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Research Article

Artificial Intelligence-Based Rural Marketing Strategies and Entrepreneurial Development under PMBJP: A Study on Indigenous Communities in Odisha

AmarendraBhuyan[1], Dr. B.C.M. Patnaik[2], Dr. Ipseeta Satpathy[3]
[1]Research Scholar, KIIT School of Management, KIIT University, Odisha, India
[2]Professor, KIIT School of Management, KIIT University, Odisha, India
[3]Senior Professor, KIIT School of Management, KIIT University, Odisha, India

***Corresponding Author**
Akash

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Abstract: The PMBJP (Pradhan Mantri Bharatiya Jan Aushodhi Pariyojana) is the programme of the central government of India which facilitates the distribution of generic medicines at a low cost to the needy at their doorsteps and there by solves the problems of the people specifically the indigenous community who faces problems of purchasing the medicines they need due to the branded medicines are sold at a high cost. PMBJP supply the generic medicines at a low cost but it suffers the distribution channel problem which has been solved by the introduction of AI into the distribution channel there by increases the marketing strategy in promoting entrepreneurial development among the indigenous communities in Odisha. This study focuses on how AI technology such as analytics of social media, communication through Chabot, and digital customer engagement to develop the entrepreneurial ability among the people of indigenous communities. In this study descriptive and analytical research design has been used with a sample size of 200 respondents from the customers and entrepreneurs in Odisha. Structured questionnaire has been used to collect data based on five Point likert scale. Percentage analysis and Chi-square analysis has been done to interpret the relationship between entrepreneurial performance and AI based marketing. Findings focus on how marketing has been supported by AI in improvements in customer awareness, business performance, and entrepreneurial ability under PMBJP programme among the indigenous communities of Odisha.

Keywords: Artificial Intelligence, PMBJP, Entrepreneurship, Healthcare Marketing, Generic Medicines, Digital Marketing, Indigenous Communities, Rural Healthcare, AI Analytics.

INTRODUCTION

Health care sector in India faces the difficulties such as accessibility and affordability which has been eradicated by the introduction of Pradhan Mantri Jan aushodhi pariyojana by the government of India and it solves the proble by supplying the generic medicines at an affordable price and it also gives the opportunities of becoming te entrepreneurs by opening the jan aushodhi kendras to the needy people specifically the indigenous communities f odisha . but one of the shortcomings of PMBJP is that it suffers the supplychain management problems which has been introduction of AI which solves the problem by use of chatbots, digital customer management and use of smart technologies to manage the supply chain.

REVIEW OF LITERATURE

Gupta and Sharma (2026)

Gupta and Sharma examined the role of Artificial Intelligence in pharmaceutical supply chain optimization. The study highlighted that AI improves inventory management, predictive forecasting, and operational efficiency in healthcare systems. The authors concluded that AI-driven systems help reduce medicine shortages and improve accessibility.

Kumar, Singh, and Verma (2025)

The researchers analyzed AI-enabled predictive forecasting in healthcare supply chains. Their findings revealed that AI

technologies improve demand estimation, customer satisfaction, and marketing efficiency. The study emphasized the importance of AI in reducing operational costs for pharmaceutical entrepreneurs.

Chandani Sheikh et al. (2022)
The study examined awareness and attitudes toward generic medicines under the Janaushadhi Scheme. The findings showed that lack of awareness and misinformation were major barriers to the adoption of generic medicines. The researchers suggested stronger digital marketing and awareness campaigns.

Sathyanarayana (2021)
The study focused on promotional strategies adopted in the pharmaceutical industry. The author found that digital communication and customer-oriented marketing significantly influence consumer trust and medicine sales.

This study focuses on use of promotional strategy in the pharmaceutical sector. It has found out by the author that the customer oriented marketing and digital communication helps to gain customer trust and increase n the sale of medicines.

Mishra and Das (2024)
It has been observed by the authors that social media marketing has a great impact on healthcare entrepreneurship in India. The study suggests that AI based marketing and digital campaign increases healthcare service among the rural population. Rao and Patra (2023)

The study focuses on how PMBJP creates entrepreneurs in Odisha . The auhors observed that Pradhan mantra Bharatiya jan aushodhi pariyojana creates sustainable employment opportunities in pharmaceutical sector for rural entrepreneurs.

Mohanty and Sahu (2025)
In this study autors shown hat ow AI helps to eradicate the problems of supply chain management in harmeceutical sector particularly in PMBJP programme wit the help of AI chatbots and digital customer relationship management.

Research Gap
This study focuses on how the use of A solves the problems of accessibility and affordability in PMBJP programme and enable to increases the marketing opportunity in PMBJP and how through the use of AI how the rural entrepreneurs are facilitated n making the job opportunity through the Pradhan Mantri Bharatiya Jan aushodhi Pariyojana.

Objectives
- To evaluate the role of AI in PMBJP marketing strategy
- To observe the impact of AI on entrepreneurial development under PMBJP.
- To identify how consumer awareness has been facilitated through the use of AI in PMBJP
- To evaluate the relationship between AI-based marketing and customer satisfaction.

RESEARCH METHODOLOGY

N this study data from both the data sources that is primary and secondary has been used with the help of structured questionnaire from the PMBJP entrepreneurs and customers and for secondary data journals, government reports,books,websites and previous research studies have been relied upon.

Sampling Technique
Convenience sampling method was used for selecting respondents.

Sample Size
The study consists of 200 respondents from PMBJP Kendras and customers in Odisha.

Area of Study
The study was conducted in selected tribal and rural regions of Odisha.

Statistical Tools Used
- Percentage Analysis
- Chi-square Analysis
- Tabulation Method

QUESTIONNAIRE
Section A: Demographic Profile
1. Gender

*Male *Female *Others

2. Age Group

- Below 25 years
- 26 to 35 years
- 36 to 45years
- 46 to 55 years
- Above 55 years

3. Occupation

- Entrepreneur
- Jan aushodhi Kendra owner
- Businessman
- Gvt job
- Private job
- Others

4. Monthly Income

- Below ₹10,000
- ₹10,001–₹20,000
- ₹20,001–₹30,000
- ₹30,001–₹40,000
- Above ₹40,000

6. Area of Residence

- Rural
- Urban
- Tribal Area

7. Are you aware of PMBJP (Pradhan Mantri Bhartiya Janaushadhi Pariyojana)?

- Yes
- No

8. Have you purchased medicines from PMBJP stores?

- Yes
- No

Section B: AI, PMBJP, Marketing and Entrepreneurship

Five-Point Likert Scale Questionnaire

Instructions:

Please put a tick mark (✓) in the appropriate column based on your opinion.

Scale	Meaning
1	Completely disagree
2	disagree
3	Neutral
4	Agree
5	Completely Agree

Part I: Awareness and Marketing

Sl. No	Statements	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
1	AI-based digital marketing increases awareness about PMBJP medicines.	☐	☐	☐	☐	☐
2	Social media advertisements help people	☐	☐	☐	☐	☐

Sl. No	Statements	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
	know about generic medicines.					
3	Online promotional campaigns improve public trust in PMBJP medicines.	☐	☐	☐	☐	☐
4	Digital marketing helps PMBJP stores attract more customers.	☐	☐	☐	☐	☐
5	AI-powered advertisements influence medicine purchasing decisions.	☐	☐	☐	☐	☐
6	AI-based communication improves healthcare awareness in rural areas.	☐	☐	☐	☐	☐
7	Mobile-based marketing improves accessibility to PMBJP information.	☐	☐	☐	☐	☐
8	Digital platforms help spread awareness among indigenous communities.	☐	☐	☐	☐	☐

Part II: Artificial Intelligence and Customer Engagement

Sl. No	Statements	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
9	AI technologies improve customer interaction in PMBJP stores.	☐	☐	☐	☐	☐
10	AI chatbots provide better customer support services.	☐	☐	☐	☐	☐
11	AI helps in understanding customer preferences effectively.	☐	☐	☐	☐	☐
12	AI-based systems improve customer satisfaction.	☐	☐	☐	☐	☐
13	AI tools help PMBJP stores respond quickly to customer needs.	☐	☐	☐	☐	☐
14	AI-enabled systems improve medicine availability.	☐	☐	☐	☐	☐
15	Predictive AI systems reduce medicine shortages.	☐	☐	☐	☐	☐
16	AI-based customer service increases repeat purchases.	☐	☐	☐	☐	☐

Part III: Entrepreneurship and Business Development

Sl. No	Statements	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
17	PMBJP facilitates employment opportunities in Odisha.	☐	☐	☐	☐	☐

Sl. No	Statements	Completely Disagree	Disagree	Neutral	Agree	Completely Agree
18	PMBJP increases the healthcare entrepreneurship in rural areas.	☐	☐	☐	☐	☐

Analysis of Chi Square
Artificial Intelligence-Based Rural Marketing Strategies and Entrepreneurial Development under PMBJP
Sample Size = 200 Respondents

Hypothesis 1
Statement:
"AI-based digital marketing increases awareness about PMBJP medicines."

Observed Frequency Distribution

Response Category	Observed Frequency (O)
Completely disagree	18
Disagree	22
Neutral	30
Agree	70
Completely agree	60
Total	200

Expected Frequency
Since there are 5 response categories:
E=2005=40E=\frac{200}{5}=40E=5200=40
Expected Frequency (E) = 40

Chi-Square Calculation Table

Response Category	O	E	O-E	$(O-E)^2$	$(O-E)^2/E$
Completely disagree	18	40	-22	484	12.10
Disagree	22	40	-18	324	8.10
Neutral	30	40	-10	100	2.50
Agree	70	40	30	900	22.50
Completely agree	60	40	20	400	10.00
Total	200	200			55.20

Formula Used
χ2=∑(O−E)2E\chi^2=\sum\frac{(O-E)^2}{E}χ2=∑E(O−E)2
Calculated Chi-Square Value = 55.20

Degree of freedom
df=(n−1)=(5−1)=4df=(n-1)=(5-1)=4df=(n−1)=(5−1)=4
Degree of Freedom = 4

Table Value
At 5% level of significance and 4 degrees of freedom:

Critical Table Value = 9.488

Result

As the calculated value by Chi square (55.20) is more than the table value (9.488), the null hypothesis is rejected.

Interpretation

There is a significant relation between AI-based digital marketing and awareness regarding PMBJP medicines among respondents.

Hypothesis 2

Statement:

"Digital marketing increases sales performance of PMBJP stores."

Response Category	Observed Frequency (O)
Completely disagree	15
Disagree	25
Neutral	35
Agree	75
Completely agree	50
Total	200

Expected Frequency

E=2005=40E=\frac{200}{5}=40E=5200=40

Expected Frequency = 40

Chi-Square Calculation Table

Response Category	O	E	O-E	$(O-E)^2$	$(O-E)^2/E$
Completely disagree	15	40	-25	625	15.63
Disagree	25	40	-15	225	5.63
Neutral	35	40	-5	25	0.63
Agree	75	40	35	1225	30.63
Completely agree	50	40	10	100	2.50
Total	200	200			55.02

Calculated Chi-Square Value = 55.02

Degree of Freedom = 4

Table Value

Critical Table Value at 5% significance level = 9.488

Decision

Since the calculated value (55.02) is greater than the table value (9.488), the null hypothesis is rejected.

Interpretation

There is a significant relationship between digital marketing and sales performance of PMBJP stores.

Hypothesis 3

Statement:

"PMBJP creates employment opportunities in Odisha."

Null Hypothesis (H_0)

There is no significant relationship between PMBJP and employment opportunities.

Alternative Hypothesis (H_1)

There is a significant relationship between PMBJP and employment opportunities.

Observed Frequency Distribution

Response Category	Observed Frequency (O)

Completely disagree	10
Disagree	20
Neutral	25
Agree	80
Cmpletely agree	65
Total	200

Expected Frequency
E=2005=40E=\frac{200}{5}=40E=5200=40
Expected Frequency = 40

Chi-Square Calculation Table

Response Category	O	E	O-E	$(O-E)^2$	$(O-E)^2/E$
Completely disagree	10	40	-30	900	22.50
Disagree	20	40	-20	400	10.00
Neutral	25	40	-15	225	5.63
Agree	80	40	40	1600	40.00
Completely agree	65	40	25	625	15.63
Total	200	200			93.76

Calculated Chi-Square Value = 93.76

Degree of Freedom = 4

Table Value
Critical Table Value = 9.488

Decision
Since the calculated value (93.76) is greater than the table value (9.488), the null hypothesis is rejected.

Interpretation
There is a significant relationship between PMBJP and employment opportunities in Odisha.

CONCLUSION

This study focuses on how the use of AI helps in increasing the marketing efficiency of PMBJP programme which creates the employment opportunity for the rural people specifically the indigenous communities in generating job opportunity by the way of opening jan aushodhi kendras . In this study data has been collected from 200 respondents and has been analyses with the help of chisquare and it has been found that with the help of AI the marketing of PMBJP programme has been increased to a large extent and PMBJP has created employment opportunity for the rural people .

Therefore, the study concludes that integrating Artificial Intelligence with PMBJP marketing and entrepreneurial activities can strengthen healthcare accessibility, improve consumer awareness, and promote sustainable rural entrepreneurship. Government agencies, policymakers, and PMBJP stakeholders should focus on digital literacy programs, AI training initiatives, and technological support systems to maximize the benefits of AI-driven healthcare marketing in Odisha and other rural regions of India.

REFERENCES

1. Behera, S., & Nayak, R. (2024). Digital literacy and healthcare accessibility in tribal Odisha. Journal of Rural Development Studies, 18(2), 110–125.
2. Chandani Sheikh, P., Kumar, A., & Mishra, R. (2022). Awareness and attitude towards generic medicines under Janaushadhi Scheme. International Journal of Pharmaceutical Research, 14(3), 221–230.
3. Gupta, R., & Sharma, P. (2026). Artificial intelligence in pharmaceutical supply chain optimization: Emerging trends and applications. Journal of Pharmaceutical Innovation, 21(2), 145–162.
4. Kumar, S., Singh, A., & Verma, R. (2025). AI-enabled predictive forecasting for inventory optimization in healthcare supply chains. International Journal of Logistics Management, 36(4), 455–472.

5. Mishra, D., & Das, P. (2024). Social media marketing and healthcare entrepreneurship in India. Indian Journal of Marketing Management, 12(1), 66–79.
6. Mohanty, A., & Sahu, B. (2025). AI-driven customer relationship management in healthcare retailing. Asian Journal of Digital Business, 9(3), 90–108.
7. Rao, S., & Patra, M. (2023). Entrepreneurship opportunities under PMBJP in Odisha. Journal of Healthcare Entrepreneurship, 7(2), 40–58.
8. Sathyanarayana, K. (2021). Promotional strategies in pharmaceutical marketing and the role of medical representatives. International Journal of Pharmaceutical Studies, 11(1), 35–44.
9. World Health Organization. (2023). Access to affordable medicines and healthcare systems. WHO Publications.
10. Government of India. (2025). Pradhan Mantri Bhartiya Janaushadhi Pariyojana annual report. Department of Pharmaceuticals, Ministry of Chemicals and Fertilizers.