

Determinants of Financial Sustainability in Traditional Craft Enterprises: Evidence from the Bandhej Industry of Rajasthan

MS. HEMA RATHORE, DR. VARSHA CHOUDHARY,
DR. SHUBHA MEGHWANSHI

Abstract: *Traditional handicraft industries carry a double weight: they preserve cultural heritage and they support local employment and household income, often in the same transaction. Rising market competition, globalization, faster technology cycles, and shifting consumer taste have made both of those roles harder to sustain. This study examines what actually drives financial sustainability among Bandhej enterprises in Rajasthan, using primary data from a randomly drawn subsample of 175 Bandhej business owners (drawn from a larger fieldwork sample of 330 across the major Bandhej-producing clusters) through a structured questionnaire, following a pilot reliability test on an independent sample of 50 respondents (Cronbach's $\alpha = 0.975$ across 25 initial items).*

Exploratory Factor Analysis (EFA) on the retained items (KMO = 0.674; Bartlett's $\chi^2(45) = 773.97, p < 0.001$) extracted three dimensions of financial sustainability, explaining 68.5 percent of total variance: Technological and Capacity Enhancement (4 items, $\alpha = 0.881$), Institutional and Financial Support (3 items, $\alpha = 0.706$), and Market and Competitive Forces (3 items, $\alpha = 0.602$). Financial sustainability correlated significantly with all three factors ($r = 0.404, 0.358$, and 0.470 respectively, $p < 0.001$). In a multiple regression model, Market and Competitive Forces was the strongest predictor ($\beta = 0.386, p < 0.001$) and Technological and Capacity Enhancement was also significant ($\beta = 0.341, p < 0.001$); Institutional and Financial Support did not reach significance at this sample size ($\beta = 0.110, p = 0.116$). Together the three factors explained 35.9 percent of the variance in financial sustainability ($R^2 = 0.359, F(3, 171) = 31.915, p < 0.001$).

The results point to a fairly direct conclusion: Bandhej enterprises that modernize their production and marketing, that draw on institutional and financial support where it is available, and that stay responsive to shifting market conditions are better positioned for long-term sustainability than those that do not. The study adds empirical, data-grounded evidence to the still-thin literature on traditional craft sustainability and offers concrete direction for entrepreneurs, policymakers, and handicraft promotion agencies working to keep the Bandhej sector competitive and economically viable.

Ms. Hema Rathore, Research Scholar, Department of Management, IIS (deemed to be University), Jaipur
Dr. Varsha Choudhary, Assistant Professor, Department of Management, IIS (deemed to be University), Jaipur
Dr. Shubha Meghwanshi, Sr. Assistant Professor, Department of Management, IIS (deemed to be University), Jaipur

Keywords: Financial Sustainability; Bandhej Craftsmanship; Traditional Enterprises; Handicraft Industry; Rajasthan; Exploratory Factor Analysis; Market Dynamics

Introduction

Traditional handicrafts sit at the center of a large part of India's cultural heritage, and they do real economic work besides: generating employment, anchoring rural livelihoods, and keeping indigenous knowledge systems alive across generations. Among the country's many craft traditions, Bandhej — more widely known as Bandhani — stands out as one of the most recognizable textile art forms associated with Rajasthan. The craft's tie-and-dye process produces patterning that cannot be fully replicated by machine, which is a large part of why Bandhej products continue to command a premium in both domestic and export markets.

That cultural standing has not insulated the industry from pressure. Globalization, faster technology cycles, changing consumer taste, competition from machine-made imitations, and demand that swings with fashion cycles have all reshaped the business environment Bandhej enterprises operate in over the past decade. Whether these enterprises can remain financially viable under that pressure is now an open question, not a settled one.

Financial sustainability, for the purposes of this study, means an enterprise's ability to hold stable financial performance, absorb market shocks, generate adequate revenue, and continue operating over the long term. For a craft sector like Bandhej, that is not only a business question. Sustainability failure does not just mean lost profit; it can mean the erosion of a skill set that took generations to build, and the eventual disappearance of a craft that carries real cultural weight (UNESCO, 2022).

Prior research on traditional enterprises has pointed to institutional support, market access, technology adoption, and financial accessibility as recurring levers of sustainability (World Bank, 2023; Government of Rajasthan, 2023). Much of that work, however, stays at the level of culture, history, or marketing, and rarely isolates the financial determinants specifically — which is precisely the gap this study tries to close for the Bandhej industry. Grounding the analysis in Schumpeter's (1934) view of entrepreneurship as an adaptive, innovation-driven process, and in Porter's (1985) framework of competitive forces shaping firm performance, the study sets out to identify what actually determines financial sustainability among Bandhej enterprises in Rajasthan, and to translate those findings into something entrepreneurs, policymakers, and support institutions can act on.

Objectives of the Study

The study was guided by three objectives:

1. To assess the impact of economic challenges faced by Bandhej owners on sustaining their craft in the contemporary era.

2. To examine the relationship between external forces — market dynamics, globalization, and government policy — and the financial sustainability of Bandhej owners.
3. To explore the opportunities available for strengthening the financial sustainability of Bandhej craftsmanship in Rajasthan.

Hypotheses of the Study

H₀₁: Economic challenges faced by Bandhej owners have no significant impact on sustaining their craft in the contemporary era.

H₀₂: There is no significant relationship between external forces (market dynamics, globalization, and government policies) and the financial sustainability of Bandhej owners.

Research Methodology

The study followed a descriptive and analytical design to investigate the determinants of financial sustainability among Bandhej enterprises in Rajasthan, using primary data collected through a structured questionnaire administered directly to Bandhej business owners.

Prior to the main survey, the instrument was pilot-tested on 50 respondents; reliability analysis on this pilot sample returned a Cronbach's Alpha of 0.975 across the initial 25-item pool, indicating strong internal consistency and supporting the instrument's use in the full study (Nunnally & Bernstein, 1994).

For the main study, 175 respondents were analyzed, drawn at random (seeded for reproducibility) from a larger fieldwork sample of 330 owners across the state's major Bandhej clusters, including Jodhpur, Bagru, Jaipur, Bikaner, and other key production centers. This sample size is consistent with established guidance on sample size determination for survey-based research (Krejcie & Morgan, 1970). Two items — covering seasonal demand fluctuation and credit facility availability — were dropped from the final predictor set after exploratory factor analysis showed weak or cross-loading behaviour, leaving 10 predictor items plus an 8-item financial sustainability outcome scale.

Data were analyzed using SPSS. Reliability was assessed with Cronbach's Alpha, following the internal-consistency threshold conventions set out by Nunnally and Bernstein (1994). Exploratory Factor Analysis (EFA) was used to uncover the underlying dimensions of financial sustainability, with principal-axis extraction and varimax rotation following standard multivariate practice (Hair et al., 2019; Field, 2018). Pearson correlation analysis then tested relationships among the extracted factors, and multiple regression analysis assessed their impact on financial sustainability, in line with standard econometric procedure (Gujarati & Porter, 2021).

Results and Discussion

5.1 Reliability of the Measurement Scales

Table 1 presents Cronbach's Alpha for the pilot instrument and for each finalized construct in the main study. All main-study constructs exceeded, or in one case approached, the conventional acceptability threshold of 0.70 (Nunnally & Bernstein, 1994); Market and Competitive Forces, at 0.604, is below that threshold but still within the range treated as acceptable for exploratory three-item scales in applied social-science research.

Table 1. Reliability Statistics

Scale	Sample	Items	Cronbach's α
Pilot instrument (all constructs, pre-EFA)	N = 50	25	0.975
Technological and Capacity Enhancement	N = 175	4	0.881
Institutional and Financial Support	N = 175	3	0.706
Market and Competitive Forces	N = 175	3	0.602
Financial Sustainability (outcome scale)	N = 175	8	0.840

Note: pilot reliability was assessed on the original 25-item pool prior to item purification; main-study alphas are reported for the finalized scales retained after EFA-based item reduction.

5.2 Exploratory Factor Analysis

Sampling adequacy was confirmed before interpreting the extracted factors. The Kaiser-Meyer-Olkin (KMO) measure was 0.674, above the conventional 0.60 minimum for factorability, and Bartlett's Test of Sphericity was significant, indicating the correlation matrix was suitable for factor analysis (Hair et al., 2019).

Table 2. KMO and Bartlett's Test

Measure	Value
Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy	0.674
Bartlett's Test of Sphericity – Approx. Chi-Square	773.97
df	45
Significance	$p < 0.001$

Two items from the original 12-item predictor pool — “Seasonal fluctuations in demand affect my financial planning” and “Availability of credit facilities supports business expansion” — were removed prior to the final extraction after showing weak or cross-loading behaviour in preliminary analysis (both loaded within 0.03–0.30 of a second factor in the full fieldwork sample; the same two items were excluded here for consistency). The remaining 10 items produced a clean three-factor structure, jointly explaining 68.5 percent of total variance.

Table 3. Rotated Component Matrix, Eigenvalues, and Variance Explained (Varimax Rotation)

Item	F1: Tech. & Capacity	F2: Institutional & Financial	F3: Market & Competitive	Communality
GST and other taxation policies are burdensome for small craft businesses	0.868	−0.111	0.086	0.772
Online platforms have opened new sales channels for my products	0.812	0.017	0.057	0.662
Modern production methods improve my profitability	0.847	0.215	−0.003	0.764
Training and capacity-building programs have improved my business efficiency	0.890	0.147	−0.031	0.814
Government schemes support my business growth	−0.170	0.780	0.415	0.809
Access to trade fairs and exhibitions helps in business expansion	0.213	0.806	0.090	0.704
I face difficulties in accessing affordable finance for my business	0.318	0.684	−0.052	0.572
Competition from machine-made alternatives affects my sales	0.166	0.266	0.746	0.656
Changing customer preferences challenge traditional Bandhej products	−0.104	0.349	0.526	0.409

Global fashion trends influence the demand for Bandhej designs	0.011	0.043	0.829	0.689
Eigenvalue	3.416	2.384	1.052	—
% of Variance Explained	31.35	20.02	17.15	—
Cumulative % Variance	31.35	51.37	68.52	—

Note: extraction method: principal-axis factoring; rotation method: varimax with Kaiser normalization. Loadings above 0.50 define each factor's primary items; all items shown loaded most strongly on their assigned factor. N = 175.

5.3 Correlation Analysis

Correlation analysis showed significant positive relationships between each of the three extracted factors and financial sustainability. Market and Competitive Forces had the strongest association with financial sustainability ($r = 0.470$, $p < 0.001$), followed by Technological and Capacity Enhancement ($r = 0.404$, $p < 0.001$) and Institutional and Financial Support ($r = 0.358$, $p < 0.001$). Among the predictor factors themselves, Institutional and Financial Support correlated moderately with Market and Competitive Forces ($r = 0.448$, $p < 0.001$) and more weakly with Technological and Capacity Enhancement ($r = 0.218$, $p = 0.004$); the correlation between Technological and Capacity Enhancement and Market and Competitive Forces was not statistically significant ($r = 0.099$, $p = 0.192$).

Table 4. Pearson Correlation Matrix (N = 175)

Variable	1	2	3	4
1. Financial Sustainability	1			
2. Technological and Capacity Enhancement	0.404**	1		
3. Institutional and Financial Support	0.358**	0.218**	1	
4. Market and Competitive Forces	0.470**	0.099	0.448**	1

*** Correlation is significant at the 0.01 level (2-tailed). The Technological/Market cell ($r = 0.099$) is not statistically significant ($p = 0.192$).*

5.4 Multiple Regression Analysis

The regression model was statistically significant ($F(3, 171) = 31.915$, $p < 0.001$) and explained 35.9 percent of the variance in financial sustainability ($R^2 = 0.359$; Adjusted $R^2 = 0.348$). Two of the three extracted factors were significant predictors: Market and Competitive Forces was the strongest ($\beta = 0.386$, $p < 0.001$), followed by Technological and Capacity Enhancement ($\beta = 0.341$, $p < 0.001$). Institutional and Financial Support was positive but did not reach statistical significance at this sample size ($\beta = 0.110$, $p = 0.116$).

Table 5. Regression Model Summary

Model	R	R ²	Adj. R ²	F (df1, df2)	Sig.
1	0.599	0.359	0.348	31.915 (3, 171)	p < 0.001

Table 6. Regression Coefficients

Predictor	Unstd. B	Std. β	t	Sig.
(Constant)	0.443	—	3.693	p < 0.001
Market and Competitive Forces	0.344	0.386	5.643	p < 0.001
Technological and Capacity Enhancement	0.209	0.341	5.441	p < 0.001
Institutional and Financial Support	0.086	0.110	1.581	p = 0.116 (n.s.)

Note: Dependent variable: Financial Sustainability. Standard errors: constant = 0.120; Market and Competitive Forces = 0.061; Technological and Capacity Enhancement = 0.039; Institutional and Financial Support = 0.055. N = 175.

Read together, these results still point toward market responsiveness and technological modernization as the levers that move the needle most on sustainability in this sector. What changes at N = 175, compared with the full 330-respondent fieldwork sample, is the Institutional and Financial Support effect: it remains positive and its correlation with financial sustainability is still significant, but the regression coefficient itself no longer clears the conventional significance threshold. That pattern is consistent with a genuine loss of statistical power at the smaller sample size rather than a reversal of the underlying relationship, and it is reported here without adjustment.

Based on these results, H_{01} is rejected: economic challenges do significantly affect Bandhej owners' ability to sustain their craft, operating through the Market and Competitive Forces and Technological and Capacity Enhancement dimensions. H_{02} is partially rejected: market dynamics and globalization (captured in Market and Competitive Forces) show a significant relationship with financial sustainability, but the government-policy component of external forces (Institutional and Financial Support) does not reach significance as a regression predictor at this sample size, even though it remains significantly correlated with financial sustainability at the bivariate level.

Implications

6.1 Managerial Implications

Because market dynamics, technology, and institutional support all significantly shape financial sustainability, Bandhej entrepreneurs need proactive strategies for responding to shifting customer preferences, emerging fashion trends, and rising competition from machine-made alternatives — the dimension that carried the strongest weight in this study.

The comparatively strong loading and reliability of the Technological and Capacity Enhancement factor points to a concrete next step: investment in modern production methods, digital marketing tools, and skill-development programmes to raise productivity and business efficiency. Moving onto online sales platforms is one of the more immediate ways enterprises can reach wider markets and open up new revenue.

Trade fairs and exhibitions came through as a genuine growth opportunity rather than a formality. Entrepreneurs who participate actively in these platforms build market presence, form customer relationships, and pick up on emerging trends earlier than those who don't.

6.2 Policy Implications

For government agencies and policymakers working on handicraft development, Institutional and Financial Support remained positively and significantly correlated with financial sustainability even though it did not clear the significance threshold as a regression predictor at $N = 175$. That combination — a real bivariate relationship alongside a regression effect too small to detect reliably at this sample size — suggests institutional support matters but functions less consistently across enterprises than market responsiveness or technological capacity do, and that its effect is worth re-examining in a larger sample before treating it as a secondary lever.

Expanding financial assistance programmes, easing access to credit, and strengthening marketing support would directly address this factor. Regular exhibitions, buyer-seller meets, and promotional campaigns organized by government bodies (Ministry of Textiles, Government of India, 2023) could meaningfully improve market access for Bandhej entrepreneurs.

6.3 Academic Implications

This study adds empirical evidence, grounded in the Bandhej industry specifically, to the broader literature on traditional handicrafts, entrepreneurship, and financial sustainability. The three-factor structure identified here, and validated through EFA with acceptable sampling adequacy and significant Bartlett's test, offers a testable framework other researchers can apply to different craft sectors, regions, or cultural contexts.

Limitations and Future Research

The study is cross-sectional, so it captures a single point in time and cannot speak to how these relationships shift as market conditions or technology adoption change. The analysis sample of 175 respondents, drawn from a larger fieldwork sample of 330 across Rajasthan's major Bandhej clusters, is smaller than the full available dataset, and this reduction in sample size has a direct, visible consequence in the results: the Institutional and Financial Support factor's regression coefficient, significant in the full 330-respondent sample, falls short of conventional significance at $N = 175$ ($p = 0.116$), most plausibly reflecting reduced statistical power rather than a genuine absence of effect. Researchers using this smaller-sample version of the analysis should treat that particular finding as inconclusive rather than as evidence the effect does not exist, and should consult the full-sample results where higher power is needed. Demographic

and enterprise-level profile data (gender, age, years in business, enterprise size) were not available in the dataset used for this analysis and are recommended for inclusion in future reporting of this study to strengthen its generalizability claims.

The three-factor model explains 35.9 percent of the variance in financial sustainability at this sample size, which leaves a majority of the variance attributable to factors outside the model — possibly including individual entrepreneurial capability, family business structure, or access to informal credit networks, none of which were captured here. The Market and Competitive Forces scale's reliability ($\alpha = 0.602$) is also below the conventional 0.70 threshold and should be interpreted with some caution; refining or expanding this three-item scale is a natural next step for future work. Future research should prioritize using the full available sample, or an even larger one, before drawing firm conclusions about the Institutional and Financial Support pathway specifically, and could extend the model longitudinally and compare Bandhej sustainability determinants against other Rajasthani or Gujarati craft traditions.

Conclusion

This study set out to identify what drives financial sustainability among Bandhej enterprises in Rajasthan, and the results point to a combination of technological, institutional, and market-related factors rather than any single cause.

The three dimensions extracted through EFA — Technological and Capacity Enhancement, Institutional and Financial Support, and Market and Competitive Forces — were all significantly correlated with financial sustainability, and two of the three, Market and Competitive Forces and Technological and Capacity Enhancement, significantly predicted it in the regression model, with Market and Competitive Forces carrying the most weight. That ordering underscores how much responsiveness to shifting customer preferences, fashion trends, and competitive pressure matters for a craft sector operating in a fast-moving market. Institutional and Financial Support's regression effect did not reach significance at this sample size, a result that should be read as a power limitation rather than a conclusion that institutional support is irrelevant.

Taken together, the findings suggest Bandhej's future rests on successfully integrating traditional skill with modern business practice. Preserving the craft's cultural heritage remains essential, but it will not be enough on its own; entrepreneurs also need to embrace innovation, technological change, and market-oriented strategy to stay competitive. What the findings underline, ultimately, is that preserving Rajasthan's cultural heritage and building sustainable economic outcomes are not competing goals — they depend on the same collaborative effort among stakeholders.

References

- Field, A. (2018). *Discovering Statistics Using IBM SPSS Statistics* (5th ed.). Sage Publications.
- Government of Rajasthan. (2023). *Handicrafts and Cottage Industries Development Report*. Government of Rajasthan.
- Gujarati, D. N., & Porter, D. C. (2021). *Basic Econometrics* (6th ed.). McGraw-Hill Education.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate Data Analysis* (8th ed.). Cengage Learning.
- Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30(3), 607–610.
- Ministry of Textiles, Government of India. (2023). *Annual Report 2022–23*. Ministry of Textiles, Government of India.
- Nunnally, J. C., & Bernstein, I. H. (1994). *Psychometric Theory* (3rd ed.). McGraw-Hill.
- Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. Free Press.
- Schumpeter, J. A. (1934). *The Theory of Economic Development*. Harvard University Press.
- UNESCO. (2022). *Creative Economy Outlook: Trends in International Trade in Creative Industries*. UNESCO Publishing.
- World Bank. (2023). *Small and Medium Enterprise Development Report*. World Bank Publications.