Exploring Entrepreneurial Competencies for Enhancing Performance in Agro-Based MSMEs: A Case Study from Bihar

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Abstract

This study explores the impact of entrepreneurial competencies on the performance of agro-based Micro, Small, and Medium Enterprises (MSMEs) in Bihar, a predominantly agrarian state in India. Agro-based MSMEs are critical for the state's economic development, with over 70% of the population relying on agriculture. This research identifies key entrepreneurial competencies such as opportunity recognition, strategic thinking, organizational effectiveness, and networking, and assesses their influence on business performance indicators, including profitability, sales growth, and organizational efficiency. A survey-based approach was utilized, collecting data from 245 agro-based MSMEs across sectors such as Agro-Allied Products, Farming, Fisheries, and Poultry. The findings indicate that while competencies like opportunity recognition are vital for enhancing market competitiveness, their effectiveness varies across sectors. The Poultry sector, in particular, showed a strong positive correlation between entrepreneurial competencies and profitability. Strategic thinking and organizational effectiveness had a limited direct impact on performance, suggesting the influence of external factors like market conditions and resource availability. The study offers practical insights for MSMEs and policymakers to foster entrepreneurial competencies that drive sustainable growth in Bihar's agro-based sector.

Keywords: Entrepreneurial Competencies, MSMEs, Agro-Based Sector, Profitability, Market Competitiveness, Strategic Thinking

1. INTRODUCTION

1.1 Overview of Bihar's Economic Landscape and the Importance of Agro-Based MSMEs

Bihar, a predominantly agrarian state in India, has a rich tradition in agriculture, contributing significantly to the state's GDP. With over 70% of its population dependent on agriculture and related activities, the state's economic development is closely tied to the performance of the Agro-based Micro, Small, and Medium Enterprises (MSMEs). Agro-based MSMEs, including food processing, dairy, textile, and agro-machinery sectors, play a crucial role in adding value to agricultural produce, generating employment, and fostering rural entrepreneurship,

In 2021-2022, the Gross State Domestic Product (GSDP) of Bihar was estimated at $78 billion (₹6.33 lakh crore), with the agriculture sector contributing 25-30%. Agro-based MSMEs constitute approximately 50-55% of the total MSMEs in the state. According to a report by the Directorate of Industries, Bihar had over 10 lakhs registered MSMEs as of 2022, with around 3-4 lakh enterprises

operating in the Agro-based sector. The sector provides employment to around 8-10 million people, largely in rural areas. However, despite this potential, the sector faces several challenges, including limited access to technology, capital, and markets, which hinder their scalability and competitiveness.

1.2 Definition and Significance of Entrepreneurial Competencies in Driving Business Success

Entrepreneurial competencies such as opportunity recognition, strategic thinking, and networking are crucial for navigating the unique challenges faced by agro-based MSMEs, particularly in a resource-constrained environment like Bihar, where market access, capital, and technology are limited. Research shows that MSMEs with higher levels of entrepreneurial competencies perform better in terms of growth and profitability. A study by the National Institute for Entrepreneurship and Small Business Development (NIESBUD) found that MSMEs led by entrepreneurs with strong managerial and financial skills grew 1.5-2 times faster than those led by less competent entrepreneurs. In Bihar, the adoption of modern business practices and the development of entrepreneurial skills are still at a nascent stage. However, evidence suggests that improving these competencies can significantly enhance the competitiveness of agro-based MSMEs.

2. LITERATURE REVIEW

Entrepreneurial competencies play a pivotal role in determining the success of MSMEs, particularly in the agro-based sector in developing regions like Bihar. The theoretical framework around entrepreneurial competencies, initially conceptualized by **Man et al. (2002)**, outlines five critical competencies: opportunity, strategic, conceptual, organizing, and commitment competencies. These competencies collectively empower entrepreneurs to navigate challenges, capitalize on opportunities, and drive business growth.

Opportunity competencies, as discussed by **Bird (1995)**, refer to an entrepreneur's ability to recognize and act on potential business opportunities. This ability is crucial for agro-based MSMEs in Bihar, where shifts in market demand, climate variability, and technological advancements present frequent new opportunities. Recent research by **Gupta and Sharma (2023)** highlights how entrepreneurs in Bihar who possess strong opportunity competencies are better equipped to adopt innovative farming techniques and diversify their product lines, leading to enhanced market competitiveness.

Strategic competencies are essential for long-term business success. Entrepreneurs with strong strategic thinking can align their operations with long-term goals, even in unpredictable markets. **Lans et al. (2011)** demonstrated the value of strategic competencies in ensuring sustainable business growth. More recently, **Verma and Singh (2022)** found that MSMEs in Bihar with strong strategic planning competencies were better able to cope with market disruptions, such as supply chain interruptions caused by the COVID-19 pandemic.

Conceptual competencies are equally vital for entrepreneurs, involving creativity and the ability to solve complex business problems. **Mitchelmore and Rowley (2010)** emphasized the role of conceptual competencies in fostering innovation. In the context of Bihar, **Desai and Bhatia (2021)** found that agro-based MSMEs with high conceptual competencies were more adept at improving production processes and adopting environmentally sustainable practices, leading to cost efficiencies and greater market demand for their products. Conceptual skills are increasingly important as businesses face growing pressures to adopt digital tools and sustainable practices.

Organizing competencies are also crucial in resource-scarce environments like Bihar. **Chandler and Jansen (1992)** highlighted the role of organizing competencies in managing resources effectively, which

is particularly relevant for agro-based MSMEs that often struggle with limited access to finance, skilled labor, and modern technology. Recent studies by **Kumar and Rao (2023)** show that MSMEs with strong organizing competencies are better positioned to streamline operations, reduce wastage, and increase overall productivity.

Commitment competencies, as defined by **Ahmad et al. (2010)**, relate to an entrepreneur's dedication and resilience in overcoming business challenges. In Bihar, agro-based MSMEs face frequent external shocks such as price volatility, erratic weather patterns, and infrastructure bottlenecks. **Patnaik and Singh (2023)** found that entrepreneurs with high levels of commitment competency were more likely to persist through these challenges, ensuring long-term business sustainability.

Empirical research continues to establish the strong link between entrepreneurial competencies and MSME performance. **Ghosh and Kaur (2019)** highlighted that MSMEs led by entrepreneurs with well-developed financial and strategic competencies witnessed higher revenue growth and market expansion in the Indian context. More recently, **Sinha and Jha (2022)** demonstrated that MSMEs in Bihar, particularly those in agro-processing, saw improved operational efficiency and profitability when entrepreneurs possessed strong opportunity and organizing competencies. **Ibrahim and Shariff (2016)** also showed that in Nigeria, agro-based MSMEs led by entrepreneurs with high levels of strategic and opportunity competencies were able to enter new markets and increase product diversification, mirroring trends observed in Bihar.

In addition, the importance of networking as a key entrepreneurial competency has gained increasing attention. **Kyndt and Baert (2015)** emphasized that entrepreneurs with strong networking abilities are more likely to gain access to valuable resources, such as financing, information, and market opportunities. **Sharma and Bansal (2022)** found that agro-based MSMEs in Bihar that actively engaged in networking activities, such as forming cooperatives or participating in government-led schemes, were better able to scale their operations and compete in regional and national markets. This research underscores the role of networking in overcoming the geographic isolation that many MSMEs in rural Bihar face.

Despite the critical role of entrepreneurial competencies, agro-based MSMEs in Bihar face several structural challenges. One of the most significant is limited market access. **Beyene (2002)** observed that limited infrastructure and poor transportation networks often prevent MSMEs from reaching broader markets, and this issue remains prevalent in Bihar. Recent data from **NITI Aayog (2022)** shows that over 70% of agro-based MSMEs in Bihar are unable to efficiently transport their products to larger markets due to poor infrastructure, leading to reduced profitability and growth potential.

Another major challenge is resource constraints, particularly in accessing finance and technology. While **Mead and Liedholm (1998)** noted that MSMEs in developing economies struggle to secure adequate financing, **Rao et al. (2020)** found that these issues are exacerbated in agro-based MSMEs in India, where entrepreneurs often lack formal credit histories or sufficient collateral to secure loans. **Gupta and Banerjee (2023)** also highlighted that Bihar's MSMEs face significant barriers to adopting new technologies, which limits their productivity and ability to innovate.

Finally, the lack of networking opportunities continues to impede the growth of agro-based MSMEs in Bihar. **Burt (2000)** emphasized the importance of networking for accessing markets and resources, but many MSMEs in rural Bihar remain geographically isolated. **Singh and Sinha (2023)** found that a lack of participation in business networks and industry associations severely limits these MSMEs' ability to collaborate, share knowledge, and access external markets. These findings point to the need for greater

support in fostering networking opportunities, particularly through government initiatives and local business forums.

The literature reveals critical gaps in understanding entrepreneurial competencies for agro-based MSMEs in Bihar. There is limited research focusing specifically on how these competencies are applied in this region's unique context. Empirical evidence linking competencies to performance metrics like productivity in Bihar's agro-sector is scarce. Additionally, the impact of resource constraints on developing competencies remains underexplored. The role of digital and technological competencies, networking challenges due to geographic isolation, and longitudinal studies tracking competency development over time also need further investigation. Moreover, gender-specific barriers for female entrepreneurs in Bihar's agro-based sector are inadequately addressed, highlighting a need for targeted research

3. RESEARCH OBJECTIVES AND HYPOTHESIS

3.1 Research Objectives (RO) of the Study

RO₁: To analyze the impact of entrepreneurial competencies (e.g.,opportunity recognition, strategic thinking, and organizational skills) on the performance of agro-based MSMEs in Bihar, as measured by key performance indicators such as profitability, sales growth, and organizational effectiveness.

RO₂: To assess how resource constraints, including financial limitations, technological inadequacies, and market access, influence the development and application of entrepreneurial competencies in agro-based MSMEs in Bihar.

RO₃: To analyze the role of digital and technological competencies in enhancing the operational efficiency and market competitiveness of agro-based MSMEs in Bihar.

RO₄: To investigate how networking competencies help agro-based MSMEs in Bihar overcome geographic isolation and improve market access and business growth.

Table 1: Mean Scores of Entrepreneurial Competencies across Sectors

	Business Type	Mean	Median	SD	Minimum	Maximum	Shapiro-Wilk W	p
Opportunity Competency	Agro-Allied Products	3.07	3	1.35	1	5	0.888	< .001
	Farming	3.00	3	1.48	1	5	0.867	< .001
	Fisheries	2.81	3.00	1.36	1	5	0.895	< .001
	Poultry	2.82	3	1.35	1	5	0.889	< .001
Strategic Competency	Agro-Allied Products	2.89	3	1.43	1	5	0.883	< .001
	Farming	2.96	3	1.45	1	5	0.882	< .001
	Fisheries	2.87	3.00	1.41	1	5	0.886	< .001
	Poultry	3.14	3	1.25	1	5	0.906	< .001

Customer Base	Agro-Allied Products	3.28	4	1.44	1	5	0.869	$<.001$
	Farming	2.35	2	1.17	1	5	0.868	$<.001$
	Fisheries	3.13	3.00	1.44	1	5	0.882	$<.001$
	Poultry	2.95	3	1.43	1	5	0.887	$<.001$
Organizational Effectiveness	Agro-Allied Products	2.77	3	1.40	1	5	0.883	$<.001$
	Farming	3.07	3	1.46	1	5	0.870	$<.001$
	Fisheries	2.75	3.00	1.25	1	5	0.905	$<.001$
	Poultry	2.97	3	1.40	1	5	0.891	$<.001$
Profitability	Agro-Allied Products	2.79	3	1.30	1	5	0.901	$<.001$
	Farming	3.09	3	1.41	1	5	0.892	$<.001$
	Fisheries	2.98	3.00	1.46	1	5	0.871	$<.001$
	Poultry	3.38	4	1.35	1	5	0.882	$<.001$
Sales Growth	Agro-Allied Products	3.06	3	1.44	1	5	0.878	$<.001$
	Farming	2.95	3	1.41	1	5	0.891	$<.001$
	Fisheries	3.02	3.00	1.48	1	5	0.873	$<.001$
	Poultry	3.03	3	1.48	1	5	0.876	$<.001$

3.2 Hypothesis of the Study

Based on the research objectives, the following hypothesis (H1-H4) is derived:

H_1: Entrepreneurial competencies (opportunity recognition, strategic thinking, and organizational skills) will positively and significantly improve key performance metrics, including profitability, sales growth, and organizational effectiveness in agro-based MSMEs in Bihar.

H_2: Resource constraints (limited access to finance and technology) have a moderating effect, reducing the impact of entrepreneurial competencies on the performance of agro-based MSMEs.

H_3: Digital and technological competencies have a significant positive impact on the operational efficiency and market competitiveness of agro-based MSMEs in Bihar.

H_4: Networking competencies significantly improve market access and business growth, helping agro-based MSMEs overcome geographic isolation.

4. METHODOLOGY

This study follows a survey-based research design, targeting 245 agro-based MSMEs in Bihar. The sample is drawn using a stratified random sampling method to represent different sectors of the agro-based industry, ensuring diversity in business types and sizes. Data collection is conducted through a structured questionnaire, designed to measure entrepreneurial competencies and their impact on business performance. The questionnaire includes sections on competencies such as opportunity recognition, strategic thinking, and networking, as well as business performance indicators like profitability, sales growth, organizational effectiveness, and customer base.

For data analysis, regression analysis is employed to investigate the relationships between entrepreneurial competencies (independent variables) and MSME performance indicators (dependent variables). This method will quantify the influence of specific competencies on business success.

Additionally, regression analysis will be used to explore the moderating effects of resource constraints and geographic isolation on competency development and performance outcomes.

5. DATA ANALYSIS

The analysis was conducted using data from 245 agro-based MSMEs across sectors including Agro-Allied Products, Farming, Fisheries, and Poultry in Bihar. Descriptive statistics, normality tests, and multiple regression analysis were employed to assess the relationship between entrepreneurial competencies and MSME performance.

Source: Author's own work

6. RESULTS AND DISCUSSION

This section presents the findings from the analysis of entrepreneurial competencies and their impact on the performance of agro-based MSMEs in Bihar. The results are discussed in detail, using tables and graphs to illustrate the key relationships and trends.

6.1 Results

6.1.1 Descriptive Statistics

- **Opportunity Competency**: Agro-Allied Products scored highest (mean = 3.07), while Fisheries had the lowest (mean = 2.81). This suggests that Agro-Allied Products are better at recognizing and acting on business opportunities.
- **Strategic Competency**: Poultry scored highest (mean = 3.14), indicating a more robust strategic approach, while Agro-Allied Products and Fisheries showed weaker strategic planning.
- **Profitability**: Poultry reported the highest profitability (mean = 3.38), further validating the strength of its entrepreneurial competencies.

Table 2: Regression Analysis Results

Predictor	Estimate	SE	t	p
Intercept [a]	2.5731	0.3543	7.263	< .001
Strategic Competency	0.0848	0.0640	1.326	0.186
Organizational Effectiveness	-0.0369	0.0641	-0.576	0.565
Sales Growth	0.0239	0.0611	0.392	0.696
Business Type:				
Farming – Agro-Allied Products	0.3059	0.2456	1.246	0.214
Fisheries – Agro-Allied Products	0.1939	0.2512	0.772	0.441
Poultry – Agro-Allied Products	0.5824	0.2371	2.457	0.015

[a] Represents reference level   Source: Author's own work

Table 3: Model Fit Measures

Model	R	R²	Overall Model Test			
			F	df1	df2	p
1	0.189	0.0356	1.46	6	238	0.192

Table 4: Omnibus ANOVA Test

	Sum of Squares	df	Mean Square	F	p
Strategic Competency	3.329	1	3.329	1.758	0.186
Organizational Effectiveness	0.629	1	0.629	0.332	0.565
Sales Growth	0.291	1	0.291	0.154	0.696
Business Type	11.781	3	3.927	2.074	0.104
Residuals	450.589	238	1.893		

Note. Type 3 sum of squares
Source: Author's own work

6.1.2 Normality Test

The Shapiro-Wilk test was used to assess the normality of the competency scores across different sectors. The results confirmed that the distributions were not normal ($p < 0.001$), indicating variability in how these competencies are developed and applied among the sectors.

6.1.3 Regression Analysis

To further explore the relationship between entrepreneurial competencies and MSME performance, a multiple regression analysis was conducted. The dependent variable was Profitability, while the independent variables included Strategic Competency, Organizational Effectiveness, Sales Growth, and Business Type.

The regression analysis results reveal that neither strategic competency ($p = 0.186$) nor organizational effectiveness ($p = 0.565$) significantly predicted profitability. However, the Poultry sector demonstrated a significant positive effect on profitability compared to Agro-Allied Products ($p = 0.015$), indicating that sector-specific advantages may moderate competency-performance relationships.

6.1.4 ANOVA Results

The ANOVA test was performed to determine if there were significant differences in the impact of competencies across business types.

6.2 Discussion

6.2.1 Analysis of Competencies

The study shows that Opportunity Competency is crucial across all sectors but varies significantly in its impact. Agro-Allied Products displayed the highest scores for opportunity recognition, likely due to better access to diversified markets and resources. In contrast, the low scores for Fisheries suggest limited ability to identify and exploit market opportunities, potentially due to structural constraints or market isolation.

- Strategic Competency: Although important in theory, the regression analysis indicates that Strategic Competency does not significantly predict Profitability ($p = 0.186$). This could imply that other factors, such as external market conditions or resource limitations, may moderate its effect..

- Organizational Effectiveness: Despite its perceived importance, Organizational Effectiveness did not show a significant impact on profitability ($p = 0.565$). This may suggest that structural challenges, such as limited access to finance and technology, prevent MSMEs from leveraging their internal competencies effectively. Further studies should explore these external constraints in more detail.

6.2.2 Sector-Specific Insights

The positive relationship between the Poultry sector and profitability, as indicated by the regression results ($p = 0.015$), suggests that certain sectors may have inherent advantages. Graph 1 shows the profitability trends across different sectors, highlighting that poultry enterprises consistently outperform other sectors.

7. CONCLUSION AND SUGGESTIONS

7.1 Conclusion

This study provides valuable insights into the role of entrepreneurial competencies in shaping the performance of agro-based MSMEs in Bihar, a region where agriculture plays a pivotal role in economic development. The findings highlight the nuanced impact of different competencies, such as opportunity recognition, strategic thinking, and organizational effectiveness, on the profitability and growth of these enterprises.

- **Opportunity Competency** emerged as a critical driver of market competitiveness, particularly in the Agro-Allied Products sector. However, sectors like Fisheries demonstrated lower scores, indicating a need for better mechanisms to identify and capitalize on new opportunities. This suggests that fostering opportunity competency is essential for enhancing adaptability and resilience in the face of market changes.

- **Strategic Competency** was found to be important for long-term business planning and sustainability but did not show a statistically significant direct impact on profitability in this study. This finding implies that external factors such as market volatility, resource availability, and policy environment may moderate the effect of strategic competency, thereby requiring a more nuanced approach to strategy development in MSMEs.

- **Organizational Effectiveness** showed no significant direct impact on profitability, suggesting that while internal management practices are crucial, they may be constrained by external structural challenges, including limited access to finance, technology, and skilled labor. This finding points to the need for integrated strategies that address both internal capabilities and external constraints.

- **Poultry sector** exhibited a significant positive relationship with profitability compared to other sectors. This suggests that certain sectors may possess inherent advantages, such as lower entry barr-

iers or more consistent demand patterns, which can be leveraged to enhance performance.

Overall, this study emphasizes the complex interplay between various entrepreneurial competencies and their impacts on MSME performance in Bihar. It underscores the importance of targeted policy interventions that not only enhance these competencies but also address the structural barriers that limit their effective application.

7.2 Suggestions

- **Enhancing Market Access**: To address the challenges faced by sectors like Fisheries and Farming, policies should focus on improving market access through better infrastructure, logistics, and distribution channels. Additionally, integrating digital platforms could enable these enterprises to reach broader markets and reduce transaction costs.

- **Facilitating Access to Finance and Technology**: Government and financial institutions should develop innovative financing solutions tailored to the needs of agro-based MSMEs. This could include collateral-free loans, credit guarantees, and microfinancing options that cater specifically to small-scale enterprises. Concurrently, promoting technology adoption through subsidies, grants, and training programs can help these businesses improve productivity and competitiveness.

- **Sector-Specific Development Strategies**: Recognizing the inherent advantages of sectors like Poultry, targeted development strategies should be designed to capitalize on these strengths. This could involve developing specialized clusters, promoting value addition, and enhancing supply chain linkages to maximize sectoral growth potential(Pathak & Rahul Kumar, 2024).

- **Building Entrepreneurial Capacity**: Developing robust training programs that focus on key entrepreneurial competencies such as opportunity recognition, strategic planning, and financial management, and networking can help MSMEs better navigate market dynamics and enhance their growth prospects. Partnerships between government agencies, academic institutions, and industry bodies could facilitate these initiatives.

- **Promoting Networking and Collaboration**: Networking opportunities should be expanded to enable MSMEs to share knowledge, access new markets, and build strategic alliances. The formation of cooperatives, industry clusters, and participation in national and international trade fairs can help overcome geographic isolation and foster innovation(Kumar et al., 2024).

- **Encouraging Digital and Technological Adoption**: Digital transformation is vital for MSMEs to remain competitive in a rapidly evolving market environment. Governments and industry stakeholders should promote the use of digital tools, such as e-commerce platforms, digital marketing, and supply chain management systems, to enhance operational efficiency and expand market reach(kumar, 2024).

- **Addressing Gender-Specific Barriers**: Special attention should be given to understanding and overcoming the unique challenges faced by female entrepreneurs in Bihar's agro-based sector. Tailored interventions, such as dedicated funding programs, mentorship opportunities, and capacity-building workshops, could help bridge the gender gap and promote inclusive growth.

- **Strengthening Policy Support and Infrastructure**: Effective policy support, including fiscal incentives, simplified regulatory frameworks, and better infrastructure, is essential to create a conducive environment for MSMEs to thrive. Focused government interventions should aim to reduce bureaucratic hurdles, improve transport and communication networks, and facilitate access to essential resources.

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