain deeper insight into how behavioral finance principles influence risk management strategies and how these strategies can be improved to achieve more effective and efficient outcomes.

5. Conclusion

5.1 Summary of Findings

This research has provided an in-depth understanding of the application of behavioral finance principles in the risk management strategies of multinational companies, especially in the context of hedging against currency and interest rate fluctuations. The main findings of this literature review can be summarized as follows:

1. **The Influence of Cognitive Bias on Hedging Decisions:** Research shows that cognitive biases such as overconfidence, loss aversion have a significant impact on hedging decisions taken by multinational companies. These biases often lead to suboptimal decisions, both in terms of excessive risk aversion and inappropriate risk taking.
2. **Variations in the Application of Behavioral Finance:** The findings show that the application of behavioral finance principles in hedging strategies varies depending on the industry sector and geographic region. For example, companies in more volatile sectors or countries with high economic uncertainty may be more susceptible to psychological biases in hedging decisions.
3. **Integration of Behavioral Finance Principles in Hedging Strategies:** Multinational companies that successfully integrate behavioral finance principles into their risk management strategies demonstrate increased effectiveness in managing currency and interest rate risks. This includes the use of decision models that consider psychological factors as well as training and analytical tools to identify and overcome cognitive biases.
4. **Limitations and Areas of Further Research:** This study identified several limitations, including limited literature coverage and study selection bias. Areas for continued research include empirical exploration of the impact of cognitive biases on long-term financial performance, analysis across industries and regions, and the development of new theoretical models and analytical tools.

5.2 Concluding Remarks

The conclusions of this study emphasize the importance of understanding the role of psychological factors in financial risk management. The principles of behavioral finance provide valuable insight into how cognitive biases can influence hedging decisions and risk management strategies in multinational companies.

Understanding the influence of psychological biases is not only important for increasing the effectiveness of hedging strategies, but also for building more robust and adaptive risk management systems. Financial managers need to be aware of how psychological factors can influence their decisions and implement approaches that can mitigate the negative impact of cognitive biases.

In conclusion, this research emphasizes the need for a more holistic approach in the development of risk management strategies, which is not only based on quantitative analysis and market data, but also takes into account the psychological aspects of decision making. By paying attention to and integrating behavioral finance principles, multinational companies can increase their financial resilience and be more effective in dealing with global market uncertainty.

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