

How Cognitive Bias Shapes Gambling Behaviour and Consumer Vulnerability

Michael Mncedisi Willie 

Correspondence regarding this article should be addressed to:

* Michael Mncedisi Willie, Council for Medical Schemes, Pretoria, South Africa,

✉ m.willie@medicalschemes.co.za

This article is available online via the following issue link:

<https://doi.org/10.64420/ijcp.v3i2>

How to Cite this Article:

Willie, M. M. (2026). How Cognitive Bias Shapes Gambling Behaviour and Consumer Vulnerability. *International Journal of Counseling and Psychotherapy*, 3(2), 151-160. <https://doi.org/10.64420/ijcp.v3i2.521>

SCROLL DOWN TO READ THIS ARTICLE



Academia Edu Cendekia Indonesia (AEDUCIA), as the publisher, makes every effort to ensure the accuracy of all information (the "Content") contained in its publications. However, we make no representations or warranties regarding the accuracy, completeness, or suitability of the Content for any purpose. Any opinions and views expressed in this publication are solely those of the authors and do not reflect the views or endorsement of AEDUCIA. The accuracy of the Content should not be relied upon without independent verification using primary sources. AEDUCIA shall not be liable for any losses, actions, claims, proceedings, demands, costs, expenses, damages, or other liabilities, whether direct or indirect, arising from the use of the Content.

International Journal of Counseling and Psychotherapy (IJCP) is published by AEDUCIA and complies with the [Principles of Transparency and Best Practice in Scholarly Publishing](#) in Scholarly Publishing at all stages of the publication process. IJCP may include links to external websites operated by third parties. These links are provided solely for the dissemination of scholarly knowledge in the fields of counseling and psychotherapy. AEDUCIA does not assume responsibility for the content or accuracy of information on external websites.

Article Information

Copyright holder:

© Willie, M. M. (2026)

First Publication Right:

International Journal of Counseling and Psychotherapy

Article info:

DOI: <https://doi.org/10.64420/ijcp.v3i2.521>

Word Count: 6227

Publisher's Note:

The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of AEDUCIA and/or the editor(s). AEDUCIA and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.

This Article is licensed under the: [CC BY-SA 4.0](#)

Publication details, including instructions for authors and subscription information, are available at:

<https://ojs.aeducia.org/index.php/ijcp/about>





Review Article

Read Online: <https://doi.org/10.64420/ijcp.v3i2.521>

Open Access

How Cognitive Bias Shapes Gambling Behaviour and Consumer Vulnerability

Michael Mncedisi Willie

Council for Medical Schemes, Pretoria, South Africa

ARTICLE HISTORY

Submitted: March 8, 2026
Revised: July 21, 2026
Accepted: July 27, 2026
Published: August 30, 2026

KEYWORDS

Cognitive bias;
Digital marketing;
Gambling behaviour;
Consumer vulnerability;
Mental health;

ABSTRACT

Background: The rapid expansion of digital gambling platforms significantly amplifies consumer vulnerability and gambling related harm, yet interdisciplinary literature synthesizing cognitive distortions, AI driven marketing personalization, and regulatory governance gaps remains limited. **Objective:** This study aims to synthesize empirical and theoretical evidence on how cognitive biases shape gambling behavior and consumer vulnerability across psychological, technological, socioeconomic, and regulatory dimensions. **Methods:** A qualitative literature review combining narrative and scoping review designs was conducted, examining 37 eligible studies selected via the PRISMA framework and analyzed using thematic synthesis. **Results:** The findings demonstrate that cognitive biases, including the illusion of control, overconfidence bias, gambler's fallacy, and heuristic thinking, interact with AI driven marketing personalization to reinforce persistent high-risk betting. These dynamics disproportionately harm vulnerable populations, culminating in acute psychological distress, severe debt accumulation, and broader socioeconomic instability exacerbated by cross border regulatory deficits. **Conclusion:** Mitigating digital gambling harm requires an integrated framework combining ethical AI governance, transparent marketing standards, public health interventions, and robust regulatory enforcement. **Originality/Value:** This review article advances scientific knowledge in the fields of behavioral economics, consumer psychology, and public health by synthesizing the evolving literature regarding cognitive biases and predictive digital marketing that has remained underexplored. It maps theoretical and methodological gaps while serving as a strategic reference for regulatory bodies and policymakers in formulating responsible gambling frameworks.

1. INTRODUCTION

The rapid proliferation of gambling across both offline and online environments has emerged as a pressing concern globally, with digital technologies enabling pervasive engagement (Badu, 2024; Bedford, 2024; National Gambling Board [NGB], 2024). The global gambling industry is growing rapidly, with consumer losses expected to approach US\$700 billion by 2028 (Wardle et al., 2024 - verify citation and add to reference list), driven significantly by smartphone access in low- and middle-income countries.

This topic attracts widespread attention because digital gambling platforms severely exacerbate broader risks; the World Health Organization [WHO] (2024) highlights that electronic and online gambling contribute not only to individual mental health issues and financial strain but also to family breakdown, corruption, and money laundering.

According to theories of cognitive behavior and decision making in design, consumer choices in high-risk environments should ideally rely on rational assessment of probability and objective awareness of systemic risks. In

* **Corresponding Author:** Michael Mncedisi Willie, m.willie@medicalschemes.co.za

Policy Research and Monitoring, Council for Medical Schemes, Pretoria, South Africa

Address: Block A Eco Glades 2 Office Park, 420 Witch-Hazel Avenue, Eco-Park Estate, Centurion, 0157, South Africa



an ideal cognitive state, human judgment remains free from systematically distorted patterns of thinking to avoid choices that are fundamentally irrational (Delfabbro & Winefield, 2000; Lockton, 2012; Rockloff et al., 2024; Abel et al., 2021). Under these optimal theoretical frameworks, individuals are expected to possess an accurate understanding of risk mechanics to prevent persistent hazardous engagement. Rather than operating under these ideal rational parameters, however, real-world decision-making is severely disrupted by cognitive vulnerabilities, such as illusions of control, optimism bias, and overconfidence, which distort perceptions of reward and lead consumers to underestimate potential losses (Philander & Gainsbury, 2021; Torrance et al., 2021; Al-Hadrawi & Jawad, 2024; Elem et al., 2024).

The real-world problem shattering this ideal baseline is the profound disconnect between digital participation and risk awareness, which disproportionately exposes susceptible demographics to financial, social, and psychological harms. In South Africa, the NGB (2025) explicitly notes a continued rise in online gambling and highlights persistent vulnerabilities among youth and low-income groups. A real phenomenon demonstrating this vulnerability is the behavior of tertiary students exposed to unregulated services and aggressive digital marketing. Recent survey data reveal that while 43.3% of students report engaging in online gambling, a striking minority of only 28% demonstrate an accurate understanding of the associated digital risks. This problem is further compounded by the fact that, despite 62% of students claiming moderate digital literacy, a vast majority still suffer significant psychological stress (76.4%) and academic difficulties (56.6%), indicating that literacy alone is insufficient to mitigate the harmful consequences of online gambling.

Research regarding cognitive biases and behavioral risks in digital environments has been conducted extensively in recent years. Various studies show that factors such as overconfidence and the feeling of being lucky lead people to place riskier sports bets than rational models would predict, thereby amplifying financial losses and prolonging engagement (Chegere & Falco, 2025). Other studies also confirm that repeated engagement with betting platforms strongly reinforces these biases through experiential learning and experiential reinforcement schedules (Willie, 2026). Findings from these current lines of research show that the modern digital gambling landscape actively manipulates these cognitive distortions by leveraging AI-driven personalization, gamified interfaces, social media ads, and influencer campaigns to normalize high-risk behavior and encourage continuous play (Mihai et al., 2025; Karami et al., 2024; Chinnathurai, 2025; Kabir et al., 2025; Gainsbury et al., 2016; Rossi & Nairn, 2022; Bolat et al., 2024).

Unfortunately, empirical studies that have been conducted regarding this phenomenon are still limited, as most prior research addresses cognitive traits, marketing

tactics, and socio-economic harms in isolation rather than providing a comprehensive, integrated picture. While quantitative data have established a clear connection between gambling and severe outcomes like suicidality, previous studies have largely ignored the underlying qualitative and socio-technical dynamics that drive these transitions. Marionneau & Nikkinen (2022) argue that qualitative research is essential for understanding the personal and social processes that turn gambling behavior into suicidal ideation or action. Furthermore, existing methodologies for estimating the overall social costs of gambling vary widely, leaving substantial empirical gaps regarding the uniform economic and social burdens imposed on vulnerable groups (Hautamäki et al., 2025). To address this gap, this study offers a comprehensive synthesis of cognitive, marketing, socioeconomic, and regulatory dimensions.

This study provides a significant contribution through the development of a conceptual framework that is capable of explaining the multidimensional interactions between human cognitive bias and AI-driven personalization more comprehensively. The framework and model produced are expected to enrich the scientific literature, strengthen the conceptual foundation for subsequent research, and provide practical guidelines for researchers and academicians. Practically, this study provides an empirical basis for governments, educational institutions, and policymakers to design evidence-based policies. This research is essential to address the regulatory challenges of cross-border online trade, eliminate digital platform loopholes, and strengthen consumer protection enforcement against illegal operations (Hörnle & Zammit, 2010; Kerti, 2025). Ultimately, it provides a foundation for the ethical deployment of AI and responsible marketing to ensure technological innovations do not exploit consumer vulnerabilities (Bahangulu & Berko, 2025; International Chamber of Commerce, 2020; Islam et al., 2024).

This study aims to synthesize the current empirical and theoretical evidence on the role of cognitive biases, AI-driven gambling marketing, socio-economic and mental health impacts, and regulatory oversight in shaping gambling behavior in South Africa. The focus of this study is to improve the systematic understanding of digital gambling risks, map the critical disconnect between digital literacy and risk management among vulnerable populations, and provide multi-level strategic insights that can guide comprehensive public health initiatives, ethical AI governance, and robust regulatory protections to safeguard vulnerable groups and promote responsible gambling practices.

2. METHOD

2.1 Research Design

This study employed a qualitative literature review using a combination of narrative review and scoping re-

view approaches (Paré & Kitsiou, 2017; Snyder, 2019; Sukhera, 2022). A narrative review was selected because it enables a comprehensive interpretation and critical discussion of evidence drawn from diverse disciplines. In contrast, a scoping review facilitates the systematic mapping of existing literature, identifies key concepts, summarizes available evidence, and reveals research gaps. The integration of these two approaches was considered appropriate because the phenomenon of gambling behaviour is multi-dimensional, involving psychological, behavioural, technological, socio-economic, and regulatory perspectives that cannot be adequately addressed through a conventional systematic review alone.

The review focused on synthesizing empirical and theoretical evidence concerning cognitive biases, AI-driven gambling marketing, consumer vulnerability, socio-economic consequences, mental health outcomes, and regulatory governance in South Africa and comparable international contexts. This methodological approach provides a comprehensive understanding of how these dimensions interact to shape gambling behaviour and consumer vulnerability.

2.2 Research Object

The object of this research consisted of published scientific literature examining the influence of cognitive biases on gambling behaviour and consumer vulnerability. The review incorporated peer-reviewed journal articles, master's theses, government reports, policy documents, and other relevant grey literature discussing cognitive biases, gambling behaviour, digital marketing, artificial intelligence,

mental health, socio-economic impacts, and gambling regulation.

Studies published between 2000 and 2026 were included to capture the evolution of gambling research from traditional gambling environments to contemporary AI-driven digital gambling platforms. Literature from both Global North and Global South contexts was reviewed to provide broader theoretical and empirical perspectives while maintaining particular attention to the South African gambling landscape.

2.3 Instrument and Data Collection Procedures

A systematic literature search was conducted using Scopus, Web of Science, PubMed, PsycINFO, and Google Scholar. Search terms included “cognitive bias”, “gambling behaviour”, “online gambling”, “digital marketing”, “artificial intelligence”, “consumer vulnerability”, “mental health”, “regulation”, and “South Africa”, with additional grey literature identified through reference screening. A total of 194 publications were initially retrieved, followed by duplicate removal, title and abstract screening, and full-text assessment based on predefined inclusion and exclusion criteria. Studies addressing cognitive biases, AI-driven gambling, socio-economic or mental health impacts, and gambling regulation were considered eligible. After the screening process, 37 studies met the eligibility criteria and were included in the final thematic synthesis. The overall study selection process followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to improve transparency and reproducibility of the review process (Page et al., 2021).

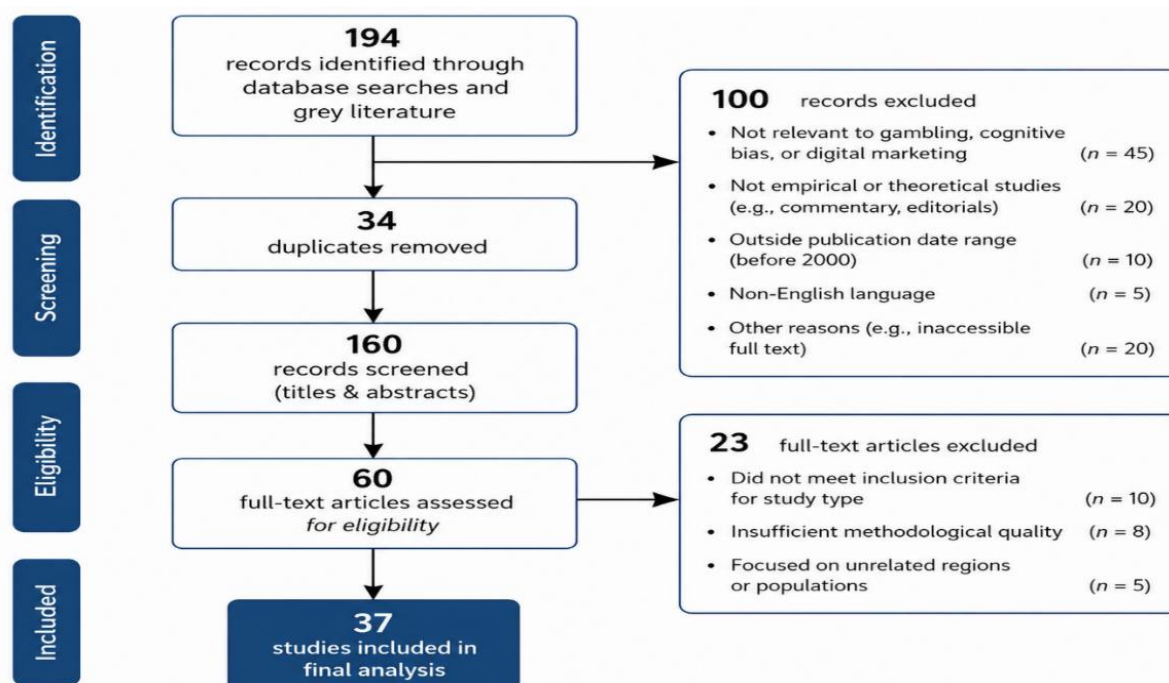


Fig. 1. PRISMA Flow Diagram of study Selection

To illustrate the temporal distribution of the selected literature, publications were further classified according to five-year publication intervals. This analysis demonstrates the increasing scholarly attention devoted to cognitive biases, digital gambling, artificial intelligence, and consumer protection in recent years.

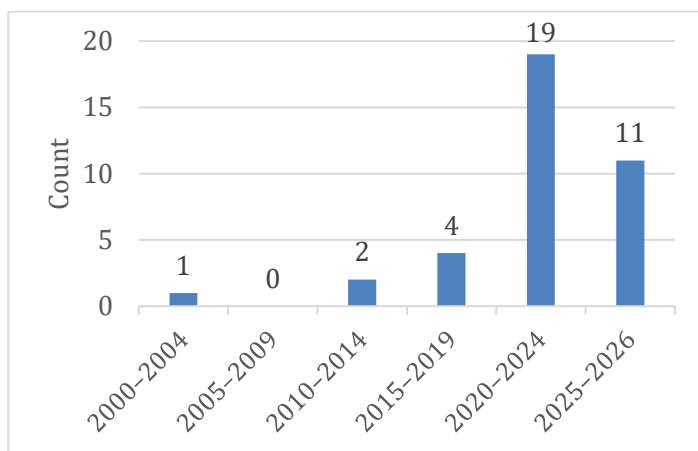


Fig. 2. Distribution of Sources by Five-Year Period

Distribution of included sources by 5-year publication range. This bar chart shows the temporal spread of the thirty-seven selected studies, highlighting the concentration of research in the most recent 5-year periods and demonstrating the growing focus on cognitive biases, gambling behaviour, and digital regulation.

2.4 Data Analysis

The selected studies were analysed using thematic synthesis (Paré & Kitsiou, 2017; Snyder, 2019; Sukhera, 2022). This analytical approach was selected because it enables the integration of findings from heterogeneous study designs while identifying conceptual relationships across different research traditions.

The final synthesis organised the evidence into four major thematic dimensions: 1) Cognitive biases influencing gambling behaviour; 2) AI-driven digital marketing and behavioural manipulation; 3) Socio-economic and mental health impacts on vulnerable populations; 4) Regulatory governance, consumer protection, and ethical AI considerations.

The thematic synthesis facilitated the identification of recurring patterns, similarities, inconsistencies, emerging trends, and research gaps across the literature. Furthermore, it enabled a multidimensional interpretation of the interaction between cognitive biases, digital marketing technologies, socio-economic vulnerability, and regulatory environments in shaping gambling behaviour. The findings generated evidence-based recommendations for future research, responsible gambling policies, ethical AI governance, and consumer protection strategies (Islam et al.,

2024; Bolat et al., 2024; Chinnathurai, 2025; Kabir et al., 2025).

3. RESULTS AND DISCUSSION

3.1 Results

3.1.1 Cognitive Biases in Gambling

Cognitive biases are systematic patterns of thinking that distort judgment and decision-making, often leading individuals to make choices that are not entirely rational. In gambling, these biases can strongly influence behaviour, increasing the likelihood of repeated play and risky decisions (Delfabbro & Winefield, 2000). Common biases include:

Illusion of Control: Gamblers believe they can influence outcomes that are completely random, such as slot machines or roulette. This cognitive distortion frequently results in excessive betting and overconfidence in personal winning strategies (Philander & Gainsbury, 2021).

Overconfidence Bias: Individuals systematically overestimate their ability to predict random outcomes, manage financial risks, or understand complex gambling systems, which typically results in larger or more frequent wagers (Al-Hadrawi & Jawad, 2024).

Gambler's Fallacy: This bias leads players to incorrectly believe that past outcomes influence future ones, for instance, confidently expecting a "win" simply because they have experienced a consecutive series of losses (Chegere & Falco, 2025).

Heuristic Thinking: Simplified mental shortcuts, like chasing losses or relying heavily on "lucky numbers," often override a rational assessment of probability, increasing irrational persistence despite compounding negative consequences (Elem et al., 2024).

These biases are further reinforced in online gambling environments through AI-driven personalisation, gamified interfaces, and targeted marketing, which create tailored experiences that exploit existing psychological tendencies to encourage continuous engagement (Chinnathurai, 2025). Vulnerable populations, such as young adults, students, and low-income individuals, are particularly susceptible, as these cognitive distortions directly interact with acute socio-economic pressures and limited financial literacy (Savolainen et al., 2025).

3.1.2 Cognitive Biases and Behavioural Risks

The cognitive biases described above directly influence gambling behaviour by altering how individuals perceive uncertainty, probability, and expected rewards. Rather than making decisions based on objective evidence, gamblers frequently overestimate their chances of winning while underestimating potential losses. These distorted

perceptions are reinforced through repeated gambling experiences, particularly within online betting environments where immediate feedback and continuous reinforcement encourage persistent engagement (Abel et al., 2021; Chegere & Falco, 2025).

Behavioural risks become increasingly evident when gamblers engage in loss-chasing, excessive wagering, and repeated participation despite accumulating financial losses. Overconfidence in understanding gambling mechanics often results in greater monetary losses and prolonged gambling sessions, especially among young adults and inexperienced gamblers. Similarly, heuristic decision-making promotes irrational persistence by encouraging individuals to interpret random events as meaningful patterns or indicators of future success (Philander & Gainsbury, 2021).

These behavioural tendencies are further intensified among socio-economically disadvantaged individuals, who may perceive gambling as an opportunity to improve their financial circumstances. Limited financial literacy and economic pressures often increase susceptibility to risky gambling decisions, creating a cycle in which cognitive biases reinforce behavioural persistence while worsening financial vulnerability (Badu, 2024; NGB, 2024). Consequently, effective interventions should address not only behavioural patterns but also the psychological mechanisms underlying gambling-related decision-making.

3.1.3 Digital Marketing and AI Influence

The rapid expansion of digital technologies has fundamentally transformed gambling marketing strategies. Social media platforms, influencer promotions, gamification, and AI-driven recommendation systems increasingly shape consumer behaviour by delivering highly personalised gambling content (Gainsbury et al., 2016; Rossi & Nairn, 2022; Bolat et al., 2024).

Artificial intelligence enables gambling operators to analyse user behaviour and deliver tailored advertisements based on previous gambling activities and personal preferences. Such personalised marketing increases user engagement and reinforces gambling participation by continuously exposing individuals to relevant promotions and incentives (Mihai et al., 2025; García-Pérez et al., 2024). At the same time, gamified interfaces create immersive experiences that encourage repeated interaction while obscuring the actual probabilities of winning.

Children, adolescents, and young adults are particularly vulnerable to these digital marketing strategies because influencer-generated content frequently portrays gambling as entertaining, socially acceptable, and financially rewarding. As repeated exposure normalises gambling participation, consumers become increasingly susceptible to behavioural manipulation and engagement with illegal or lightly regulated online gambling platforms (Elem et al., 2024; Savolainen et al., 2025).

Beyond behavioural influence, AI-driven gambling marketing also raises important ethical concerns regarding algorithmic transparency, consumer privacy, and fairness. Without appropriate governance, personalised algorithms may exploit psychological vulnerabilities for commercial gain, highlighting the need for ethical AI implementation within digital gambling environments (Karami et al., 2024; Bahangulu & Berko, 2025; Chinnathurai, 202).

3.1.4 Socio-Economic and Mental Health Impacts on Vulnerable Groups

The consequences of gambling extend beyond individual financial losses and create broader social, economic, and public health challenges. Participation in illegal or unregulated gambling platforms substantially increases the risks of debt accumulation, financial insecurity, reduced work productivity, family conflict, and social instability (Bedford, 2024; NGB, 2024).

These negative impacts disproportionately affect vulnerable populations, including young adults, low-income households, and individuals with limited financial literacy. Existing socio-economic disadvantages often magnify gambling-related harm, making recovery more difficult while increasing dependence on gambling as a perceived solution to financial hardship (Elem et al., 2024).

Mental health consequences are equally significant. Gambling-related harm has been associated with anxiety, depression, psychological distress, and suicidal ideation, particularly among individuals experiencing prolonged financial losses and social isolation. Although approaches to estimating the social costs of gambling differ across studies, there is broad agreement that gambling imposes considerable economic and societal burdens extending beyond affected individuals to families and communities (Marionneau & Nikkinen, 2022; WHO, 2024; Hautamäki et al., 2025).

These findings underscore the importance of integrating public health initiatives, financial education, psychological support, and community-based interventions to reduce gambling-related harm among high-risk populations.

3.1.5 Regulatory, Governance, and Ethical Considerations

Given the growing complexity of digital gambling ecosystems, effective regulation and governance are essential for protecting consumers and reducing gambling-related harm. AI-driven personalisation, cross-border online platforms, and rapidly evolving digital technologies present significant regulatory challenges that conventional gambling policies often struggle to address (Kerti, 2025).

Regulatory frameworks should therefore extend beyond traditional consumer protection by incorporating algorithmic transparency, responsible marketing practices, data privacy safeguards, and ethical standards for AI

deployment. Such measures can reduce opportunities for manipulative targeting while strengthening public trust in digital platforms (Islam et al., 2024; Bahangulu & Berko, 2025).

International experience further demonstrates the importance of cross-border cooperation in regulating online gambling, as digital platforms frequently operate across multiple jurisdictions with differing legal frameworks. Effective monitoring of illegal gambling operators, combined with consistent enforcement mechanisms, remains essential for protecting vulnerable consumers in increasingly globalised digital markets (Hörnle & Zammit, 2010; Kerti, 2025).

In addition to regulatory enforcement, preventive strategies including public awareness campaigns, industry self-regulation, responsible gambling education, and targeted interventions for high-risk groups can substantially reduce gambling-related harm. Accordingly, a comprehensive governance model integrating legal, ethical, technological, and socio-economic perspectives is required to promote responsible gambling while ensuring sustainable development of the digital gambling industry (International Chamber of Commerce, 2020).

3.2. Discussion

The main findings of this study reveal that gambling has become an increasingly pressing issue in South Africa, particularly with the rapid expansion of digital platforms that make betting easy, immediate, and constantly accessible (Badu, 2024; Bedford, 2024). These findings indicate that within this environment, gambling often begins as casual participation but rapidly escalates due to basic cognitive and behavioral triggers (Delfabbro & Winefield, 2000). Substantively, these results address the research objective by demonstrating how personalized online content, including influencer campaigns and gamified promotions, actively draws in young people and low-income individuals (Gainsbury et al., 2016; Torrance et al., 2021). The meaning of these findings shows that repeated exposure reinforces distorted beliefs about winning, prompting continued engagement and increased risk-taking, particularly on platforms that are illegal or lightly regulated (Philander & Gainsbury, 2021; García-Pérez et al., 2024).

The emergence of these findings is highly influenced by a combination of factors, arising from the interaction of subject characteristics, aggressive marketing environments, and structural platform mechanisms. The phenomenon likely occurs because cognitive biases such as overconfidence, illusions of control, and heuristic-driven judgments distort how individuals perceive risks and rewards, thereby increasing susceptibility to continued gambling engagement (Lockton, 2012; Rockloff et al., 2024). In addition, technological factors such as AI-driven personalization deliver content tailored to individuals' prior gambling

behavior, magnifying these cognitive biases and perpetuating risky patterns (Chinnathurai, 2025; Karami et al., 2024). This situation is severely worsened by exposure to unregulated or illegal online platforms, which often operate without safeguards, leaving users open to financial and emotional harm (Savolainen et al., 2025). This indicates that the relationship between psychological vulnerabilities, AI targeting, and low financial literacy forms a compounding mechanism that traps consumers (Elem et al., 2024; NGB, 2024).

From a theoretical perspective, the findings of this study strongly reinforce the assumptions of cognitive bias theories and behavioral models within design frameworks. The findings align with established psychological theories stating that cognitive distortions like the "gambler's fallacy" or chasing losses override rational assessments of probability, causing irrational persistence despite negative consequences (Abel et al., 2021; Chegere & Falco, 2025). Furthermore, these results reinforce the clinical view that gambling disorder shares overlapping neurobiological and genetic features with substance-related disorders, justifying its updated classification in the DSM-5 and ICD-11 (Vijayakumar & Vijayakumar, 2023). These findings support and extend the conceptual framework of consumer vulnerability by demonstrating how modern AI personalization algorithms systematically exploit heuristic-driven decision-making in digital spaces (Mihai et al., 2025; Kabir et al., 2025).

The findings of this study are consistent with previous research reporting that excessive participation in digital gambling is directly linked to severe individual and societal consequences, including financial difficulties, debt accumulation, reduced productivity, and family conflict (Willie, 2026). The results also confirm prior quantitative studies showing a clear connection between high-risk gambling and severe mental health problems, such as anxiety, depression, and suicidal thoughts (Marionneau & Nikkinen, 2022; WHO, 2024). On the other hand, this study uncovers a distinct divergence from traditional gambling literature regarding risk management: while a majority of students claimed moderate digital literacy, a stark contrast was found as 76.4% still suffered significant psychological stress and 56.6% experienced academic difficulties, proving that literacy alone is insufficient to mitigate modern AI-driven gambling harms (NGB, 2025).

Unlike single-discipline investigations, this study offers a comprehensive synthesis by successfully integrating cognitive psychology, algorithmic marketing tactics, public health outcomes, and regulatory governance into a unified analysis. The strength of this study lies in its ability to map how digital marketing architectures interact directly with cognitive biases, producing a much more complete understanding of modern consumer vulnerability. The scientific value of these findings is further strengthened because it provides a solid empirical basis regarding the socio-eco-

conomic burdens of gambling, highlighting how the digital landscape actively amplifies existing inequalities among low-income households and youth (Hautamäki et al., 2025; Bolat et al., 2024).

This study expands existing understanding by explicitly revealing that consumer protection can no longer rely on industry self-regulation or traditional literacy campaigns alone. The obtained findings successfully fill a critical research gap, specifically by mapping the severe disconnect between digital risk awareness and actual online gambling participation among young adults in developing economies. These results provide a new perspective on the relationship between technological personalization and psychological exploitation; an area previously understudied in the South African context. By assessing both legal framework limitations and the operational reality of illegal digital platforms, this study enriches the literature through a multi-level governance approach (Kerti, 2025; Islam et al., 2024).

A deeper analysis of the findings indicates that the relationship between technological advancement and consumer harm is not simple, but rather driven by complex socio-technical feedback loops. Based on the overall results, a new perspective can be developed: digital gambling interfaces act as behavioral modification environments where immediate digital feedback and gamification systematically camouflage the true mathematical probability of losing. This insight opens up a new conceptual model emphasizing that mitigating gambling-related harm requires multi-level interventions that combine ethical AI deployment, algorithmic transparency, and cross-border regulatory enforcement rather than focusing solely on individual consumer restraint (Bahangulu & Berko, 2025; Hörnle & Zammit, 2010).

Although the results demonstrate that cognitive biases and AI marketing are major drivers of high-risk behavior, it is highly possible that external factors also influence these findings. An alternative interpretation of the data suggests that these behavioral patterns are heavily driven by macro-economic crises; for instance, vulnerable, socio-economically disadvantaged populations may turn to gambling not merely due to cognitive distortions, but as a desperate, survivalist avenue for financial improvement during a severe cost-of-living crisis. Therefore, future research is required to isolate these macroeconomic variables from psychological biases.

4. IMPLICATIONS AND CONTRIBUTIONS

4.1 Implications of the Review Study

The findings of this study provide theoretical implications for the study of digital gambling behavior and consumer vulnerability by synthesizing that individual cognitive biases interact dynamically with AI-driven marketing

personalization algorithms to significantly amplify financial risks and exacerbate socio-economic and mental health harms. The findings of this study fill a literature gap (specifically a conceptual gap) regarding the lack of an integrated framework that explains the multi-dimensional connection between technological features, psychological vulnerabilities, and regulatory limitations in developing economies.

4.2 Contributions of the Review to the Literature

The findings of this study contribute as a vital source of new scientific knowledge in the fields of behavioral economics, digital marketing, and public health by synthesizing a new conceptual framework regarding the multi-dimensional determinants of digital gambling harm that can be used to comprehensively explain the socio-technical mechanisms through which predatory digital platforms exploit human heuristics to cause severe debt, family conflict, depression, and severe psychological distress among vulnerable populations through the accumulation of findings from prior studies.

5. LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

5.1 Research Limitations

This study has several limitations. First, the review relies exclusively on secondary data from published literature, making its findings dependent on the quality, scope, and methodological diversity of the included studies. Second, although the review integrates evidence from multiple countries, much of the available literature originates from developed contexts, which may limit the generalizability of the findings to South Africa and other developing economies with different socio-cultural, regulatory, and technological environments. Finally, the narrative and scoping review approaches provide a comprehensive conceptual synthesis but do not quantitatively assess effect sizes or causal relationships between cognitive biases, AI-driven marketing, and gambling behaviour.

5.2 Recommendations for Future Research

Future research should employ empirical and longitudinal designs to examine how specific cognitive biases influence gambling behaviour across different demographic groups and digital gambling environments. Quantitative approaches, such as structural equation modelling, experimental studies, or longitudinal surveys, could provide stronger evidence regarding causal mechanisms linking cognitive biases, AI-driven personalization, financial vulnerability, and mental health outcomes. Furthermore, comparative cross-country studies and evaluations of regulatory interventions are needed to assess the effectiveness of responsible gambling policies, ethical AI governance, and consumer protection strategies in reducing

gambling-related harm within rapidly evolving digital gambling ecosystems.

6. CONCLUSION

This study examined the role of cognitive biases in shaping gambling behaviour and consumer vulnerability by synthesizing evidence from psychological, technological, socio-economic, and regulatory perspectives. The findings demonstrate that cognitive biases, including the illusion of control, overconfidence bias, the gambler's fallacy, and heuristic thinking, significantly distort risk perception and decision-making, thereby increasing the likelihood of persistent gambling and risky financial behaviour. These psychological mechanisms are further reinforced by AI-driven personalization, gamified digital environments, and targeted digital marketing, particularly among vulnerable populations such as young adults, low-income individuals, and those with limited financial literacy.

The review further reveals that gambling-related harm extends beyond individual behavioural outcomes to broader socio-economic and public health consequences. Financial losses, debt accumulation, psychological distress, family conflict, and widening social inequalities are intensified by aggressive marketing practices, exposure to illegal or unregulated gambling platforms, and insufficient regulatory oversight. Addressing these complex challenges requires a comprehensive approach that integrates responsible AI governance, ethical digital marketing, consumer protection, financial literacy, public health initiatives, and stronger regulatory enforcement to reduce gambling-related harm effectively.

This study contributes to the existing literature by providing an interdisciplinary synthesis that connects cognitive psychology, artificial intelligence, consumer behaviour, and regulatory governance within a unified framework for understanding gambling behaviour. The findings offer valuable insights for policymakers, regulators, public health practitioners, and gambling operators in designing evidence-based interventions and responsible gambling policies. Moreover, this review establishes a conceptual foundation for future empirical research on ethical AI implementation, cross-border gambling regulation, and targeted intervention strategies aimed at protecting vulnerable populations while promoting a safer and more sustainable digital gambling environment.

Acknowledgments

The author gratefully acknowledges the Council for Medical Schemes, South Africa, for providing an academic environment that supported the completion of this study. Sincere appreciation is also extended to researchers, regulatory bodies, and international organizations whose published studies, reports, and policy documents provided

the foundation for this literature review. Their contributions have significantly advanced the understanding of cognitive bias, digital gambling, consumer vulnerability, and responsible gambling governance.

CRedit Authorship Contribution Statement

The author declares that the entire study and writing process for this article was conducted independently. The author assumes full responsibility for all data associated with this study. No other individual contributed as a co-author or made any significant contribution to the content of this work.

Declaration of GenAI Usage in Scientific Writing

QuillBot and Grammarly were used solely for language editing and improving clarity. The intellectual content, analysis, and interpretation remain entirely the author's own work. All instances of Generative AI usage in this article were conducted by the author in accordance with the [IJCP GenAI Tool Usage Policy](#), with the author assuming full responsibility for the originality, accuracy, and integrity of the work.

Conflict of Interest Statement

The author declares that he has no financial, professional, or personal conflicts of interest that could have influenced the conduct or presentation of the work presented in this manuscript.

Funding Statement

The author declares that no external funding was received for conducting this study.

Informed Consent Statement

The author declares that this study is a literature review and does not involve human participants, personal data, or any other subjects. Therefore, written and verbal informed consent is not required. The entire study process was conducted in accordance with academic ethical standards, upholding scientific honesty, integrity, and the ethical use of legitimate sources.

REFERENCES

- Abel, M., Cole, S., & Zia, B. (2021). Changing gambling behavior through experiential learning. *The World Bank Economic Review*, 35(3), 745–763. <https://doi.org/10.1093/wber/lhaa016>
- Al-Hadrawi, B. K., & Jawad, A. R. (2024). Cognitive marketing and strategic drift: An exploration of cognitive bias in marketing decision-making.

- International Journal of Multidisciplinary Research and Growth Evaluation*, 5(1), 933–946.
- Badu, E. (2024). The impact of illegal online gambling platforms on vulnerable populations. *Gambling Research Journal*, 15(2), 45–63.
- Bahangulu, K., & Berko, L. O. (2025). Algorithmic bias, data ethics, and governance: Ensuring fairness, transparency and compliance in AI-powered business analytics applications. *World Journal of Advanced Research and Reviews*, 25(2), 1746–1763. <https://doi.org/10.30574/wjarr.2025.25.2.0571>
- Bedford, K. (2024). Gambling control in a cost-of-living crisis: An analysis of the White Paper High Stakes: Gambling Reform for the Digital Age (2023). *The Modern Law Review*. <https://doi.org/10.1111/1468-2230.12904>
- Bolat, E., Panourgia, C., Yankouskaya, A., & Kelly, M. (2024). Influencer-driven gambling content and its impact on children and young people: Research snapshot. Gambling Research Exchange Ontario. [https://www.greo.ca/Modules/EvidenceCentre/files/Bolat%20et%20al%20\(2024\)_Research%20Snapshot_Influencer-driven%20gambling%20content%20and%20its%20impact%20on%20children%20and%20young%20people.pdf](https://www.greo.ca/Modules/EvidenceCentre/files/Bolat%20et%20al%20(2024)_Research%20Snapshot_Influencer-driven%20gambling%20content%20and%20its%20impact%20on%20children%20and%20young%20people.pdf)
- Chegere, M. J., & Falco, P. (2025). The magic of the game: Experimental evidence on sports betting behavior. *Journal of Economic Behavior & Organization*, 240, 107301. <https://doi.org/10.1016/j.jebo.2025.107301>
- Chinnathurai, G. D. (2025). *AI-driven marketing: Ethical dilemmas in data privacy and consumer manipulation*. In *AI and machine learning in marketing* (p. 51). Shanlax Publications. <https://www.researchgate.net/publication/389815152>
- Delfabbro, P., & Winefield, A. H. (2000). Predictors of irrational thinking in regular slot machine gamblers. *The Journal of Psychology*, 134(2), 117–128. <https://doi.org/10.1080/00223980009600854>
- Elem, S., Ugochukwu, S., Orji-Egwu, A., & Nwutulor, M. (2024). Television advertising influence and the gambling habits of students in selected tertiary institutions in South-East Nigeria. *African Journal of Politics and Administrative Studies*, 17(1), 1001–1026. <https://doi.org/10.4314/ajpas.v17i1.49>
- Gainsbury, S. M., Delfabbro, P., King, D. L., & Hing, N. (2016). An exploratory study of gambling operators' use of social media and the latent messages conveyed. *Journal of Gambling Studies*, 32(1), 125–141. <https://doi.org/10.1007/s10899-015-9525-2>
- García-Pérez, Á., Krotter, A., & Aonso-Diego, G. (2024). The impact of gambling advertising and marketing on online gambling behavior: An analysis based on Spanish data. *Public Health*, 234, 170–177. <https://doi.org/10.1016/j.puhe.2024.06.025>
- Hautamäki, S., [FULL AUTHOR LIST REQUIRED]. (2025). Methodologies and estimates of social costs of gambling: A scoping review. *Social Science & Medicine*, 371, 117940. <https://doi.org/10.1016/j.socscimed.2025.117940>
- Hörnle, J., & Zammit, B. (2010). *Cross-border online gambling law and policy* (1st ed.). Routledge. <https://doi.org/10.4324/9781848443020>
- International Chamber of Commerce. (2020). *The benefits of advertising self-regulation in ensuring responsible and compliant advertising*. <https://iccwbo.org/wp-content/uploads/sites/3/2020/06/2020-icc-srtoolkit-benefits-of-sr.pdf>
- Islam, M. S., Azizzadeh, F., & Ali, M. (2024). Ethical deployment of cognitive biases in marketing: A framework for responsible influence. *Advances in Psychological Research*, 3(2), Article 1363. <https://doi.org/10.59400/apr.v3i2.1363>
- Kabir, M. H., Sultana, S., Hossain, M. M., & Islam, S. M. A. (2025). The impact of digital marketing strategies on consumer behavior: A comprehensive review. *Business & Social Sciences Review*. <https://doi.org/10.25163/business.3110269>
- Karami, A., Shemshaki, M., & Ghazanfar, M. A. (2024). Exploring the ethical implications of AI-powered personalisation in digital marketing. *Data Intelligence*. <https://doi.org/10.3724/2096-7004.di.2024.0055>
- Kerti, R. M. (2025). Consumer protection in the digital economy: A legal analysis of e-commerce practices and regulatory challenges. *Lex Localis - Journal of Local Self-Government*, 23(10), 776–786. <https://doi.org/10.52152/801041>
- Lockton, D. (2012). Cognitive biases, heuristics and decision-making in design for behaviour change. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2124557>
- Marionneau, V., & Nikkinen, J. (2022). Gambling-related suicides and suicidality: A systematic review of qualitative evidence. *Frontiers in Psychiatry*, 13, 980303. <https://doi.org/10.3389/fpsy.2022.980303>
- Mihai, F., Aleca, O. E., & Iordache, D.-M. (2025). AI personalisation and its influence on online gamblers' behavior. *Behavioral Sciences*, 15(6), 779. <https://doi.org/10.3390/bs15060779>
- National Gambling Board. (2024). *Annual report 2023/24*. Department of Trade, Industry and Competition. <https://www.ngb.org.za/wp-content/uploads/2024/09/NGB-AR2024-FINAL.pdf>
- National Gambling Board. (2025). *Annual report 2024/25*. Department of Trade, Industry and Competition. <https://www.thedtic.gov.za/wp-content/uploads/Re-Revised-NGB-AR.pdf>

- Paré, G., & Kitsiou, S. (2017). Methods for literature reviews. In F. Lau & C. Kuziemy (Eds.), *Handbook of eHealth evaluation: An evidence-based approach* (Chapter 9). University of Victoria. <https://www.ncbi.nlm.nih.gov/books/NBK481583>
- Philander, K. S., & Gainsbury, S. M. (2021). Overconfidence in understanding of how electronic gaming machines work is related to positive attitudes. *Frontiers in Psychology*, 11, 609731. <https://doi.org/10.3389/fpsyg.2020.609731>
- Rockloff, M., Russell, A. M. T., Hing, N., Browne, M., Thorne, H., Newall, P., & Visintin, T. (2024). Illusions of control: A quasi-experiment comparing skill-based and traditional slot machines. *Journal of Behavioral Addictions*, 13(4), 962–973. <https://doi.org/10.1556/2006.2024.00057>
- Rossi, R., & Nairn, A. (2022). New developments in gambling marketing: The rise of social media ads and its effect on youth. *Current Addiction Reports*, 9, 10224. <https://doi.org/10.1007/s40429-022-00457-0>
- Savolainen, T., Roukka, T., & Oksanen, A. (2025). The impact of gambling advertising online: A longitudinal study on exposure and harm. *International Gambling Studies*. <https://doi.org/10.1080/14459795.2025.2548220>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339. <https://doi.org/10.1016/j.jbusres.2019.07.039>
- Sukhera, J. (2022). Narrative reviews: Flexible, rigorous, and practical. *Journal of Graduate Medical Education*, 14(4), 414–417. <https://doi.org/10.4300/JGME-D-22-00480.1>
- Torrance, J., John, B., Greville, J., O'Hanrahan, M., Davies, N., & Roderique-Davies, G. (2021). Emergent gambling advertising: A rapid review of marketing content, delivery and structural features. *BMC Public Health*, 21, 718. <https://doi.org/10.1186/s12889-021-10805-w>
- Vijayakumar, L., & Vijayakumar, V. (2023). Online gambling and suicide: Gambling with lives. *Indian Journal of Psychiatry*, 65(1), 3–4. https://doi.org/10.4103/indianjpsychiatry.indianjpsychiatry_817_22
- Volosevici, D., & Isbasoiu, G. D. (2025). Surveillance as a socio-technical system: Behavioral impacts and self-regulation in monitored environments. *Systems*, 13(7), 614. <https://doi.org/10.3390/systems13070614>
- Willie, M. M. (2026, February). *Cognitive bias in digital gambling: Understanding behavioural risks in South Africa* [Preprint]. ResearchGate. <https://doi.org/10.13140/RG.2.2.17554.52160>
- World Health Organization. (2024, December 2). *Gambling*. WHO. <https://www.who.int/news-room/fact-sheets/detail/gambling>

Author Information

^{1*} **Michael Mncedisi Willie**, ✉ m.willie@medicalschemes.co.za,  <https://orcid.org/0000-0003-4322-7857>

Council for Medical Schemes, Pretoria, South Africa

Dr. Michael Mncedisi Willie is a distinguished researcher and executive in South Africa's private healthcare industry, with a wealth of expertise in research, digital marketing, strategy, corporate governance, advanced data analytics, and service innovation. Throughout his career, Dr. Willie has demonstrated a passion for exploring the intricacies of the healthcare sector, with a particular focus on improving service delivery and promoting digitally innovative solutions.

Address: Block A Eco Glades 2 Office Park, 420 Witch-Hazel Avenue, Eco-Park Estate, Centurion, 0157, South Africa