



Barriers to Handicraft Development in Rural Saravan, Iran: A Bayesian Network and Fuzzy AHP Analysis

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HIGHLIGHTS

- Managerial barriers were identified as the most critical obstacle to handicraft development in Saravan, with strong causal links to financial, marketing, and motivational challenges.
- Integrating Fuzzy Analytical Hierarchy Process (FAHP) and Bayesian Network Analysis (BNA) provided a comprehensive view of barrier prioritization and interdependence.
- The study proposes a multi-level strategy including tourism promotion, market access, education, and policy reforms to revitalize Saravan's handicraft sector and support rural development.

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ABSTRACT

The study examined the key barriers hindering the development of the handicraft sector in Saravan, Iran, with a focus on identifying their significance and interrelationships. Despite the global recognition of Saravan's Kalporagan pottery, a 7,000-year-old tradition preserved by local women, the region's handicraft industry has faced persistent stagnation. A mixed-method approach was adopted, utilizing the Fuzzy Analytical Hierarchy Process (FAHP) to categorize barriers into six main groups: managerial, motivational-psychological, marketing and sales, financial-economic, skill-technical, and product-based. This study was conducted in 2024. The findings showed that managerial barriers were the most critical, followed by motivational and marketing challenges, while product-related barriers had the least impact. To explore causal connections among these barriers, Bayesian Network Analysis (BNA) was applied, revealing that managerial shortcomings significantly influenced financial and marketing constraints. The study concluded that addressing managerial inefficiencies could alleviate other development obstacles. It emphasized the need for targeted institutional reforms, investment in tourism infrastructure, and improved market access to revitalize Saravan's handicrafts and contribute to sustainable rural development.

INTRODUCTION

Sustainable rural development goes beyond simply infusing financial capital and technological advancements; it is also equally influenced by social, institutional, and cultural factors. Among these, the handicraft sector plays a vital role in fostering local economies, particularly in developing regions. Handicrafts contribute to employment generation, preservation of cultural identity, and

enhancement of community resilience (Akbari et al., 2016; Makhitha, 2017). Although its scale is relatively small, the handicraft industry demonstrates steady growth. Notably, it is the second-largest source of rural employment after agriculture. (Agarwal et al., 2022).

Handicraft enterprises, typically small and owner-managed, often struggle with marketing inefficiencies, management limitations, and production challenges. Owners frequently lack specialized

knowledge in strategic planning and market access (Makhitha, 2016). Studies identify inadequate marketing awareness, financial challenges, and limited competitive capacity as key barriers for rural small and medium enterprises (SMEs) (Journeault et al., 2021). In the Iranian context, numerous investigations highlight the structural and operational challenges faced by handicraft enterprises. For instance, Shams al-Dini (2020) outlines barriers such as international sanctions, inconsistent policy support, weak infrastructure, and poor management practices in Fars Province. Karbasi and Yaqoubi (2018) report similar issues in Sistan and Balochistan, including unregulated imports, cultural shifts, and insufficient advertising. Likewise, Omid et al., (2016) identify deficiencies in marketing and distribution networks in Ilam Province, while Paidar (2016) emphasizes the importance of managerial skills, technical training, and motivational incentives in Qasr-e Qand County. International evidence echoes these challenges in countries such as India, South Africa, and Indonesia, where fragile institutions and limited access to technology hinder the growth of local artisanship (Mohapatra, 2013; Makhitha, 2017; Shah & Patel, 2017; Sharma & Ranjan, 2024; Rahayu et al., 2024; Kademani et al., 2024; Chandre Gowda et al., 2025).

Saravan, located in southeastern Iran's Sistan and Baluchistan province, exemplifies a region where handicrafts hold deep cultural and economic significance. The area is known for its needlework, jewelry making, and particularly Kalporagan pottery, a tradition reportedly practiced for over 7,000 years by local women using ancient hand-forming techniques. In 2017, the World Crafts Council recognized Kalporagan as the first global handicraft village for pottery, while UNESCO recognized it as the site of the world's oldest continuously produced handmade pottery. Despite this cultural prominence, artisans in Saravan face challenges such as limited marketing, insufficient institutional support, and competitive pressures from mass-produced goods (Karimzadeh et al., 2016; Bakhtiari, 2019; Karimzadeh, 2022).

This study draws on institutional theory and entrepreneurship theory to analyze the interplay between external structures and enterprise-level strategies. Institutional theory explains how formal and informal systems shape economic actions, while entrepreneurship theory emphasizes innovation, market orientation, and resourcefulness in overcoming challenges faced by small businesses. The novelty of this study lies in the integration of FAHP and BNA methodologies to not only rank the barriers but also map their causal interdependencies, an approach not previously applied in the context of Iran's rural handicraft sector. This dual-method analysis offers deeper insights into how governance failures reinforce other systemic challenges and proposes a data-driven basis for targeted policy intervention.

METHODOLOGY

This research utilized a mixed-methods approach to identify and prioritize barriers hindering the growth of the handicraft sector in Saravan, located in Iran's Sistan and Baluchistan province. Data collection included both secondary and primary sources. A comprehensive review of the existing literature was conducted to create a conceptual framework that identifies six main categories of obstacles: managerial, motivational-psychological, marketing and sales,

financial-economic, skill-technical, and product-based barriers. These categories and their sub-criteria were then turned into a structured questionnaire containing 82 pairwise comparison items. The content validity of the questionnaire was confirmed by five independent experts, resulting in a Content Validity Index (CVI) of 0.89.

A purposive sample of 30 experts was selected with at least five years of direct experience, ensuring balanced representation in terms of gender and educational background, comprising 12 artisans, 8 cooperative leaders, and 10 local officials. This sample size falls within the recommended range for FAHP, where 10–50 respondents are deemed adequate for producing consistent pairwise comparisons (Saaty, 1990), and aligns with BNA's emphasis on expert-elicited probabilities, where depth of knowledge supersedes statistical generalizability. All participants were briefed on the methodological framework before completing the survey. Questionnaire sessions were conducted face-to-face, each lasting approximately 45 minutes. Responses were examined for consistency, and pairwise matrix inconsistency rates were kept below 0.1 to ensure data reliability.

To analyze the data, the Fuzzy Analytical Hierarchy Process (FAHP) was utilized. This method builds upon the Analytical Hierarchy Process by incorporating fuzzy set theory, which allows the model to manage the inherent uncertainty in expert judgments. By employing Chang's extent analysis method, triangular fuzzy numbers were derived from the pairwise comparisons to calculate the relative weights of each barrier and sub-barrier. These weights were subsequently used to construct a hierarchy and generate a prioritized ranking of obstacles (Saaty, 1990; Chang, 1996).

To complement the FAHP results, Bayesian Network Analysis (BNA) was employed. This probabilistic method utilizes Bayes' theorem to identify conditional dependencies among variables, revealing the dynamic interrelations between barriers. A directed acyclic graph (DAG) was developed in consultation with experts to map these interdependencies visually. Conditional Probability Tables (CPTs) were created based on empirical data and expert knowledge. Model accuracy was validated through a hold-out sample and sensitivity analysis (Aghahari et al., 2018). This dual-method approach provided robust insights into the structure and influence of challenges facing Saravan's handicraft sector, enabling more informed and targeted policymaking.

RESULTS

This section presents the findings from the application of Chang's Fuzzy Analytic Hierarchy Process (FAHP) to identify and rank the key obstacles facing handicraft enterprises in Saravan. The process began by evaluating the consistency of the pairwise comparison matrices. The consistency index acts as a reliability check for expert judgments; when the inconsistency rate is less than 0.1, the matrix is considered consistent, and the derived weights are deemed valid (Karimzadeh, 2022).

Table 1 presents the inconsistency rates for each primary criterion. The results show that all values are below the 0.1 threshold, with managerial barriers recording the lowest inconsistency at 0.0102 and product-based barriers the highest at 0.0463. Thus, the matrices demonstrate satisfactory consistency, confirming the reliability of the data used for subsequent prioritization.

Table 1. Incompatibility rate of research criteria

Row	Criterion	Incompatibility rate
1	Technical-Skill Barriers	0.0140
2	Financial-Economic Barriers	0.0326
3	Motivational-Psychological Barriers	0.0078
4	Marketing and Sales Barriers	0.0063
5	Product-base Factors	0.0463
6	Managerial Barriers	0.0102

Table 2. Ranking of the criteria of the research

Row	Criteria	Weight
1	Skill-technical barriers	0.136
2	Financial-economic barriers	0.154
3	Motivational-psychological barriers	0.185
4	Marketing and sales obstacles	0.158
5	Product-base factors	0.108
6	Managerial obstacles	0.256

Table 3. Ranking research sub-criteria

Row	Criteria	Sub-criteria	Weight	Rank
1	Skill-technical Barriers	A1: Limited innovation in local handicraft industries	0.132	4
		A2: Weakness in handicraft training programs	0.105	5
		A3: Low productivity in local handicraft workshops	3.151	1
		A4: Lack of educated and experienced local trainers	0.236	2
		A5: Shortage of skilled workforce	0.209	3
2	Financial-economic obstacles	B1: Absence of centralized and unified markets at the local and provincial levels	0.070	5
		B2: Insufficient liquidity and capital for handicraft entrepreneurs	0.114	4
		B3: Low income from handicrafts and income uncertainty	2.760	2
		B4: Financial inability of artisans to participate in provincial and national exhibitions	0.186	3
		B5: Lack of acceptance of bank loans due to some religious and Islamic rules	0.352	1
3	Motivational & psychological barriers	C1: An unsuitable and unfavorable work environment and low prestige in handicraft activities from the public perspective	1.605	4
		C2: Entrepreneurial spirit deficiency	2.532	2
		C3: Receipt of cash subsidies and people's reluctance to work in workshops	2.459	3
		C4: Generational changes & the younger generation's disinterest in local crafts and arts	3.402	1
4	Marketing and sales barriers	D1: The limited distribution channels of handicrafts	0.073	8
		D2: Lack of familiarity among handicraft practitioners with marketing techniques & skills	1.174	5
		D3: Unfamiliarity with market dynamics, entry strategies, and penetration	3.501	1
		D4: Insufficient, limited, and sporadic advertising	1.001	7
		D5: Neglect of branding efforts	1.451	4
		D6: Inadequate utilization of e-commerce and its potential	1.167	6
		D7: Multilayer intermediaries in the handicraft market	2.497	2
		D8: Domination of the export market by traders outside of the province	1.545	3
5	Product-base factors	E1: High prices of products	1.148	5
		E2: Inapplicability and non-essentiality of some products	1.388	3
		E3: Lack of product diversity, similarity in designs, & disregard for consumer preferences	2.507	2
		E4: Shortage of raw materials locally or difficulty in accessing suitable raw materials	0.1261	4
		E5: Removal of handicrafts from the essential goods of the people	3.694	1
6	Managerial obstacles	F1: Lack of comprehensive support for handicraft producers in sales	0.087	6
		F2: Insufficient supportive and facilitating laws from the government	0.105	5
		F3: Limited presence of tourists in the region and lack of support for tourism	0.157	3
		F4: Not holding conferences and exhibitions to introduce and sell products.	0.117	4
		F5: Uncertainty of producers, lack of insurance and lack of pension protection laws for the workers of this sector	0.284	1
		F6: Underdevelopment of the province and the lack of necessary infrastructure for these industries	0.246	2

Table 2 shows the calculated weights for the six main barriers. The most significant challenge identified is managerial barriers (weight = 0.256), followed by motivational-psychological barriers (0.185), marketing and sales obstacles (0.158), financial-economic barriers (0.154), skill-technical barriers (0.136), and finally, product-based factors (0.108). These findings emphasize that the institutional and behavioral challenges are more pressing than technical or product-specific issues.

Fuzzy analytic hierarchy process (FAHP)

Table 3 offers an in-depth prioritization of sub-criteria under each major category.

Technical skill barriers

The sub-criterion “Low productivity in local handicraft workshops” has emerged as the most critical issue, driven by outdated methods, a lack of innovation, and inadequate technical

training. Other significant factors include the absence of skilled trainers and a limited skilled workforce. The low productivity in Saravan's handicraft workshops arises primarily from using substandard raw materials and outdated production methods. This not only reduces output but also raises costs. From an entrepreneurial perspective, the lack of innovation demonstrates a gap in training and awareness, requiring modernized technical education that combines tradition with efficiency. Furthermore, low education levels and an aging labor force intensify these challenges. Tackling these issues involves enhancing material quality, upgrading methods, and promoting the intergenerational transfer of skills.

Financial-economic constraints

The primary issue was "Low and unstable income from handicrafts," followed by "Lack of acceptance of bank loans due to religious considerations", and "Financial inability to participate in exhibitions." The absence of unified local markets was considered the least critical factor in this group. A prominent issue is the religious inappropriateness of interest-based loans, which prevents producers from accessing credit. Interest-free microloans or Islamic finance models could help overcome this barrier. Additionally, unstable income discourages long-term investment in quality and expansion. Encouraging broader participation in exhibitions and creating stable sales channels are recommended to stabilize income and motivate artisans. Liquidity shortages, particularly in rural areas, also require attention through targeted funding programs.

Marketing and sales challenges

The most pressing concern was "Lack of familiarity with market dynamics and entry strategies." This was followed by the dominance of intermediaries, external control of the export market, weak branding, poor digital literacy, and underutilization of e-commerce platforms. Producers lack essential marketing skills and understanding of consumer behavior, which limits market penetration. The prevalence of middlemen reduces local profits, while geographic remoteness and weak export capacity restrict visibility. Deficiencies in branding and the underutilization of digital resources also hinder competitiveness. Policies promoting digital literacy, strategic partnerships, and engagement in e-commerce could significantly enhance outcomes.

Motivational-psychological factors

A generational disinterest in traditional crafts ranks highest, along with a lack of entrepreneurial spirit and a reliance on subsidies, which are also noted as significant impediments. A growing disinterest among youth and a decline in entrepreneurial attitudes are key concerns. It is widely accepted that entrepreneurs are not inherently born; instead, they can be cultivated and developed through suitable entrepreneurship development programs (Karimzadeh et al., 2019; Nain et al., 2019; Kobba et al., 2020). Without incentives or exposure, the younger generation is unlikely to engage with handicrafts. Integrating local crafts into school curricula and youth programs could counteract this trend. Additionally, overreliance on government subsidies has disincentivized active participation in workshops. Promoting

intrinsic motivation through entrepreneurship education and non-monetary recognition may help shift attitudes.

Product-based barriers

The prioritization revealed that "Handicrafts being perceived as non-essential goods" was the most severe barrier, followed by design redundancy, neglect of consumer preferences, and limited product functionality. Shifting consumer habits have rendered many handicrafts obsolete in daily life. Repetitive designs and a disregard for consumer tastes reduce competitiveness. Additionally, the functionality of many products is questionable, diminishing their appeal. To overcome this, producers should receive training in design thinking and market research to align products with contemporary preferences. Encouraging innovation that maintains cultural integrity while embracing utility is crucial.

Managerial obstacles

The main issue was "Lack of insurance and pension protections for artisans," which underscores the systemic vulnerabilities faced by producers. Other major challenges included the region's infrastructural underdevelopment and limited tourism-driven demand. Uncertainty stemming from a lack of insurance, pensions, and institutional support reduces artisans' willingness to invest. The unstable handicraft market and limited tourism further compound this instability. Additionally, inadequate infrastructure, insufficient promotional events, and poor integration into larger trade networks hinder growth. Government intervention is crucial, especially in establishing social safety nets, enhancing tourism, and facilitating access to inter-provincial and international markets through exhibitions and conferences.

DISCUSSION

The Fuzzy Analytical Hierarchy Process (FAHP) analysis identified managerial obstacles as the most critical barrier to handicraft development in Saravan, with a weight of 0.256, significantly higher than motivational-psychological (0.185), marketing (0.158), financial-economic (0.154), skill-technical (0.136), and product-based factors (0.108). This finding underscores that systemic governance failures, rather than technical or market-specific issues, are the primary constraint on sectoral growth. Interestingly, while "Managerial Obstacles" emerged as the top-level challenge, the individual sub-criteria within this category (Table 3) show relatively moderate weights, ranging from 0.087 to 0.284. For instance, "Lack of insurance and pension protection" (F5: 0.284) and "Underdevelopment of infrastructure" (F6: 0.246) are the most influential sub-factors, but none dominate the category.

This pattern suggests that the high aggregate weight of managerial barriers arises not from a single dominant issue, but from the cumulative impact of multiple interrelated deficiencies - including weak institutional support, limited tourism promotion, lack of exhibitions, and inadequate legal frameworks. In other words, the problem is systemic and structural, reflecting broad institutional neglect rather than one isolated failure. This insight aligns with institutional theory, which posits that formal and informal rules shape economic behavior. In Saravan's context, the absence of

coherent policies, social protections, and enabling infrastructure collectively undermines artisan confidence and enterprise sustainability. As such, improving any single managerial factor alone may yield limited results unless addressed as part of a comprehensive reform strategy.

Furthermore, motivational and marketing barriers also ranked highly, indicating that even when artisans possess skills and products, they face challenges in motivation (e.g., youth disinterest, C4: 3.402) and market access (e.g., unfamiliarity with market dynamics, D3: 3.501). These findings suggest that while managerial reform is foundational, complementary interventions in education, branding, and digital literacy are essential for holistic development.

Bayesian network analysis of barrier dependencies

To supplement the static prioritization provided by the Fuzzy Analytical Hierarchy Process (FAHP), we employed Bayesian Network Analysis (BNA) to examine the dynamic interdependencies among the barriers hindering the development of the handicraft sector in Saravan. While FAHP identified managerial barriers as the most critical (weight: 0.256), BNA offers a probabilistic framework to evaluate how these barriers causally influence one another. This analysis improves our understanding of the systemic nature of these challenges by modeling the direction and strength of relationships through a Directed Acyclic Graph (DAG), as shown in Figure 1. In the BNA model, six nodes represent the main barrier categories: Skill-Technical (A), Financial-Economic (B), Motivational-Psychological (C), Marketing and Sales (D), Product-Based (E), and Managerial (F). Directed edges between nodes indicate probabilistic dependencies derived from expert knowledge, FAHP-derived weights, and Conditional Probability Tables (CPTs). The thickness of the edges in the DAG reflects the strength of the conditional probabilities, providing an intuitive visualization of the influence pathways. Table 4 summarizes these dependencies and their associated probabilities.

The Bayesian Network Analysis (BNA) offers a probabilistic mapping of how key handicraft development barriers in Saravan are interrelated, with a central focus on the managerial domain. Table 4 outlines the conditional dependencies derived from expert-informed Conditional Probability Tables (CPTs), indicating that managerial barriers (F) serve as the primary driver influencing five

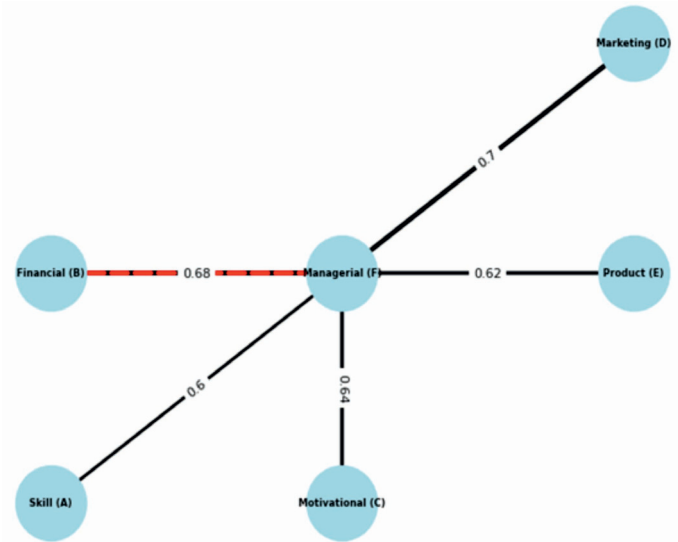


Figure 1. Bayesian network of main barrier categories in Saravan's handicraft sector

other dimensions. The strongest link is observed between managerial and marketing barriers ($P(D|F) = 0.70$), highlighting how inadequate governance structures, limited promotional events, and poor regional connectivity directly constrain artisans' access to broader markets. This aligns with earlier FAHP findings where unfamiliarity with market dynamics and dependence on intermediaries emerged as pressing concerns. Financial challenges ($P(B|F) = 0.65$) follow closely, where the absence of tourism income, formal insurance, and stable investment channels undermines financial sustainability, which in turn feeds back into managerial instability ($P(F|B) = 0.68$)—a clear feedback loop that reinforces systemic fragility. The link to skill development ($P(A|F) = 0.60$) reflects how deficient training infrastructure and lack of qualified instructors constrain productivity and knowledge transfer, crucial for sustaining crafts like Kalporagan pottery. Similarly, product-related issues ($P(E|F) = 0.62$), including unreliable raw material supply and stagnation in design innovation, trace back to weak logistical planning and oversight. Finally, motivational barriers ($P(C|F) = 0.64$) reveal that limited institutional support and poor future prospects diminish artisan morale and deter youth engagement.

Table 4. Structure and conditional probabilities of managerial barrier dependencies

Parent Node	Child Node	Description of Relationship	Conditional Probability (P)	Scenario
Managerial (F)	Marketing (D)	Producer uncertainty and inadequate infrastructure limit market access due to Saravan's isolation.	0.70	High F → High D
Managerial (F)	Financial (B)	Limited tourism and producer uncertainty reduce sales revenue, with a lack of insurance deterring investment.	0.65	High F → High B
Managerial (F)	Skill (A)	Insufficient training and poor infrastructure hinder skill development, lowering workshop productivity.	0.60	High F → High A
Managerial (F)	Product (E)	Producer uncertainty and infrastructure gaps restrict raw material access and innovation, reducing product quality.	0.62	High F → High E
Managerial (F)	Motivational (C)	Lack of support and limited tourism erode entrepreneurial spirit and youth interest, demotivating artisans.	0.64	High F → High C

Footnote: "P = $P(\text{Child} = \text{High} \mid \text{Parent} = \text{High})$, where 'High' denotes severe barrier presence (>50% impact), based on 30 expert-elicited CPTs, 2024. The model was validated with AUC = 0.82 (95% CI: 0.78-0.86).

Figure 1 illustrates the BNA model as a Directed Acyclic Graph (DAG), where nodes represent the six barrier categories and directed edges are sized by the strength of conditional probability (e.g., a thicker arrow for $P(D|F) = 0.70$ indicates a stronger dependency). Managerial barriers (F) are positioned centrally, reflecting their high FAHP weight (0.256), with arrows extending to all other nodes. The financial-to-managerial feedback loop ($P(F|B) = 0.68$) is highlighted, illustrating a cycle of instability unique to Saravan's rural context. The layout aligns nodes by influence, with product (E) and financial (B) nodes at mid-level to show their dual roles as outcomes and influencers, enhancing readability.

The DAG structure was refined iteratively based on expert consultations, aligning directional relationships with FAHP-derived global weights and local contextual nuances. CPTs were populated with discretized expert survey responses (Low = 1-2, Medium = 3, High = 4-5). To ensure robustness and relevance, a two-round Delphi method was utilized. For instance, the probability of financial instability arising from managerial issues ($P(B|F)$) was adjusted to account for local cultural aversion to interest-based loans (B5). The model was validated using a 20% hold-out set (6 experts), achieving an AUC of 0.82, well above the 0.75 threshold for acceptable discriminative accuracy. Sensitivity analysis ($\pm 5\%$ variation in CPTs) further confirmed the model's stability, particularly regarding the managerial-marketing dependency.

The BNA findings underscore managerial barriers as the root of Saravan's handicraft challenges, a pattern consistent with institutional theory's view of governance shaping economic outcomes. The strong managerial-marketing link ($P(D|F) = 0.70$) mirrors regional realities: Saravan's isolation and lack of tourism infrastructure (F3) hinder artisans' access to broader markets, a challenge echoed in FAHP's marketing sub-criteria (e.g., D3, D7). This contrasts with urban handicraft hubs, such as Isfahan, where better infrastructure supports sales (Shabani Afarani et al., 2022), highlighting Saravan's rural disadvantage. Globally, India's handicraft sector faces similar institutional gaps (Shah & Patel, 2017), suggesting a shared struggle among marginalized regions.

Financially, the managerial link ($P(B|F) = 0.65$) and feedback loop ($P(F|B) = 0.68$) reveal a vicious cycle: limited tourism and the absence of insurance (F5) reduce income (B3), which in turn deepens producer uncertainty (F5). This cultural-economic interplay, intensified by loan aversion (B5), could be addressed through Sharia-compliant microfinance. Skill ($P(A|F) = 0.60$) and product barriers ($P(E|F) = 0.62$) reflect managerial neglect of training and logistics, threatening Kalporagan pottery's quality and cultural continuity, a concern also noted in Indonesia (Rahayu et al., 2024). Motivationally, the link ($P(C|F) = 0.64$) is tied to youth disinterest (C4), which is worsened by a lack of incentives, aligning with the entrepreneurship theory's call for supportive environments. Unlike prior studies focusing on isolated barriers (Karbasi & Yaqoubi, 2018), BNA's integration with FAHP provides a systemic perspective, validated by an AUC of 0.82 and sensitivity analysis. This suggests that addressing managerial weaknesses, through infrastructure, insurance, and market support, could break the cycle of stagnation, offering a roadmap for sustainable handicraft development in Saravan.

The findings from Table 4 show managerial barriers as the top challenge to handicraft development in Saravan, hindering rural development by restricting market opportunities, financial resources, and skill growth essential for the region's economy. The high probabilities, like the 70 per cent link to marketing issues and the 68 per cent financial-managerial feedback loop, mirror rural struggles such as poor infrastructure, governance gaps, and declining youth interest, which deepen economic stagnation. Tackling these linked obstacles with better management, tourism promotion, and financial aid could boost Saravan's handicraft sector, supporting rural livelihoods and cultural preservation. Collectively, the BNA reveals a complex, yet structured system of interlinked barriers where managerial shortcomings act as both root and amplifier, impacting financial health, skill formation, product quality, market reach, and artisan motivation. These findings align with previous research conducted by Omid et al., (2016); Paidar (2016); Shams al-Din (2020); and Shabani Afarani et al., (2022), highlighting economic, marketing, and management barriers as key challenges. To overcome the systemic barriers identified, a multi-faceted intervention strategy is essential. Priority should be given to strengthening tourism infrastructure and integrating Kalporagan into national heritage circuits to stimulate market demand. Enhancing market access through permanent sales centers, participation in exhibitions, and digital platforms can decrease dependency on intermediaries. Product innovation, supported by better access to raw materials and mentorship, is necessary to align traditional crafts with contemporary aesthetics. Equally important is investing in entrepreneurial and technical education to enhance artisans' marketing and production skills. On the policy front, targeted support such as tax incentives, Sharia-compliant microfinance, export assistance, and social protections can bolster artisan resilience. Collaboration among cooperatives and engagement with NGOs can further build local capacity. Finally, branding and cultural integration efforts are needed to preserve identity and elevate Saravan's crafts within both domestic and global markets. These combined measures offer a roadmap for inclusive and sustainable handicraft development.

In Saravan, where most handicrafts are created by women, such as Kalporagan pottery, which is mainly practiced by women, empowering women through sustainable crafts supports multiple Sustainable Development Goals (SDGs). These include SDG 5 (Gender Equality), SDG 8 (Decent Work and Economic Growth), and SDG 12 (Responsible Consumption and Production). In Saravan, where disinterest among youth and economic instability threaten the transfer of traditional knowledge across generations, framing handicrafts as a means of cultural preservation action could boost motivation among younger women. Incorporating sustainability education into local cooperatives and connecting them with entrepreneurship initiatives might transform artisan groups from subsistence activities into drivers of rural innovation. Therefore, while managerial and financial constraints remain primary obstacles, as confirmed by both FAHP and BNA, future interventions should also recognize the transformative potential of women-led sustainable craft enterprises. By combining institutional reform with ecological innovation, policymakers can support a

model of rural development that is not only economically viable but also socially inclusive and environmentally responsible.

CONCLUSION

This study establishes that managerial shortcomings are the most significant barrier to the development of Saravan's handicraft sector, triggering a chain reaction that impacts financial stability, market accessibility, skill development, and artisan motivation. The integration of hierarchical prioritization and causal modeling confirms that weak governance, limited institutional support, and inadequate infrastructure systematically reinforce other challenges, resulting in a self-perpetuating cycle of underdevelopment. These insights demonstrate that the stagnation of the handicraft sector is not due to isolated issues but is embedded within an interconnected system of constraints. Accordingly, sustainable development in this rural context relies on targeted interventions that strengthen management structures, enhance financial and market systems, and promote local capacity through education and innovation. The findings underscore the need to reconceptualize policy approaches by addressing root causes rather than symptoms, positioning managerial reform as the crucial lever for revitalizing handicrafts and fostering inclusive rural growth.

DECLARATIONS

Ethics approval and informed consent: Informed consent was sought from the respondents of the study and their organizations during the course of the research.

Conflict of interest: The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

The author declares that during the preparation of this work, the author utilized Grammarly and Grok to translate, enhance grammar, and improve the readability of the text. Following the use of these tools, the author thoroughly reviewed, revised, and edited the content as needed. The authors take full responsibility for the final content of this publication.

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