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The Impact of Overconfidence Bias on Customer Satisfaction in Digital Banking: A Bivariate Analysis

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ABSTRACT

This study investigated the association between overconfidence bias and customer satisfaction in the realm of digital banking. As digital platforms become increasingly prevalent, customers are more reliant on their own financial judgments, which may lead to cognitive distortions such as overconfidence bias. Through a structured survey and quantitative analysis, this study explores whether such bias significantly influences perceived satisfaction with digital banking services. Using statistical tools, such as Pearson correlation, one-way ANOVA, independent samples t-test, and linear regression, 232 participants were analysed. The findings indicated a minimal yet noteworthy relationship between overconfidence and satisfaction, with educational level contributing to variations in overconfidence. This study enhances the understanding of behavioural biases in digital finance and offers implications for improving user engagement and satisfaction through awareness and education.

Keywords: *Overconfidence Bias, Customer Satisfaction, Digital Banking, Behavioural Finance, Financial Literacy*..

1. INTRODUCTION

The digital transformation of the banking industry has redefined how customers interact with financial services. As digital platforms become ubiquitous, users increasingly make independent financial decisions, often without professional guidance. Regional variations in customer perceptions and preferences for digital banking services may also exist. This finding suggests that banks may need to adapt their digital strategies to align themselves with specific market contexts. (Mwababa & C Hapompwe, 2024). While autonomy promotes convenience and accessibility, it also elevates the role of cognitive bias. Cognitive biases significantly impact the banking sector, particularly in shaping the decision-making processes and risk evaluations. Within the realm of commercial lending, bankers' risk assessments of borrowers are influenced by both organisational and cognitive factors. (McNamara & Bromiley, 1997). Particularly overconfidence bias in influencing user behaviour and satisfaction. (Zhang, 2024), a well-documented psychological tendency, causes individuals to overestimate their knowledge and abilities. In the digital banking context, this bias may shape user expectations, interactions, and ultimately, satisfaction levels.

Understanding the interplay between overconfidence and customer satisfaction is crucial for financial institutions to enhance user experience. The significance of employing professional participants in financial experiments lies in the potential differences in their behaviour compared to that of non-experts. Nonetheless, certain studies have indicated that professionals may demonstrate even greater biases than non-professionals (Muradoglu & Harvey, 2012). As satisfaction influences loyalty, continued usage, and customer advocacy, identifying behavioural determinants can provide strategic insights. Despite its relevance, few empirical studies directly examine this relationship within the digital banking landscape in the Indian context. This study addresses this gap by conducting a detailed bivariate analysis to assess whether the overconfidence bias affects satisfaction among digital banking users..

Theoretical Background

The overconfidence bias originates from behavioural finance theory, which incorporates psychological insights into financial decision-making processes. Kahneman and Tversky's foundational research demonstrates how cognitive biases can distort rational behaviour. Overconfidence is defined as the propensity to maintain an exaggerated belief in one's

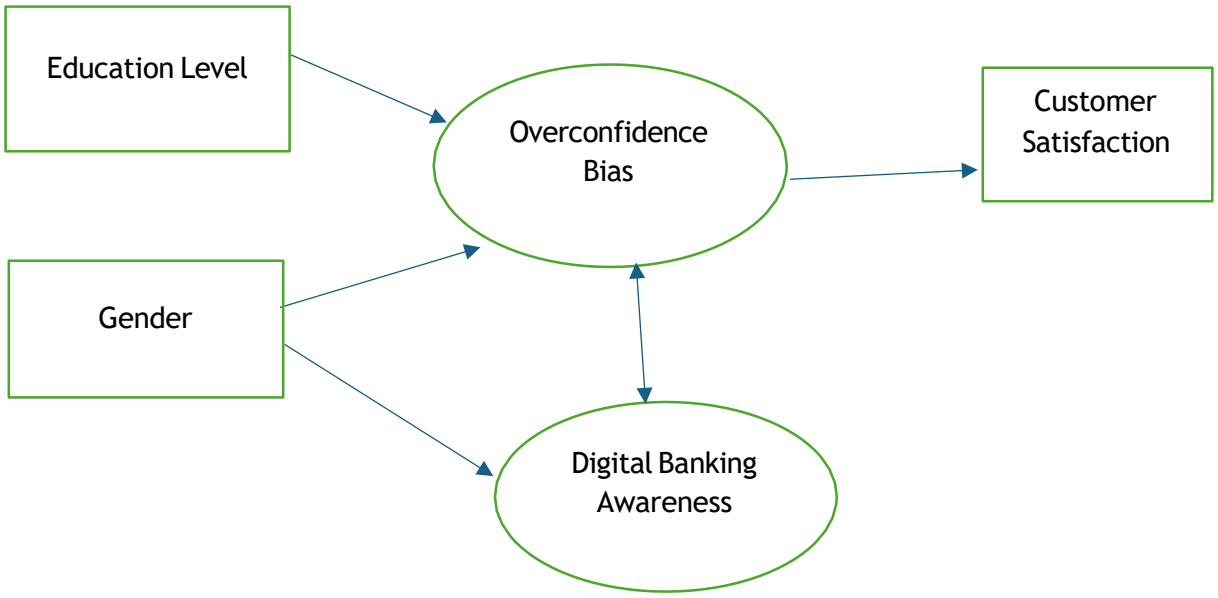
knowledge, control, or predictive capabilities, often resulting in underestimation of risks and overestimation of outcomes.

In digital banking, overconfidence may manifest as users assuming that they fully understand financial products, ignoring important terms and conditions, or dismissing the need for expert advice. This behaviour could influence satisfaction in two ways: positively by reinforcing perceived control and autonomy, or negatively by resulting in unmet expectations or financial errors. Previous research on consumer behaviour and finance has linked overconfidence to risk- taking, reduced consultation, and decision-making flaws. However, its direct impact on satisfaction in the digital banking space remains underexplored.

Earlier Studies

Recent empirical research has advanced our understanding of customer satisfaction within the digital banking realm. Jain et al. (2023) investigate the influence of behavioural biases, particularly overconfidence, on the adoption and continued use of digital banking platforms, underscoring the need to consider cognitive distortions in financial decision-making. In a related study, Debnath and Chellasamy (2022) identified that innovative digital banking tools such as chatbots, mobile banking applications, and digital wallets exert a significant positive effect on customer satisfaction, thereby highlighting the critical role of digital service innovation in enhancing user experience. Mwababa and Hapompwe (2024) noted that, although customers generally rate digital banking systems highly in terms of reliability and responsiveness, concerns regarding security and data protection persist, particularly among newer users, thus moderating satisfaction levels. Adding a service quality perspective, Susilawaty and Nicola (2020) demonstrated that functional quality, employee-customer engagement, and platform innovation are strong predictors of satisfaction, whereas traditional constructs, such as comfort and brand trust, exert limited direct influence. Collectively, these studies underscore the multifaceted nature of digital banking satisfaction and reaffirm the importance of aligning technological innovation with an understanding of the behavioural factors crafting customer-centric digital banking experiences.

Conceptual Framework and Hypotheses Development



Conceptual Framework

The proposed conceptual model is designed to investigate the impact of cognitive and demographic factors on customer satisfaction in the context of digital banking. Central to this model is the hypothesis that overconfidence bias, a cognitive distortion wherein individuals overestimate their knowledge and decision-making abilities, affects their perception of satisfaction with digital banking services.

Overconfidence Bias → Customer Satisfaction (H1): Overconfidence bias is conceptualized as an independent variable that may exert an influence on customer satisfaction. Individuals exhibiting inflated confidence may neglect essential precautions, disregard expert advice, and perceive their experiences as optimal. This phenomenon could either enhance or reduce satisfaction contingent upon the alignment of outcomes with expectations. The model examined this relationship through correlation and linear regression analyses, positing a direct psychological effect on satisfaction.

Education Level → Overconfidence Bias (H2): Education level is considered a demographic variable hypothesised to significantly influence levels of overconfidence. Individuals with higher educational attainment may demonstrate a more accurate assessment of their abilities, whereas those with less formal education may exhibit increased confidence, which is

not

necessarily supported by skill. This relationship was evaluated using one-way ANOVA to identify statistical differences across various educational categories.

Gender → Digital Banking Awareness (H3): This study investigates digital banking awareness, conceptualised as a behavioural analogue to overconfidence, with a focus on gender differences. Historically, disparities in digital literacy have been sex-specific; however, this study evaluated whether such awareness is now equitably distributed across genders. This hypothesis was empirically tested using an independent samples t-test to ascertain whether gender continues to significantly influence financial literacy within the digital framework.

Overconfidence Bias ↔ Digital Banking Awareness (H4): The relationship suggests a theoretically inverse correlation between confidence and actual knowledge. As awareness increases, it is logical to expect a decline in overconfidence provided that user perceptions are accurately calibrated. Conversely, if awareness is low and confidence remains high, this indicates behavioural overconfidence. This relationship is examined through bivariate correlation, emphasising the model's focus on psychological calibration in financial decision making.

Each relationship addresses a specific aspect of behavioural finance within the digital banking ecosystem. This model serves as a basis for understanding how users make decisions and perceive satisfaction when bias and literacy intersect.

Objective of the Study

- To examine the relationship between overconfidence bias and customer satisfaction in digital banking.
- To assess whether overconfidence bias differs across education levels.
- To investigate whether digital banking awareness differs by gender.
- To analyse the relationship between overconfidence bias and digital banking awareness.

Hypothesis

H1: There is a statistically significant relationship between the overconfidence bias and customer satisfaction in the context of digital banking.

H2: The level of overconfidence bias differs significantly among customers based on their educational qualification.

H3: There is a statistically significant difference in digital banking awareness between male and female banking users.

H4: There is a statistically significant relationship between the overconfidence bias and digital banking awareness among digital banking users.

2. METHODOLOGY

A quantitative research design was implemented by employing a structured questionnaire administered to a purposively sampled cohort of digital banking users in the northern zone of the Chennai region over a six-month period. A total of 232 valid responses were analysed. The instrument includes demographic variables, five items measuring overconfidence bias, five items assessing customer satisfaction, and five items evaluating digital banking awareness.

Overconfidence bias was assessed through self-reported confidence in decision-making without expert guidance, confidence in error avoidance, and propensity to disregard terms and conditions. Satisfaction was evaluated using indicators related to perceived reliability, security, fulfilment of expectations, guidance received, and the likelihood of recommending services.

Statistical analyses were performed using the SPSS software. Descriptive statistics were used to summarise the distributions of the constructs. Pearson’s correlation coefficient was used to examine the relationship between overconfidence and satisfaction. Analysis of variance (ANOVA) was conducted to test the variance in overconfidence across different education levels. Independent t-tests were used to compare digital banking awareness between genders. Linear regression analysis was employed to assess the predictive capacity of overconfidence bias for satisfaction.

3. RESULTS AND ANALYSIS

Demographic Analysis

Table 1: Gender Vs Usage Frequency

Gender	Daily	Monthly	Rarely
Female	32	23	33
Male	26	32	35

The findings reveal a relatively balanced distribution of male and female users across various frequencies of digital banking. Among those reporting daily usage, males constituted 41.1%, whereas females comprised 31.7%. In the weekly usage category, males accounted for 27.8%, while females accounted for 24.4%. Conversely, in the infrequent usage category, female users were slightly more prevalent (29.3%) than male users (23.4%). These data suggest that,

although both genders actively engage with digital banking platforms, male users demonstrate a marginally higher frequency of usage, potentially due to occupational demands or habitual financial autonomy.

Table 2: Education Level Vs Experience in Digital Banking

Education Level	1-3 Years	4-6 years	Less than 1 Year	More than 6 years
Diploma course	9	4	3	7
Doctorate	3	6	10	10
High School	16	13	9	11
Post graduate Degree	14	21	13	5
Professional Qualification	14	10	13	9
Undergraduate Degree	7	10	5	10

The cross-tabulation of education level and years of digital banking experience indicates a significant association between higher educational attainment and the prolonged usage of digital banking services. Individuals with postgraduate degrees (38.4%) and those with professional qualifications (25.9%) were predominantly represented in the categories of 4 to 6 years and over 6 years of experience. Conversely, holders of undergraduate degrees (48.1%) were primarily found in the 1–3 years (54.5%) and less than 1 year (31.8%) experience brackets. This pattern suggests a positive correlation between educational attainment and both early adoption and extended use of digital banking, potentially attributable to enhanced digital literacy or exposure to financial technologies during academic or professional training.

Age Group Vs Usage Frequency

An analysis of usage frequency by age group indicates that young adults (18–25 years) and mid-career individuals (36–45 years) constitute the most engaged demographic. Within the daily usage category, 36.5% of the individuals were aged 18–25 years, while 33.3% were aged 36–45 years. Conversely, users aged 46–55 years and older than 55 years were predominantly found in the monthly (41.2%) or infrequent usage (47.1%) categories. These findings underscore generational adoption patterns, suggesting that younger cohorts demonstrate more frequent digital banking behaviours likely attributable to lifestyle integration and digital adaptability.

Cross-tabulation indicates modest gender disparity in digital banking tenure. Male users predominantly had 4–6 years (57.1%) and more than 6 years (60.9%) of experience.

Conversely, female users were more prominently represented in the 1–3 year (52.3%) and less than 1 year (63.6%) categories.

Table 3: Age Group Vs Experience in Digital Banking (%)

Age Group	1 - 3 years	4 - 6 years	Less than 1 year	More than 6 years
18 - 25 years	28.3	28.3	17	26.4
26 - 35 years	30.6	22.2	27.8	19.4
36 - 45 years	23.4	23.4	25.5	27.7
46 - 55 years	32.7	30.6	24.5	12.2
56+ years	21.2	27.3	27.3	24.2
Male	21.4	42.9	7.1	28.6

The distribution of digital banking experience across various age groups reveals distinct patterns. Young users, aged 18–25 years, predominantly fell within the 1–3 years (47.2%) and less than 1 year (33.3%) experience categories. This trend suggests recent adoption, likely influenced by post-pandemic digitisation trends, and a preference for mobile-first banking solutions. In contrast, middle-aged groups, specifically those aged 36–45 years and 46–55 years, exhibit a more even distribution across the 4–6 years and more than 6 years categories, with over 30–40% indicating long-term digital engagement. Senior users, those older than 55 years, remain a minority, with most reporting limited years of experience and underscoring age as a moderating factor in digital comfort and platform longevity.

Monthly Income × Gender (% Distribution)

Income distributions across genders reveal certain socioeconomic trends. In the income category of Below ₹25,000, female users constitute approximately 59.4%, suggesting a higher representation of women in lower income brackets. This is likely attributable to part-time employment, freelance work, or an early career status. Conversely, in the ₹50,001 to ₹1,00,000 range, male users predominate at 69.4%, and in the Above ₹1,00,000 range, men represent over 70%, indicating disproportionate access to higher earnings. This pattern reflects the broader income gap present in the labour market and underscores the need for targeted financial empowerment programs, particularly for women in lower-income brackets. Tailored digital financial products can facilitate female users' engagement with micro-entrepreneurship, savings automation, and investment education.

Summary Statistics

Objective	**Test Used**	**Result**	**Conclusion**
Objective 1	Correlation & Regression	r=0.028, R^2=0,001	No Significant Impact
Objective 2	One-Way ANOVA	F=2.609, P=0.026	Significant Difference by Education
Objective 3	Independent t-Test	t=-.607, p=0.545	No Significant Difference by Gender
Objective 4	Correlation	r==-0.100	No Significant Relationship

Objective 1: To investigate the association between overconfidence bias and customer satisfaction in digital banking,

This objective was assessed using both Pearson's correlation and simple linear regression analysis. The Pearson correlation coefficient between the overconfidence bias and customer satisfaction was r = 0.028, indicating an extremely weak positive relationship. Additionally, the regression model yielded a coefficient of determination (R^2) of 0.001, suggesting that overconfidence bias accounts for only 0.1% of the variance in customer satisfaction. These findings clearly demonstrate that

the overconfidence bias does not significantly influence satisfaction with digital banking services in this sample.

Objective 2: To evaluate whether overconfidence bias varies according to educational attainment.

One-way analysis of variance (ANOVA) was performed, with overconfidence bias as the dependent variable and education level as the categorical independent variable. The analysis revealed a statistically significant difference between the educational categories, with $F = 2.609$ and $p = 0.026$. Post hoc comparisons demonstrated that individuals with professional qualifications exhibited lower levels of overconfidence than those with only undergraduate degrees. This finding implies that formal education may serve as a moderating factor in shaping cognitive biases such as overconfidence.

Objective 3: To investigate whether digital banking awareness differs by gender

The objective was assessed through an independent samples t-test, which compared the mean

digital banking awareness scores of male and female respondents. The test yielded a result of t

= 0.607, with a p-value of 0.545, indicating that the observed difference in awareness levels between the two gender groups was not statistically significant. Although male users demonstrated slightly higher awareness scores, the difference did not reach the significance threshold.

Objective 4: To analyze the relationship between overconfidence bias and digital banking awareness

Pearson correlation analysis was performed to evaluate the potential relationship between overconfidence bias and digital banking awareness. The correlation coefficient was determined to be $r = -0.100$, indicating a very weak negative relationship that was not statistically significant. Awareness and confidence appear to function independently and overconfidence is not necessarily a consequence of limited financial knowledge.

4. DISCUSSION

The findings of this study offer nuanced insights into the behavioural foundations of digital banking satisfaction, particularly concerning overconfidence bias. Although overconfidence bias is a widely recognised cognitive trait in behavioural finance, it was found to have no statistically significant impact on customer satisfaction in this context. This result is consistent with a growing body of empirical evidence suggesting that customer satisfaction in digital banking is influenced more by functional elements such as interface usability, transaction speed, system reliability, and service responsiveness than by psychological predispositions alone.

The lack of significant correlation underscores the complex and multidimensional nature of satisfaction. While overconfidence may influence users' perceptions of their ability to engage with digital tools, satisfaction seems firmly rooted in actual service delivery and performance metrics. This distinction is crucial for banking institutions seeking to enhance user experience, not merely by managing perceptions but also by strengthening robust operational capabilities.

A notable finding was the substantial variation in the overconfidence bias across educational levels. Respondents with higher education, particularly those with professional qualifications or postgraduate degrees, demonstrated significantly lower levels of overconfidence than those with only undergraduate or diploma-level education. This observation aligns with the

theoretical expectation that education enhances critical thinking, self-reflection, and awareness of the limitations of knowledge. This highlights the cognitive moderating role of formal education in regulating biased self-assessments, especially in financial contexts.

Notably, this study identifies no significant gender-based disparities in digital banking awareness, suggesting a diminishing gap in digital financial literacy between male and female users. This finding represents a positive departure from the earlier literature, which frequently identifies gender as a determinant of digital access or financial understanding. The results may reflect the influence of digital inclusion policies, increased smartphone penetration, and the democratization of financial literacy through online content and community-based learning. Women are rapidly advancing in terms of their comfort and competence in navigating digital banking ecosystems, particularly in urban and semi-urban areas.

These findings collectively suggest that although overconfidence is a significant behavioural indicator, it does not serve as the primary determinant of satisfaction in digital banking. Rather, the confluence of education, access, and system performance appeared to have exerted a more substantial influence. For banks and fintech platforms, these insights necessitate revaluation of user engagement strategies. Targeted financial education, particularly for users with limited formal education, can reduce overconfidence and better align perceived capabilities with digital literacy. The integration of interactive guidance, tiered user journeys based on self-reported confidence levels, and contextual micro learning within banking applications may enhance user outcomes and promote long-term satisfaction.

5. CONCLUSION AND IMPLICATIONS

This study contributes to the growing body of literature on behavioural finance and digital banking by investigating the complex role of the overconfidence bias. While overconfidence does not have a direct effect on satisfaction, its variation

across educational levels offers valuable insights for financial institutions aiming to customize user engagement. Banks and fintech platforms should prioritize transparent communication, integrate educational prompts, and establish user feedback mechanisms to mitigate the potential negative effects of overconfidence. Future systems could incorporate behavioural nudges to improve user decision making and satisfaction.

6. LIMITATIONS AND FUTURE RESEARCH

This study is limited by its sample size and geographic scope, which may not sufficiently capture the diversity of digital banking users. Additionally, reliance on self-reported measures introduces a potential bias. Future research could benefit from employing longitudinal methods, encompassing a broader demographic base, and investigating other cognitive biases, such as confirmation bias or loss aversion. Incorporating qualitative insights could further enhance the understanding of behavioural influences on digital banking satisfaction.

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