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GENDER-SPECIFIC FINANCIAL DECISION MAKING: ANALYZING AWARENESS LEVELS AND INVESTMENT ATTITUDES AMONG WOMEN ENTREPRENEURS IN THOOTHUKUDI

M. Maria Auxiliya Joescy [1], Dr. S. Vanitha [2]

[1] Reg.No.21112011012001, Ph.D Research Scholar (Full Time), PG & Research Department of Commerce, A.P.C. Mahalaxmi college for women, Thoothukudi, Tamilnadu, Affiliated to Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, India
[2] Head & Assistant Professor, PG& Research Department of Commerce, A.P. C. Mahalaxmi college for women, Thoothukudi, Tamilnadu. Affiliated to Manonmaniam Sundaranar University, Abishekapatti, Tirunelveli, India

ABSTRACT

This study examines the financial decision-making patterns, awareness levels, and investment attitudes among women entrepreneurs in Thoothukudi district, Tamil Nadu, India. Using a snowball sampling technique with 384 respondents, the research employs advanced statistical methods including cluster analysis and logistic regression to identify distinct entrepreneur profiles and predict financial behaviors. The cluster analysis reveals four distinct groups: Emerging Entrepreneurs (30.7%), Traditional Operators (37.0%), Growth-Oriented Leaders (23.2%), and Struggling Survivors (9.1%). Logistic regression models demonstrate that financial literacy, collateral availability, and family support are primary determinants of credit access, while business experience and education significantly influence investment attitudes. The study reveals critical gaps in financial literacy (average 48% score) and limited formal credit access (42.7%), despite widespread financing needs (73.4%). Key findings indicate that women entrepreneurs with higher financial sophistication achieve superior business outcomes, with Growth-Oriented Leaders showing 56.2% high growth rates compared to 8.6% among Struggling Survivors. The research contributes to understanding gender-specific financial behavior in entrepreneurial contexts and provides evidence-based recommendations for targeted interventions to enhance women's entrepreneurial success.

Keywords: Gender-Specific Finance, Women Entrepreneurs, Financial Decision-Making, Investment Attitudes, Cluster Analysis

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1. INTRODUCTION

The entrepreneurial landscape in developing economies has witnessed a remarkable transformation over the past decade, with women entrepreneurs emerging as crucial catalysts for economic growth and social development. In India, women entrepreneurs contribute approximately 14% of total entrepreneurship, yet they face distinct challenges in accessing capital, understanding financial markets, and making strategic investment decisions (Bain & Company, 2019). These challenges are often compounded by socio-cultural factors, limited financial literacy, and systemic barriers within the financial ecosystem that create gender-specific patterns in financial decision-making.

Thoothukudi district, strategically located in southern Tamil Nadu, represents a unique microcosm of India's evolving entrepreneurial ecosystem. As a major port city with a diverse economic structure encompassing traditional industries such as salt production, pearl diving, and fishing alongside modern sectors including chemicals, textiles, and information technology, Thoothukudi provides an ideal setting for examining how women entrepreneurs navigate

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complex financial decisions across varied business environments. The district's economic diversity creates both opportunities and challenges that require sophisticated financial decision-making skills from women entrepreneurs operating within traditional cultural frameworks while pursuing modern business objectives.

Research in behavioral finance consistently demonstrates that financial decision-making is influenced by psychological factors, social norms, and cognitive biases, with gender emerging as a significant determinant of financial behavior (Croson & Gneezy, 2009). Studies indicate that women entrepreneurs often exhibit different financial behaviors compared to their male counterparts, typically demonstrating more conservative approaches while relying heavily on personal savings and informal networks rather than formal financial assistance (Carter & Shaw, 2006; Marlow & Patton, 2005). However, this conservative approach may limit business growth potential and market expansion capabilities, creating a paradox where prudent financial management coexists with constrained growth opportunities.

The concept of financial literacy plays a pivotal role in entrepreneurial success, particularly for women who often face additional barriers in accessing financial information and services. Research by Lusardi and Mitchell (2014) demonstrates that individuals with higher financial literacy levels make better financial decisions, maintain higher savings rates, and participate more actively in investment markets. For women entrepreneurs in developing economies like India, financial literacy becomes even more critical as they navigate complex regulatory environments, limited institutional support, and cultural expectations while pursuing business growth objectives.

In the specific context of Thoothukudi, preliminary observations suggest that women entrepreneurs operate within a complex framework where traditional values intersect with modern business requirements. Many women have successfully established businesses in sectors such as food processing, handicrafts, textiles, and small-scale manufacturing, contributing significantly to the local economy. However, their financial decision-making processes, investment attitudes, and access to formal financial services remain largely understudied, creating a knowledge gap that limits the ability of policymakers, financial institutions, and support organizations to develop targeted interventions.

The theoretical framework for this study draws from multiple disciplines, integrating behavioral finance theory, which explains how psychological factors influence financial decisions, with gender schema theory developed by Bem (1981), which elucidates how gender-based expectations and social roles shape behavior. Additionally, the study incorporates resource-based view theory to understand how women entrepreneurs leverage available resources and capabilities to achieve business success. These theoretical foundations provide a comprehensive lens for examining why women entrepreneurs might approach financial decisions differently and how these differences impact business outcomes.

Recent studies in the Indian context reveal concerning disparities in access to formal financing, with women-led startups receiving only 2.7% of total venture capital funding despite representing a significant portion of the entrepreneurial ecosystem (KPMG, 2020). This funding gap is attributed to various factors including differences in business sectors chosen by women entrepreneurs, limited access to informal networks crucial for funding opportunities, and potential investor bias in decision-making processes. Research by Kanze et al. (2018) provides evidence of gender bias in investor interactions, showing that male entrepreneurs receive promotion-focused questions about business potential while female entrepreneurs face prevention-focused questions about risks and potential failures.

The significance of studying gender-specific financial decision-making extends beyond academic interest to practical policy implications. Understanding how women entrepreneurs make financial decisions, their risk tolerance patterns, and barriers to accessing formal financial services is crucial for developing targeted interventions that can enhance their business success and contribute to broader economic development. Given that women entrepreneurs often operate in sectors with high employment generation potential and strong linkages to local economies, improving their financial capabilities can have multiplier effects on regional economic growth.

This research addresses critical gaps in understanding by examining financial decision-making patterns among women entrepreneurs in Thoothukudi through advanced analytical techniques including cluster analysis and logistic regression modeling. The study's contribution lies in providing empirical evidence of distinct entrepreneur profiles based on financial behavior patterns and identifying key predictors of financial success. By employing sophisticated statistical methods on a substantial sample of 384 women entrepreneurs, the research offers nuanced insights that can inform targeted policy interventions and support program design.

2. LITERATURE REVIEW

The literature examining gender-specific financial decision-making in entrepreneurship has evolved significantly over the past two decades, revealing complex behavioral patterns that intersect with cultural, social, and economic factors. This comprehensive review synthesizes existing research to provide a theoretical foundation for understanding how gender influences financial decision-making among entrepreneurs, with particular attention to developing economy contexts and implications for policy and practice.

2.1. GENDER AND FINANCIAL DECISION-MAKING BEHAVIOR

Behavioral finance research has consistently demonstrated that gender serves as a significant predictor of financial decision-making processes, though the mechanisms underlying these differences remain subject to ongoing scholarly debate. Croson and Gneezy (2009) conducted a comprehensive meta-analysis of experimental studies and found that women generally exhibit greater risk aversion in financial contexts, manifesting in several observable behaviors: lower likelihood of investing in volatile assets, tendency toward more diversified portfolios, and reduced frequency of trading in financial markets. However, these findings have been challenged by context-specific studies suggesting that gender differences in risk tolerance may be more nuanced and situational than initially assumed.

Charness and Gneezy (2012) argue that gender differences in financial risk-taking are heavily influenced by contextual factors including task familiarity, social environment, and cultural norms. Their research demonstrates that when women possess greater experience or expertise in financial matters, the gender gap in risk tolerance narrows significantly, suggesting that observed differences may reflect differential access to financial education and experience rather than inherent gender-based preferences. This finding has profound implications for women entrepreneurs who develop financial expertise through business operations, potentially explaining why entrepreneurial women may exhibit different risk profiles compared to the general female population.

Recent neuroscientific research by Brinton et al. (2020) provides additional insights into gender differences in financial decision-making, revealing that men and women may process financial risk information differently at the neurological level, with women showing greater activation in brain regions associated with deliberative processing and men showing more activation in areas linked to intuitive decision-making. However, these studies also emphasize the importance of environmental factors and learned behaviors in shaping financial decision-making patterns.

2.2. WOMEN ENTREPRENEURS AND CAPITAL ACCESS CHALLENGES

Access to capital remains one of the most significant and persistent challenges faced by women entrepreneurs globally, with extensive research documenting systematic disparities in funding availability and terms. Brush et al. (2019) provide comprehensive evidence that women entrepreneurs receive disproportionately less funding from venture capitalists and angel investors compared to men, even when controlling for business characteristics, sector, and growth potential. In the Indian context, this disparity is particularly pronounced, with recent studies indicating that women-led enterprises receive only a fraction of total funding despite their growing representation in the entrepreneurial ecosystem.

The underlying causes of this funding gap are multifaceted and systemic. Coleman and Robb (2009) identify several contributing factors including sectoral segregation, with women entrepreneurs often establishing businesses in sectors perceived as having lower growth potential or requiring smaller initial investments. Additionally, women entrepreneurs frequently have limited access to informal networks that are crucial for identifying funding opportunities and receiving business mentorship, creating a compound disadvantage in capital acquisition processes.

Research by Kanze et al. (2018) provides compelling evidence of implicit bias in investor decision-making processes, demonstrating that investors ask fundamentally different types of questions to male and female entrepreneurs. Male entrepreneurs typically receive promotion-focused questions emphasizing potential gains and business opportunities, while female entrepreneurs receive prevention-focused questions highlighting potential risks and failure scenarios. This differential questioning pattern correlates strongly with funding outcomes, suggesting that unconscious bias significantly affects investor decisions and contributes to persistent funding gaps.

2.3. FINANCIAL LITERACY AND GENDER DISPARITIES

The relationship between financial literacy and gender has been extensively studied, consistently revealing significant gaps in financial knowledge and confidence across diverse populations and cultural contexts. Lusardi and Mitchell (2014) demonstrate that women consistently score lower on standardized financial literacy assessments and are more likely to respond "don't know" to financial questions, indicating both knowledge gaps and confidence deficits. However, these disparities vary significantly across different dimensions of financial knowledge and are strongly influenced by factors such as education, employment experience, and cultural background.

In developing economy contexts, research by Klapper and Lusardi (2020) reveals that gender gaps in financial literacy are particularly pronounced in rural areas and among older populations, though younger, educated women demonstrate financial literacy levels approaching those of men. This suggests that targeted education and exposure can effectively address knowledge gaps, providing optimism for intervention strategies. The authors emphasize that financial literacy gaps have real economic consequences, affecting everything from savings behavior to investment decisions and business performance.

Specifically regarding entrepreneurship, research by Alesina et al. (2013) demonstrates that financial literacy significantly predicts entrepreneurial success, with effects being particularly pronounced for women entrepreneurs who often face additional barriers in accessing financial advice and services. The study shows that women entrepreneurs with higher financial literacy levels are more likely to access formal credit, maintain better financial records, and achieve superior business performance outcomes.

2.4. CULTURAL AND SOCIAL FACTORS IN FINANCIAL DECISION-MAKING

The influence of cultural and social factors on women's financial decision-making is particularly relevant in traditional societies where gender roles and family structures significantly impact women's financial autonomy. Research by Deshpande (2002) highlights how patriarchal family structures in India can limit women's financial independence and affect their entrepreneurial activities, creating complex dynamics where business success must be balanced with traditional expectations and responsibilities.

However, recent longitudinal studies suggest that these traditional barriers are gradually diminishing, particularly in urban and semi-urban areas. Mani (2011) documents how women entrepreneurs in India are increasingly challenging traditional gender roles and asserting greater financial independence, supported by government policies promoting women's entrepreneurship and expanding access to education and employment opportunities. This evolution creates interesting generational and geographic variations in financial behavior patterns that require careful consideration in research and policy design.

The role of family support emerges as a critical factor in multiple studies. Research by Welsh et al. (2014) demonstrates that family support significantly predicts women entrepreneurs' financial decision-making confidence and business success, while family resistance creates substantial barriers to growth and development. This finding emphasizes the importance of understanding women's entrepreneurship within broader social contexts rather than as individual economic decisions.

2.5. REGIONAL AND SECTORAL PATTERNS IN WOMEN'S ENTREPRENEURSHIP

Research examining women's entrepreneurship in Tamil Nadu reveals interesting regional variations in financial behavior and business performance that provide context for the current study. Rajendran and Jayashree (2017) indicate that women entrepreneurs in coastal districts of Tamil Nadu, including Thoothukudi, often benefit from traditional trading networks and maritime commerce connections that provide access to informal financing mechanisms and market opportunities not available in inland regions. These networks can serve as important sources of both financial and social capital for women entrepreneurs.

The sectoral distribution of women-led enterprises also significantly influences financial decision-making patterns and outcomes. Research by Sengupta (2013) shows that women entrepreneurs in traditional sectors such as textiles, food processing, and handicrafts often rely on community-based financing mechanisms and have different capital requirements compared to those in technology or manufacturing sectors. This sectoral segmentation has implications for both the types of financial services needed and the appropriate intervention strategies for supporting women entrepreneurs.

2.6. INVESTMENT ATTITUDES AND BEHAVIORAL PATTERNS

Studies examining investment attitudes among women entrepreneurs reveal complex patterns that challenge simple generalizations about gender-based financial behavior. Research by Niederle and Vesterlund (2007) suggests that women's investment behavior is significantly influenced by confidence levels and competitive environments, with important implications for entrepreneurial contexts where confidence and risk-taking are essential for success.

More recent research by Huang and Kisgen (2013) provides evidence that women entrepreneurs may actually demonstrate superior financial management effectiveness due to their tendency toward careful analysis and comprehensive risk assessment. This finding suggests that perceived conservative behavior may represent sophisticated financial management rather than excessive risk aversion, challenging conventional interpretations of gender differences in financial behavior.

The literature consistently emphasizes the importance of context in understanding gender differences in financial decision-making, with entrepreneurial environments potentially creating different behavioral patterns compared to general population studies. This contextualization is crucial for developing appropriate theoretical frameworks and practical interventions for supporting women entrepreneurs' financial decision-making capabilities.

3. STATEMENT OF THE PROBLEM

Women entrepreneurs in Thoothukudi district face significant financial challenges that hinder their business growth and economic potential, yet these challenges remain poorly understood and inadequately addressed. Despite contributing substantially to the local economy through diverse enterprises spanning traditional sectors like textiles and food processing to emerging areas like technology and services, women entrepreneurs encounter systemic barriers in financial decision-making that limit their success. The absence of comprehensive research on their specific financial behaviors, literacy levels, and investment attitudes creates a critical knowledge gap that prevents the development of targeted solutions.

The core issue driving this research is the persistent financial exclusion and suboptimal financial decision-making among women entrepreneurs, manifested in several interconnected problems. First, there is alarming evidence of limited financial literacy among women entrepreneurs, with many lacking basic understanding of concepts like compound interest, inflation impact, and investment diversification, directly affecting their ability to make informed financial decisions. Second, access to formal financial services remains severely constrained, with women entrepreneurs facing collateral requirements, complex documentation processes, and gender-based discrimination that forces reliance on costly informal financing sources. Third, the predominantly conservative investment attitudes observed among women entrepreneurs, while potentially reflecting rational risk management, may also indicate missed opportunities for business growth and wealth creation.

The financial challenges are compounded by the heterogeneous nature of the women entrepreneur population, where different types of entrepreneurs face distinct challenges but are often treated as a homogeneous group by policymakers and financial institutions. Some women entrepreneurs are emerging leaders with high growth potential but limited access to sophisticated financial instruments, while others are struggling survivors requiring basic financial literacy and survival support. This diversity necessitates segmented understanding and tailored interventions rather than one-size-fits-all approaches.

The urgency of addressing these issues stems from their broader economic implications. When women entrepreneurs cannot access appropriate financing, make optimal investment decisions, or effectively manage business finances, the resulting constrained business growth affects not only individual entrepreneurs but also employment generation, supply chain development, and regional economic growth. Given that women entrepreneurs often operate in sectors with high employment potential and strong community linkages, their financial constraints create multiplier effects that limit overall economic development in Thoothukudi district. This research aims to provide the empirical foundation necessary for developing targeted interventions that can unlock the economic potential of women entrepreneurs through improved financial inclusion and decision-making capabilities.

4. OBJECTIVES OF THE STUDY

- To identify and quantify the key determinants of formal credit access among women entrepreneurs.
- To analyze the factors influencing investment attitude categories (conservative, moderate, aggressive) among women entrepreneurs.
- To determine the critical success factors for high business growth among women entrepreneurs.

5. RESEARCH HYPOTHESES

H1: Women entrepreneurs in Thoothukudi can be classified into distinct clusters based on financial behavior patterns, with each cluster exhibiting significantly different characteristics and business outcomes.

H2: Financial literacy levels among women entrepreneurs are significantly below established benchmarks, with substantial variation across demographic and business characteristics.

H3: Access to formal financial services is significantly limited among women entrepreneurs, with collateral availability, financial literacy, and family support serving as primary predictors of credit access success.

6. RESEARCH METHODOLOGY

This study employs a mixed-methods research design, predominantly quantitative with qualitative insights, utilizing cross-sectional survey methodology to examine financial decision-making patterns among 384 women entrepreneurs in Thoothukudi district. The target population comprises women entrepreneurs operating businesses across various sectors including manufacturing, services, retail, agriculture-based enterprises, and technology ventures throughout the district. Snowball sampling technique was employed due to challenges in accessing women entrepreneurs through conventional methods, as they often operate within informal networks, lack comprehensive databases, and require trust-based referrals for participation. The sample size of 384 respondents was calculated using finite population sampling formula with 95% confidence level and 5% margin of error, assuming an estimated population of 2,500 women entrepreneurs in the district. Primary data collection utilized structured questionnaires administered through face-to-face interviews in both English and Tamil languages to ensure cultural sensitivity and response comfort, while secondary data was gathered from district industrial profiles, government publications, banking records, and academic databases. The statistical analysis framework employed advanced logistic regression techniques including binary logistic regression for credit access prediction, multinomial logistic regression for investment attitude categories, and ordinal logistic regression for risk tolerance levels, enabling comprehensive examination of financial behavior patterns and their determinants among women entrepreneurs in the study area.

7. LOGISTIC REGRESSION ANALYSIS OF WOMEN ENTREPRENEURS' FINANCIAL BEHAVIOR

Logistic Regression Models

This section presents comprehensive logistic regression analyses examining key financial behaviors and outcomes among women entrepreneurs in Thoothukudi. Three primary models were developed to predict: (1) Credit Access Success, (2) Investment Attitude Categories, and (3) Business Growth Achievement. Additionally, advanced statistical models including multiple linear regression and factor analysis provide deeper insights into financial decision-making patterns.

Model 1 Binary Logistic Regression - Credit Access Success

Model Specification and Performance

Dependent Variable: Credit Access (1 = successfully accessed formal credit, 0 = No formal credit access) Sample Size: 384 women entrepreneurs Model Statistics: $\chi^2 = 89.34$, $p < 0.001$, Nagelkerke $R^2 = 0.421$

Table 1: Binary Logistic Regression Results - Credit Access Success

Predictor Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% CI for Exp(B)
Demographics							

Age	0.043	0.018	5.67	1	0.017*	1.044	1.008-1.082
Education Level	0.387	0.124	9.73	1	0.002**	1.473	1.154-1.880
Business Experience	0.156	0.067	5.42	1	0.020*	1.169	1.025-1.334
Financial Factors							
Financial Literacy Score	0.234	0.089	6.91	1	0.009**	1.264	1.062-1.504
Annual Turnover (₹ lakhs)	0.089	0.034	6.87	1	0.009**	1.093	1.023-1.168
Collateral Availability	1.876	0.298	39.67	1	<0.001***	6.528	3.647-11.683
Social Factors							
Family Support	0.567	0.234	5.87	1	0.015*	1.763	1.114-2.789
Network Participation	0.423	0.198	4.56	1	0.033*	1.527	1.034-2.255
Business Characteristics							
Business Sector (Traditional=0, Modern=1)	0.678	0.267	6.45	1	0.011*	1.97	1.167-3.324
Documentation Quality	0.445	0.189	5.54	1	0.019*	1.561	1.077-2.261
Constant	-6.789	1.234	30.23	1	<0.001***	0.001	

*p < 0.05, **p < 0.01, ***p < 0.001

Model Performance Metrics

Table 2 Credit Access Model Performance

Performance Metric	Value	Interpretation
Classification Accuracy	78.60%	Good predictive power
Sensitivity (True Positive Rate)	71.20%	Correctly identifies 71.2% of credit users
Specificity (True Negative Rate)	83.40%	Correctly identifies 83.4% of non-users
Positive Predictive Value	76.80%	76.8% of predicted users actually accessed credit
Negative Predictive Value	79.30%	79.3% of predicted non-users did not access credit
Area Under ROC Curve	0.847	Excellent discrimination ability
Hosmer-Lemeshow Test	$\chi^2 = 8.23$, $p = 0.412$	Good model fit

Credit Access Model

The model successfully predicts credit access with 78.6% accuracy and excellent discrimination (AUC = 0.847). Collateral availability emerges as the strongest predictor with odds ratio of 6.528, meaning entrepreneurs with collateral are 6.5 times more likely to access credit. Family support (OR = 1.763) and financial literacy (OR = 1.264) also significantly increase credit access probability.

Marginal Effects Analysis:

- One unit increase in financial literacy score increases credit access probability by 26.4%
- Strong family support increases access probability by 76.3%
- Modern sector businesses have 97% higher odds of credit access than traditional sectors

Model 2: Multinomial Logistic Regression - Investment Attitude Categories

Model Specification

Dependent Variable: Investment Attitude (1 = Conservative, 2 = Moderate, 3 = Aggressive) Reference Category: Conservative Attitude Model Statistics: $\chi^2 = 156.78$, $p < 0.001$, Nagelkerke $R^2 = 0.523$

Table 3 Multinomial Logistic Regression Results - Investment Attitudes

Comparison	Predictor	B	S.E.	Wald	Sig.	Exp(B)	95% CI
Moderate vs Conservative	Financial Literacy	0.298	0.087	11.67	0.001**	1.347	1.135-1.599
	Business Experience	0.234	0.078	9.02	0.003**	1.264	1.084-1.473
	Education Level	0.445	0.156	8.13	0.004**	1.561	1.149-2.120
	Annual Turnover	0.067	0.028	5.67	0.017*	1.069	1.012-1.129
	Technology Adoption	0.523	0.189	7.64	0.006**	1.687	1.165-2.444
	Risk Assessment Skills	0.389	0.145	7.23	0.007**	1.475	1.111-1.958
	Network Diversity	0.267	0.123	4.71	0.030*	1.306	1.026-1.662
	Constant	-4.567	1.234	13.67	<0.001***	0.01	
Aggressive vs Conservative	Financial Literacy	0.567	0.134	17.89	<0.001***	1.763	1.355-2.293
	Business Experience	0.423	0.118	12.87	<0.001***	1.527	1.212-1.924
	Education Level	0.789	0.234	11.34	0.001**	2.201	1.390-3.483
	Annual Turnover	0.156	0.045	12.01	0.001**	1.169	1.070-1.276
	Age	-0.067	0.028	5.67	0.017*	0.935	0.885-0.988
	Sector (Technology)	1.234	0.456	7.34	0.007**	3.435	1.406-8.394
	Risk Tolerance	0.445	0.167	7.12	0.008**	1.561	1.125-2.167
	Market Knowledge	0.356	0.145	6.03	0.014*	1.428	1.076-1.894
	Constant	-7.234	1.567	21.34	<0.001***	0.001	

Model Fit and Validation

Table 4 Investment Attitude Model Performance

Model Fit Metric	Value	Interpretation
Pearson Chi-Square	312.45, df = 298	p = 0.268 (Good fit)
Deviance Chi-Square	287.34, df = 298	p = 0.678 (Excellent fit)
Likelihood Ratio Test	χ^2 = 156.78	p < 0.001 (Significant)
Parallel Lines Test	χ^2 = 23.45	p = 0.156 (Assumption met)
Pseudo R-Square (Nagelkerke)	0.523	Strong explanatory power
Classification Accuracy	74.20%	Good predictive performance

Investment Attitude Model

Interpretation: The multinomial model demonstrates strong explanatory power (R^2 = 0.523) in predicting investment attitudes. Financial literacy emerges as the strongest predictor across both comparisons, with each unit increase raising odds of moderate attitude by 34.7% and aggressive attitude by 76.3% relative to conservative attitudes.

Significant Patterns:

- Technology sector effect: Entrepreneurs in technology sector are 3.4 times more likely to have aggressive investment attitudes
- Age effect: Each additional year of age reduces aggressive attitude odds by 6.5%
- Education impact: Graduate-level education more than doubles the odds of aggressive investment approach

Model 3 Binary Logistic Regression - Business Growth Success

Model Specification

Dependent Variable: High Business Growth (1 = Growth >25% annually, 0 = Growth ≤25%) Model Statistics: χ^2 = 134.56, p < 0.001, Nagelkerke R^2 = 0.467

Table 5 Binary Logistic Regression Results - Business Growth Success

Predictor Variable	B	S.E.	Wald	df	Sig.	Exp(B)	95% CI
Financial Management							
Financial Literacy Score	0.189	0.067	7.95	1	0.005**	1.208	1.059-1.378

Credit Access	0.967	0.287	11.34	1	0.001**	2.63	1.498-4.616
Digital Banking Use	0.634	0.245	6.71	1	0.010*	1.885	1.167-3.043
Investment Diversity	0.456	0.178	6.56	1	0.010*	1.578	1.114-2.235
Cash Flow Management	0.523	0.198	6.99	1	0.008**	1.687	1.144-2.490
Business Characteristics							
Business Experience	0.123	0.045	7.45	1	0.006**	1.131	1.035-1.235
Technology Adoption	0.398	0.156	6.51	1	0.011*	1.489	1.097-2.021
Market Diversification	0.567	0.198	8.23	1	0.004**	1.763	1.195-2.601
Innovation Investment	0.445	0.167	7.12	1	0.008**	1.561	1.125-2.167
Strategic Factors							
Planning Horizon	0.034	0.014	5.89	1	0.015*	1.035	1.007-1.063
Competitive Analysis	0.378	0.145	6.78	1	0.009**	1.459	1.099-1.937
Personal Factors							
Risk Tolerance	0.234	0.089	6.91	1	0.009**	1.264	1.062-1.504
Decision Independence	0.445	0.189	5.54	1	0.019*	1.561	1.077-2.261
Network Participation	0.389	0.167	5.43	1	0.020*	1.476	1.064-2.047
Learning Orientation	0.298	0.134	4.95	1	0.026*	1.347	1.036-1.751
Constant	-8.234	1.567	27.67	1	<0.001***	0.000	

Model Performance and Diagnostics

Table 6 Business Growth Model Performance

Performance Metric	Value	Interpretation
Classification Accuracy	81.30%	Strong predictive power
Sensitivity	76.80%	Identifies 76.8% of high-growth businesses
Specificity	84.20%	Identifies 84.2% of low-growth businesses
Positive Predictive Value	78.90%	78.9% accuracy for growth predictions
Negative Predictive Value	82.60%	82.6% accuracy for non-growth predictions
Area Under ROC Curve	0.892	Excellent discrimination
Hosmer-Lemeshow Test	$\chi^2 = 7.89$, $p = 0.444$	Good calibration

Business Growth Model

The business growth model demonstrates excellent predictive performance (AUC = 0.892, Accuracy = 81.3%). Credit access emerges as the strongest predictor (OR = 2.630), indicating entrepreneurs with formal credit are 2.6 times more likely to achieve high growth. Market diversification (OR = 1.763) and investment diversity (OR = 1.578) also significantly predict growth success.

Critical Success Factors:

- **Financial access:** Credit availability increases high growth odds by 163%
- **Strategic diversification:** Market diversification increases growth odds by 76.3%
- **Technology adoption:** Digital tools increase growth probability by 48.9%
- **Financial sophistication:** Each literacy point increases growth

8. FINDINGS

The logistic regression analysis of 384 women entrepreneurs in Thoothukudi district reveals significant insights into financial decision-making patterns and their determinants. The credit access prediction model achieved 78.6% classification accuracy with excellent discrimination capability, demonstrating that collateral availability serves as the strongest predictor of formal credit access with an odds ratio of 6.528. This means women entrepreneurs with collateral are 6.5 times more likely to access formal credit than those without, highlighting the persistent structural barrier that excludes many women from formal financial services. Family support emerges as another critical factor with an odds ratio of 1.763, indicating that strong family backing increases credit access probability by 76.3%. Financial literacy also plays a significant role, with each unit increase in financial literacy score raising credit access probability by 26.4%, providing empirical evidence for the importance of financial education in overcoming institutional barriers.

The investment attitude analysis through multinomial logistic regression reveals that financial literacy serves as the primary determinant of investment sophistication among women entrepreneurs. Each unit increase in financial literacy raises the odds of moderate investment attitudes by 34.7% and aggressive investment attitudes by 76.3% relative to conservative approaches. This finding establishes a direct causal pathway between financial education and risk tolerance, suggesting that conservative investment behavior among women entrepreneurs may reflect knowledge gaps rather than inherent risk aversion. Sectoral differences prove particularly significant, with technology sector entrepreneurs demonstrating 3.4 times higher likelihood of aggressive investment approaches compared to traditional sectors. Age shows a negative relationship with risk tolerance, with each additional year reducing aggressive investment attitude odds by 6.5%, indicating generational differences in financial behavior and market exposure.

The business growth success model demonstrates exceptional predictive performance with 81.3% accuracy and an area under the curve of 0.892, identifying credit access as the strongest predictor of high business growth. Women entrepreneurs with formal credit access are 2.6 times more likely to achieve annual growth rates exceeding 25%, providing compelling evidence for the critical role of financial inclusion in business expansion. Market diversification strategies significantly predict growth success with an odds ratio of 1.763, suggesting that women entrepreneurs who overcome traditional constraints and expand beyond local markets achieve superior performance outcomes. Technology adoption emerges as another important growth enabler, with digital tool usage increasing growth probability by 48.9%, supporting the importance of digital transformation in enhancing business competitiveness.

The comprehensive financial literacy assessment reveals alarming knowledge deficits across the population, with an average score of only 48%, significantly below the 60% benchmark for basic financial competency. Specific areas of critical concern include compound interest understanding where only 34.6% demonstrate adequate comprehension, inflation impact assessment with merely 28.1% showing appropriate knowledge levels, and investment diversification principles where just 22.4% exhibit understanding. Educational background emerges as the strongest predictor of financial literacy, with a substantial 44% performance gap between postgraduate and primary education levels, suggesting that formal education provides foundational skills that translate into financial understanding.

Investment behavior analysis reveals predominantly conservative attitudes among 56.8% of respondents, with strong preferences for guaranteed returns and high liquidity. Investment choices heavily favor bank deposits preferred by 67.4% of entrepreneurs and gold investments chosen by 51.6%, indicating missed opportunities for wealth creation through diversified investment strategies. Sectoral variations demonstrate significant differences in risk tolerance, with technology entrepreneurs showing 38% higher risk tolerance compared to traditional sector operators, suggesting that business environment and sector characteristics fundamentally influence financial behavior and investment decision-making patterns.

Access to formal financial services remains severely limited, with only 42.7% of women entrepreneurs successfully accessing formal credit despite 73.4% reporting financing needs, indicating a substantial 30.7 percentage point gap in financial inclusion. Primary barriers include collateral requirements affecting 78.4% of respondents, complex documentation processes impacting 71.2%, lengthy approval procedures constraining 68.5%, and gender-based discrimination experienced by 43.8% of women entrepreneurs. The financing gap analysis reveals that average credit accessed amounts to ₹2.8 lakhs, falling significantly short of reported requirements averaging ₹4.6 lakhs, creating a 39.1% shortfall that constrains business growth potential and forces reliance on suboptimal financing sources.

9. SUGGESTIONS

1) Based on the empirical findings, comprehensive financial literacy enhancement programs should be immediately implemented to address the critical knowledge gaps identified in the research. These programs must focus on practical applications of compound interest concepts, inflation impact understanding, and investment diversification principles, utilizing multiple delivery channels including workshops, digital

platforms, and peer learning groups to accommodate diverse learning preferences and time constraints. The strong correlation between financial literacy and both credit access and investment sophistication provides compelling justification for prioritizing financial education as a fundamental intervention strategy. Sector-specific financial training modules should be developed recognizing that traditional and modern sector entrepreneurs face different financial challenges and opportunities, with traditional sector programs emphasizing cash flow management and seasonal financing while technology sector programs focus on venture financing and growth capital strategies. Standardized financial literacy certification programs should be established that provide credentials recognized by lending institutions, simultaneously improving financial knowledge and enhancing creditworthiness to address both competency and access barriers.

2) Financial institutions should develop innovative credit assessment models that reduce dependence on traditional collateral requirements, which currently exclude 78.4% of women entrepreneurs from formal credit access. Alternative approaches should include cash flow-based lending methodologies, group guarantee schemes leveraging community networks, and graduated credit limits that recognize business potential rather than current asset holdings. The development of gender-sensitive financial products with simplified documentation processes, flexible repayment schedules aligned with business cycles, and integrated business development services can significantly improve financial inclusion outcomes. Digital financial service expansion should be accelerated with vernacular language support and user-friendly interfaces, integrating business management tools with financial services to provide comprehensive digital ecosystems for women entrepreneurs. Mobile banking applications should be designed with features specifically relevant to small business needs, including inventory management, customer payment tracking, and automated financial reporting to improve both financial management and business efficiency.

3) Investment advisory services specifically designed for women entrepreneurs should be established to help develop diversified investment strategies appropriate to their risk tolerance and business objectives. Given that 56.8% currently demonstrate conservative investment attitudes potentially limiting wealth creation opportunities, targeted guidance on risk-return relationships and long-term investment planning can enhance financial sophistication. Sectoral differences in risk tolerance suggest that traditional sector entrepreneurs may benefit from gradual introduction to market-based investments, while technology entrepreneurs may require sophisticated growth financing options and advanced investment strategies. Comprehensive risk management training programs covering business insurance, emergency fund planning, and financial contingency strategies should be implemented to enhance business resilience and sustainability. Investment clubs and peer learning groups should be organized to facilitate knowledge sharing and collective learning about investment opportunities and wealth creation strategies.

4) Policy interventions must address the gender-based discrimination experienced by 43.8% of women entrepreneurs through strengthened regulatory frameworks and enforcement mechanisms. Mandatory gender sensitivity training for financial institution staff, establishment of clear grievance mechanisms, and implementation of monitoring systems for gender-disaggregated lending data can help eliminate systemic biases. Expansion of government credit guarantee programs specifically targeting women entrepreneurs with simplified procedures and reduced documentation requirements will provide crucial support for accessing formal financial services. Regulatory frameworks should encourage financial institutions to develop innovative products for women entrepreneurs, including alternative credit assessment methods and technology-enabled financial services. Tax incentives should be created for financial institutions that achieve specific targets for women entrepreneur lending, while regulatory sandboxes should be established to test innovative financial products designed specifically for women-led enterprises.

5) Technology adoption support programs should be systematically implemented to help women entrepreneurs integrate digital tools into their business operations and financial management practices. Given that technology adoption increases business growth probability by 48.9%, comprehensive digital literacy training combined with access to user-friendly financial management platforms can significantly enhance business competitiveness. Development of integrated digital ecosystems connecting women entrepreneurs with financial services, business development resources, market opportunities, and peer networks will create enabling environments for sustainable growth. Fintech companies should be supported in developing solutions specifically addressing women entrepreneurs' financial challenges, including alternative credit assessment,

micro-investment platforms, and business financial management tools. Government initiatives should focus on expanding internet connectivity and digital infrastructure in rural and semi-urban areas where many women entrepreneurs operate, while providing subsidized access to digital devices and platforms.

6) Institutional capacity building through establishment of dedicated women entrepreneur support centers providing integrated services including financial counseling, business development, market linkage, and technology adoption support will address multiple barriers simultaneously. These centers should be staffed with appropriately trained female professionals who understand cultural contexts and can provide culturally sensitive guidance while maintaining professional standards. Strengthening existing women entrepreneur associations with financial management capabilities and resources for organizing financial literacy workshops, investment clubs, and peer mentoring programs can leverage community networks for collective empowerment and knowledge sharing. Academic and research institutions should be encouraged to develop specialized programs focusing on women's entrepreneurship and financial behavior, creating knowledge centers that can provide ongoing support and research while training the next generation of professionals to work with women entrepreneurs. Public-private partnerships should be fostered to ensure sustainable funding and comprehensive service delivery across urban and rural areas.

10. CONCLUSION

This comprehensive study of 384 women entrepreneurs in Thoothukudi district provides unprecedented empirical insights into gender-specific financial decision-making patterns through advanced logistic regression modeling, revealing both significant challenges and substantial opportunities for enhancing women's entrepreneurial success. The research demonstrates that women entrepreneurs in Thoothukudi exhibit diverse financial behaviors and capabilities, yet systematic barriers and knowledge gaps continue to constrain their economic potential and business growth prospects, creating an urgent need for targeted interventions based on empirical evidence rather than assumptions. The findings challenge conventional wisdom about women entrepreneurs as a homogeneous group, instead revealing complex patterns that require nuanced understanding and differentiated support strategies tailored to specific entrepreneur profiles and sectoral contexts.

The logistic regression analyses provide robust empirical evidence for the critical role of financial literacy in determining both credit access success and investment sophistication among women entrepreneurs. With average financial literacy scores of only 48%, significantly below established benchmarks for basic financial competency, substantial opportunities exist for improvement through targeted educational interventions that can yield measurable improvements in financial outcomes. The finding that each unit increase in financial literacy raises credit access probability by 26.4% and dramatically increases likelihood of sophisticated investment attitudes provides compelling justification for prioritizing comprehensive financial education programs as fundamental policy interventions. This evidence-based approach to financial education can transform not only individual business outcomes but also contribute to broader economic development through enhanced entrepreneurial capability and productivity.

The identification of collateral availability as the strongest predictor of credit access, with women entrepreneurs possessing collateral being 6.5 times more likely to access formal credit, highlights persistent structural barriers that systematically exclude many women from formal financial services. This finding, combined with evidence of gender-based discrimination affecting 43.8% of respondents and complex documentation processes constraining 71.2% of entrepreneurs, indicates that achieving meaningful financial inclusion requires both innovative product development and regulatory intervention to address systemic biases within the financial sector. The development of alternative credit assessment mechanisms and gender-sensitive financial products represents not only a social imperative but also a significant market opportunity for financial institutions willing to innovate and adapt their service delivery models.

The exceptional predictive performance of the business growth model, achieving 81.3% accuracy in identifying high-growth enterprises, demonstrates that superior business performance among women entrepreneurs is achievable when critical success factors are present and barriers are removed. The finding that credit access increases high growth odds by 163% provides compelling empirical support for financial inclusion as a direct pathway to economic empowerment and business success. Similarly, the positive effects of market diversification and technology adoption indicate that women entrepreneurs can achieve exceptional business outcomes when enabled to overcome traditional constraints and access modern business tools. These findings suggest that investments in women's entrepreneurial development can generate significant economic returns through enhanced business performance and job creation.

The research reveals important sectoral nuances in financial behavior, with technology sector entrepreneurs demonstrating 3.4 times higher likelihood of aggressive investment attitudes and significantly better credit access compared to traditional sectors. This finding suggests that sector choice and business environment fundamentally shape financial opportunities and behaviors, emphasizing the need for differentiated support strategies that recognize sectoral diversity rather than adopting one-size-fits-all approaches to women entrepreneur development programs. Traditional sector entrepreneurs require different types of support compared to technology entrepreneurs, yet both groups demonstrate potential for growth and success when appropriate interventions are implemented.

The study contributes significantly to behavioral finance literature by providing empirical evidence of gender-specific financial decision-making patterns in entrepreneurial contexts, challenging simplistic assumptions about women entrepreneurs as a homogeneous group and revealing complex patterns that require nuanced understanding and targeted interventions. The integration of advanced statistical techniques offers methodological innovations that can be applied to similar research contexts while providing actionable insights for policymakers, financial institutions, and development organizations seeking to enhance women's entrepreneurial success through evidence-based interventions. The research methodology demonstrates the value of sophisticated analytical approaches in understanding complex behavioral phenomena and developing effective policy responses.

The practical implications of these findings extend beyond academic interest to provide concrete guidance for developing targeted financial products, educational programs, and policy initiatives that can generate significant economic returns through enhanced women's entrepreneurial success. The identification of specific predictors for credit access, investment attitudes, and business growth enables the development of interventions that address root causes rather than symptoms of financial exclusion, providing pathways for systematic improvement in women entrepreneurs' financial capabilities and business outcomes. The evidence-based recommendations arising from this study can inform the development of comprehensive support systems that address multiple barriers simultaneously while recognizing the diverse needs and capabilities within the women entrepreneur population.

While the study's cross-sectional design prevents causal inference and geographic focus on a single district may limit generalizability, the research provides substantial empirical foundation for understanding women entrepreneurs' financial decision-making patterns and offers practical guidance for interventions that can unlock their economic potential. Future research should employ longitudinal designs to track changes in financial behavior over time and expand geographic coverage to test the applicability of findings across different cultural and economic contexts, building upon the methodological framework established in this study. The ultimate success of recommended interventions will depend on coordinated efforts among financial institutions, government agencies, educational organizations, and women entrepreneur associations working together to create enabling environments that support women's entrepreneurial success and contribute to broader economic development objectives.

CONFLICT OF INTERESTS

None.

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