

Financial Constraints in Women-Led Start-Up Businesses: A Decision Tree Analysis

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Abstract

This study describes and finds out to the women entrepreneurs' start-up business constraints on financial functional areas. Here barriers on financial functional areas constraints variables is 'Day to day financial decision-making is difficult' (FAC-1), 'Facing high interest rates for loan' (FAC-2), 'Working capital issues in business' (FAC-3), 'Unsteady income' (FAC-4) and 'Lack of availability of collateral securities' (FAC-5). In the study to find out through the Decision Tree Analysis, which variables are most impact to women entrepreneurs' start-up business constraints on financial functional areas.

Keywords: Start-up Business, Women Entrepreneurs constraints, financial constraints

I. INTRODUCTION

Women in Indian households have very little financial independence, particularly in rural and less educated households. Women in these households are unable to make any business decisions without consulting their family members as well as taking societal norms and ethics into account. A woman cannot launch

a business or engage in any other economic activity to become independent because of her financial dependence. Although they lack financial assistance from their family, many women from low-income homes consistently possess entrepreneurial talents. Therefore, we think that the issues facing women entrepreneurs are trapped in this contradiction.

Review of Related Literature

In their study on the barriers faced by female entrepreneurs, Singh P. et al. (2022) found that the most common issue among registered entrepreneurs was a lack of financial experience, which was followed by a low ability to take risks. For both registered and unregistered businesses, the socio-familial issues were a lack of recognition and a subsequent lack of acceptance of their roles.

According to Raju Bhai Manandhar (2022), obtaining working capital and running a business are the two biggest issues facing female entrepreneurs. No parental property is given to female entrepreneurs. As a result, they are unwilling to visit financial institutions to obtain their capital, which makes it difficult to raise the required amount. Furthermore, because women are still viewed as a lower gender in our society, friends and family do not assist them in saving money to launch their careers. As a result, they have trouble raising the required funds.

Nidhi Khatrani (2021) examined the difficulties faced by women entrepreneurs. According to the report, most women struggle with a variety of issues, such as low self-esteem, financial issues, a lack of family support, and juggling personal and professional lives.

According to Anjali Chunera's (2020) research, the main societal barriers that Indian women entrepreneurs must overcome are discrimination and gender disparity, familial discouragement, a lack of social acceptance, and male dominance. Lack of self-confidence, motivation, and risk-taking ability, playing two roles at home and at work, fear of failure and criticism, and financial limitations such as insufficient working capital, ignorance of funding sources, lack of credit facilities, and lack of financial knowledge are examples of personal constraints.

Objective:

- To find the women entrepreneurs' start-up business constraints on financial functional areas

Research Design and Sample

In the present study descriptive research design will be adopted. Descriptive research studies are those studies which are concerned with describing the characteristics and attitude of a particular individual, or a group. Here the study

describing the women entrepreneurs' start-up business constraints on financial functional areas. Descriptive research is a widely accepted method in fact-finding, and the study includes adequate and accurate interpretation of results. The convenience sampling technique is applied to this study to measure start-up business barriers on regulatory and policy. 424 sample data was collected from women entrepreneurs. Here Likert five-point scale technique was used, like 5- Highly Agree, 4- Agree, 3- Neutral, 2- Disagree, 1- Highly disagree

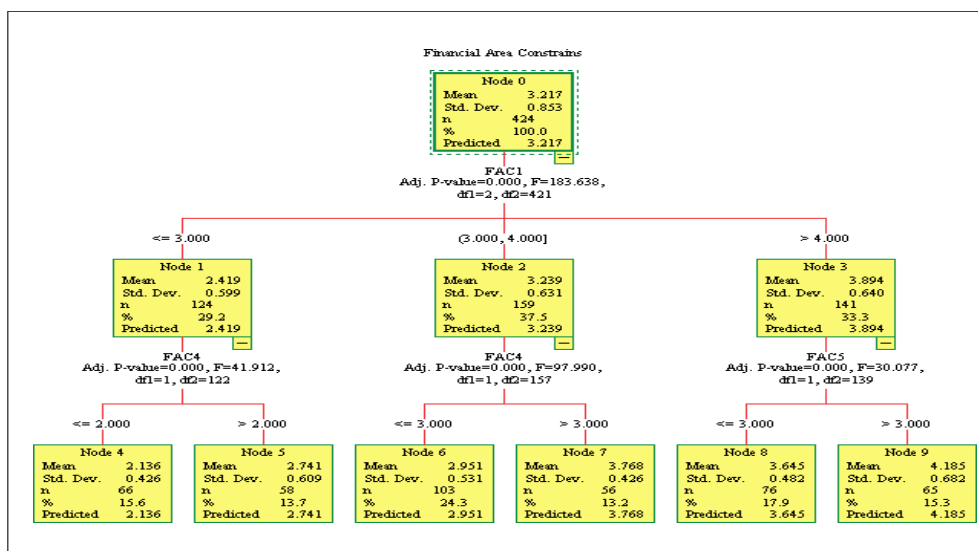
Analysis and Interpretation

Table-1
Model Summary of Women Entrepreneurs' Financial Area Constrains

Model Summary		
Specifications	Growing Method	CHAID (Chi-square Automatic Interaction Detection)
	Dependent Variable	Financial Area Constrains
	Independent Variables	FAC-1, FAC-2, FAC-3, FAC-4, FAC-5
	Validation	None
	Maximum Tree Depth	3
	Minimum Cases in Parent Node	100
	Minimum Cases in Child Node	50
Results	Independent Variables Included	FAC-1, FAC-4, FAC-5
	Number of Nodes	10
	Number of Terminal Nodes	6
	Depth	2

A CHAID decision tree analysis was conducted to identify the key determinants of Financial Area Constraints. The dependent variable was Financial Area Constraints, while the independent variables included FAC-1, FAC-2, FAC-3, FAC-4, and FAC-5. The model specifications required a minimum of 100 cases per parent node and 50 cases per child node, with a maximum depth of three levels. The final tree reached a depth of two, generating 10 nodes, of which 6 were terminal nodes. The analysis revealed that only FAC-1, FAC-4, and FAC-5 contributed significantly to predicting financial constraints, while FAC-2 and FAC-3 were excluded due to lack of statistical significance.

Fig-1
Decision Tree Analysis of Women Entrepreneurs' Financial Area
Constraints



(Here Likert five-point scale technique was used, like 5-Highly Agree, 4-Agree, 3-Neutral, 2-Disagree, 1-Highly disagree)

A classification tree analysis was conducted using the CHAID growing method to examine predictors of financial area constraints. The dependent variable was Financial Area Constraints, with independent variables including FAC-1, FAC-2, FAC-3, FAC-4, and FAC-

5. The model identified FAC-1, FAC-4, and FAC-5 as significant predictors. The final tree consisted of 10 nodes, including 6 terminal nodes, with a maximum depth of 2. The overall model risk estimate was 0.280 (SE = 0.019), indicating that the model correctly classified approximately 72% of cases.

At the root node (Node 0), the mean score for financial area constraints was $M = 3.22$, $SD = 0.85$, based on the full sample of $N = 424$ respondents. The first split occurred on FAC-1, which significantly differentiated respondents ($F(2, 421) = 183.64$, $p < 0.001$). Respondents with scores on FAC-1 ≤ 3.00 (Node 1, $n = 124$, 29.2%) had lower levels of financial constraints ($M = 2.42$, $SD = 0.59$). Those with moderate FAC-1 scores between 3.00 and 4.00 (Node 2, $n = 159$, 37.5%) reported moderate financial constraints ($M = 3.24$, $SD = 0.63$), while those with high FAC-1 scores > 4.00 (Node 3, $n = 141$, 33.3%) reported the highest constraints ($M = 3.89$, $SD = 0.64$).

Within the low FAC-1 group (Node 1), FAC-4 further differentiated respondents ($F(1, 122) = 41.91, p < .001$). Those with $FAC-4 \leq 2.00$ (Node 4, $n = 66, 15.6\%$) had the lowest mean constraints ($M = 2.14, SD = 0.43$), whereas those with $FAC4 > 2.00$ (Node 5, $n = 58, 13.7\%$) had slightly higher but still low constraints ($M = 2.74, SD = 0.61$).

Within the moderate FAC-1 group (Node 2), FAC-4 again served as a significant splitter ($F(1, 157) = 97.99, p < .001$). Respondents with $FAC4 \leq 3.00$ (Node 6, $n = 103, 24.3\%$) had moderate constraints ($M = 2.95, SD = 0.53$), whereas those with $FAC4 > 3.00$ (Node 7, $n = 56, 13.2\%$) reported higher constraints ($M = 3.77, SD = 0.43$).

Finally, within the high FAC-1 group (Node 3), FAC-5 distinguished between subgroups ($F(1, 139) = 30.08, p < .001$). Those with $FAC-5 \leq 3.00$ (Node 8, $n = 76, 17.9\%$) had slightly lower high constraints ($M = 3.65, SD = 0.48$), while those with $FAC-5 > 3.00$ (Node 9, $n = 65, 15.3\%$) reported the highest constraints overall ($M = 4.19, SD = 0.68$).

Overall, the CHAID model revealed a clear hierarchical structure of financial area constraints, with "Day to day financial decision-making is difficult" (FAC-1) emerging as the most influential predictor, followed by "Unsteady income" (FAC-4) and "Lack of availability of collateral securities" (FAC-5) in explaining subgroup differences. These findings highlight substantial heterogeneity across respondents and suggest that specific combinations of factors significantly intensify financial area constraints.

Table-2
Gain Summary for Nodes-Financial Constraints Faced by Women
Entrepreneurs

Node	n	% of Sample	Mean Constraint	Interpretation
9	65	15.3%	4.18	Very high constraints
7	56	13.2%	3.77	High constraints
8	76	17.9%	3.64	High constraints
6	103	24.3%	2.95	Moderate constraints
5	58	13.7%	2.74	Low constraints
4	66	15.6%	2.14	Very low constraints

The most vulnerable group (Node 9) represents 15.3% of the sample with the highest mean constraint score ($M = 4.18$). The least constrained group (Node 4) represents 15.6% of the sample with the lowest mean score ($M = 2.14$). The largest subgroup (Node 6) includes nearly one-quarter of respondents (24.3%) with a moderate mean constraint level ($M = 2.95$). Collectively, 46% of respondents fall into high or very high financial constraint categories (Nodes 7, 8, and 9), while 29% fall

into low or very low categories (Nodes 4 and 5).

The CHAID model demonstrates a clear hierarchical structure in financial area constraints. “Day to day financial decision-making is difficult” (FAC-1) emerged as the strongest determinant, segmenting respondents into low, moderate, and high constraint groups. Among lower and moderate groups, “Unsteady income” (FAC-4) further differentiated constraints, whereas for high groups, “Lack of availability of collateral securities” (FAC-5) was decisive. This segmentation highlights the heterogeneous nature of financial constraints across the sample, identifying both highly vulnerable and relatively secure subgroups.

Fig-2
CHILD Decision Tree on Financial Area Constraints

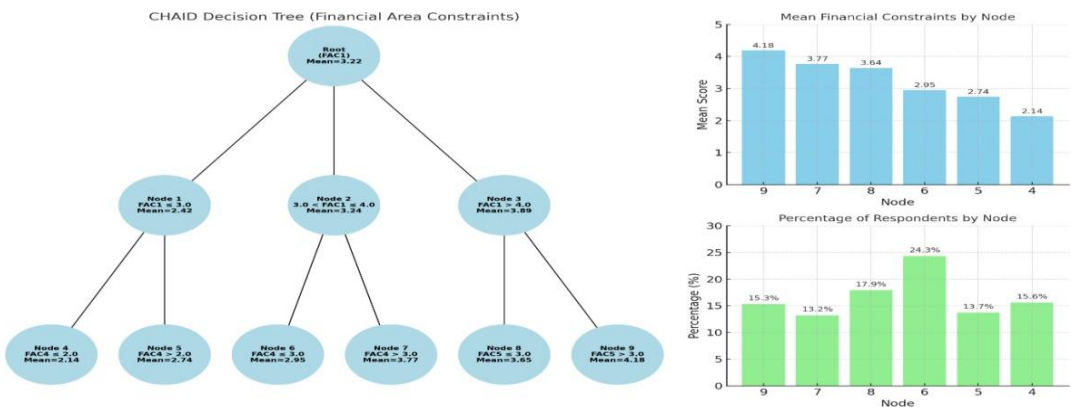


Table-3
Risk Estimation of Financial Constraints

Estimate	Std. Error
0.280	0.019
Growing Method: CHAID	
Dependent Variable: Financial Area Constrains	

Findings

The CHAID decision tree model produced a risk estimate of 0.280 (SE = 0.019), suggesting that the model misclassifies approximately 28% of cases. The low standard error indicates stability in the estimate, reflecting that the model provides a reasonably good fit for predicting financial area constraints.

II.CONCLUSION

Overall, the CHAID decision tree model effectively segmented respondents into six distinct profiles of financial area constraints, based on three significant predictors: FAC-1, FAC-4, and FAC-5. The analysis highlighted FAC-1 as the primary determinant, with FAC-4 refining outcomes for low-to-moderate cases and FAC-5 differentiating high-constraint groups. The gain summary showed that approximately 46% of respondents experienced high or very high financial constraints, while 29% reported low or very low levels, indicating considerable heterogeneity within the sample. The model produced a risk estimate of 0.280 (SE = 0.019), suggesting a reasonably accurate and stable predictive performance, with only 28% misclassification error. Taken together, these findings provide strong evidence that financial constraints among respondents are hierarchically structured and can be meaningfully predicted by a combination of “Day to day financial decision-making is difficult” (FAC-1), “Unsteady income” (FAC-4), and “Lack of availability of collateral securities” (FAC-5).

III.REFERENCE

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