The Role of Artificial Intelligence in Transforming Rural Marketing: Opportunities, Challenges, and Future Prospects

Ms Neha Katheriya[1], Dr. Priyanka Rastogi[2], Dr. Charu Rastogi[3]

[1] *Assistant Professor, Department of Business Administration, M.J.P. Rohilkhand University Bareilly (U.P).*
[2]*Assistant Professor, Department of Business Administration, M.J.P. Rohilkhand University Bareilly (U.P).*
[3]*Former Assistant Professor, Department of Business Administration, RIMT Bareilly (U.P).*

Abstract

Artificial Intelligence is a digital computer's capacity to achieve tasks commonly related to intelligent India's agriculture sector, which is the foundation of the nation's economy, is closely related to rural development. A game-changer with the potential to revolutionise many international industries is artificial intelligence (AI). In a world with supply chain conflicts and more frequent weather catastrophes, artificial intelligence (AI) solutions that maximise resources and boost output are essential. Examine the many studies on the impact of artificial intelligence on rural marketing, the agricultural market, and small businesses in rural areas in this article. The research came to the conclusion that AI would transform rural marketing in India by improving productivity, efficiency, and decision-making. Enhancing crop management and market accessibility, it provides substantial advantages in the fields of agriculture, education, health care, and finance. However, adoption is hampered by issues including expensive prices, inadequate connection, and gaps in digital literacy, particularly for small farmers. Digital twins, precision farming, and AI-powered smart farming are examples of technologies that can maximise output, save expenses, and enhance resource efficiency. AI-powered apps can guarantee high-quality product, cut down on food waste, and optimise supply networks. Digital literacy initiatives, infrastructure development, and strategic policy support are essential for sustained rural change if AI is to reach its full potential.

Keyword: Artificial Intelligence (AI), Rural marketing, Small and medium agricultural producers, Healthcare, Education

INTRODUCTION

With the potential to revolutionise a wide range of industries, including healthcare, agriculture, and education, artificial intelligence (AI) is rapidly changing several sectors globally, and its implications on rural development are particularly noteworthy. By using AI in innovative ways to develop rural regions and improve the standard of living for residents, this contributes to the economic well-being of rural areas [1]. The marketing department of many businesses supports AI, which quickly adapts clever technical solutions that promote flexible client experiences that prioritise rural areas. AI marketing systems are being developed in response to these solutions. Marketers want for more precise audience targeting based on this, using a thorough knowledge. AI reduces the marketing team's effort by facilitating conversation and generating insights via optimisation [2]. Artificial intelligence establishes a bridge that forges forward to develop and enhance the capacity to adapt and tilt in response to changes in the economy. potential uses of AI across a number of industries, including media, finance, manufacturing, services, and more. Improvements lead to significant progress on rural (rural) segregation based on observations and its significant difficulties [3].

Special Issue on AI, Life Skills and Sustainavility

The marketing landscape is changing due to artificial intelligence (AI), which could soon completely alter it. There is a dearth of literature on the issue of integrating two disciplines, even though marketing is one of the most significant commercial applications of AI today and early adopters are working to create value from it. Artificial intelligence (AI) finds use in a wide range of corporate operations and functional disciplines. Among them, marketing is considered the core of the company [4].

Role of AI in rural marketing

The artificial intelligence (AI) software enables a computer to react in some situations similarly to a person. AI comes in a variety of forms. Logical artificial intelligence is the ability of a software to behave in a certain scenario, and its objectives are all expressed in sentences using a mathematically logical language [5]. By determining that certain activities are suitable for accomplishing its objectives, the program makes decisions. The AI systems that search look at a lot of options, like game movements. New ways to do this more effectively are always being discovered in a variety of fields. AI is used for pattern recognition, where it is trained to compare what it observes with a pattern [6]. For instance, a vision software may attempt to identify a face by matching a pattern of eyes and noses in a scene. more complexity, such as in a linguistic text, a stance that is difficult to understand, etc. In some manner, the AI is employed to represent the facts. Languages of mathematical reasoning are often used [7]. Some information may be used to draw conclusions. Despite being a field of active study since the 1950s, artificial intelligence remains the furthest distant from human-level expertise in common sense understanding and reasoning. Although there has been a lot of progress, such as in the creation of theories of action and systems of non-monotonic reasoning, more innovative concepts are still required [8]. The ability of AI to learn from experience has advanced to a new degree. The only things that programs can learn are the facts or behaviours that their formalisms may describe. Telecom firms and several social media platforms utilise these to research customer behaviour and push certain information and ads to users [9]. Heuristics, genetic programming, ontology, epistemology, and planning programs are some more types of artificial intelligence. AI's involvement in marketing has begun, and by combining AI with digital and other traditional techniques, the rural market will rapidly grow [10].

Implementing AI in rural marketing:

A detailed guide on how companies may use AI into their rural marketing efforts can be found here [11]:

- **Market Research:** Gather information on rural markets first. Recognise the target regions' income distribution, demographics, and purchasing patterns.
- **AI Tools Selection:** Select the AI platforms and technologies that best suit your marketing goals. This might include chatbots, predictive analytics software, or analytics driven by AI.
- **Localization:** Make your AI solutions unique to rural customers' linguistic and cultural preferences. Make sure the information you provide is relevant and applicable.
- **Data Collection and Analysis:** Use data collecting techniques powered by AI to continually get insights from rural customers. To improve your marketing tactics, use this data.
- **AI-Enhanced Communication:** Use virtual assistants and chatbots to communicate with rural clients, offering them support and information in their chosen language.
- **Supply Chain Optimization:** Supply chain may be optimised by using AI algorithms to make sure that goods are accessible and reasonably priced in remote locations.
- **Accessibility:** Create accessible online platforms or user-friendly mobile applications that work even with spotty internet connection.
- **Training and Support:** Rural marketing staff should get assistance and training so they can utilise AI technologies and platforms efficiently.

LITERATURE REVIEW

(Soni, 2024) [12] examines how artificial intelligence (AI) tools like predictive modelling, data analytics, and machine learning are changing the agricultural marketing scene. Better decision-making is made possible by AI-driven insights at every point of the supply chain, from distribution and customer interaction to planting and harvesting. A paradigm change has occurred with the use of AI in agricultural marketing, enabling players to effectively and sustainably negotiate the intricacies of the contemporary food economy. AI's use in agriculture is anticipated to grow as it develops further, providing even more chances for

improved environmental stewardship, production, and profitability.

(Talaviya et al., 2020) [13] AI has revolutionised agriculture. Technology has shielded agricultural output from climate change, population increase, job challenges, and food security issues. This study examines farming uses of AI, such as irrigation, weeding, and spraying using sensors and other devices on robots and drones. These methods conserve water, pesticides, herbicides, preserve soil fertility, and aid in manpower efficiency, production, and quality. Discussed are soil water sensing and two automated weeding approaches. this study discusses drone installation and spraying and crop-monitoring technologies.

(Goel et al., 2024) [14] aims to provide a thorough examination of the environment around the deployment of AI in rural India. Through a thorough examination of the body of existing research, perceptive case studies, and careful data analysis, this study aims to examine both the significant challenges AI faces and its possible advantages. This paper aims to clarify AI's potential to tackle important rural development issues by carefully analysing how it can be strategically used. This will be accomplished while navigating a complex web of issues, from complex socio-cultural factors to accessibility and infrastructure limitations.

(Kumar & Shobana, 2024) [2] Focussing on utilising cutting-edge technology like precision farming and artificial intelligence (AI), the study seeks to examine how they may improve agricultural output, socioeconomic circumstances, and general well-being in rural India. The utilisation of digital platforms for information sharing and market access, AI-driven crop management, and precision farming methods are important research topics. In order to support the development of a resilient, technologically enabled rural environment in India, the study aims to inform future policy choices by illuminating the potential and limitations related to technology-driven agricultural projects. In 2047 and beyond, the research hopes to clear the path for rural people in India to have a more sustainable and fair future.

(Basha, 2023) [4] Marketing is one of the most important industries where AI is being used to improve performance. Finding out how AI affects marketing is the goal of the present study. The results of the research highlight the factors that affect the use of AI in marketing, the advantages and challenges of doing so, as well as the ethical issues, the use of AI in marketing, and your company's before and after AI marketing plan. The research suggests using AI into

marketing duties to boost business performance and, therefore, gain a competitive edge and profitability. Through the methodical and thorough identification of research gaps that connect strategic AI marketing practice and research, this work also advances the field of strategic marketing research.

(S & KAVIPRIYA, 2024) [3] The current period has seen a rise in the popularity of "Alpha gen Marketing with AI" because to the quick development of AI and massive software applications that can provide detailed ideas of accuracy and knowledge from the bigger data (also known as "big data") and delve into the nuances of the data. AI is a crucial component of rural marketing, which has been well-reported in the context of strategically planned rural revitalisation. This is done to preserve resources, culture, and the growing economy while also increasing rural revenue. By emphasising rural development, the research reiterates the first line of AI's contact with marketing; it highlights the role that the marketing industry plays in introducing AI to marketing for rural development with detailed interaction in accordance with the demands of expecting rural clients.

(Xie & He, 2022) [15] This paper proposes a research study on the marketing strategy of rural tourist attractions based on big data and artificial intelligence, analyses current applications of big data and AI in rural tourism, and discusses the transformation of rural tourism marketing to a new fusion model with their support. It aims to study every step involved and profoundly supported by big data and AI. These findings suggest that rural tourism and artificial intelligence/big data can be better integrated to improve visitors' tour experiences and rural scenic spot marketing strategies to boost revenue.

CONCLUSION

In India, artificial intelligence (AI) has the potential to completely transform rural marketing by providing data-driven solutions that improve productivity, efficiency, and decision-making. AI-driven developments in financial services, healthcare, education, and agriculture offer enormous potential, with farmers gaining access to markets and better crop management. Marketing experts also see AI's potential to boost productivity, optimise marketing operations, improve consumer insights, and improve service quality. Despite these benefits, there are a number of obstacles preventing mainstream AI use. Poor connection, a lack of digital knowledge, and unequal access to resources continue to be major obstacles, especially for small and

medium-sized farmers. Other major difficulties are worker qualification and the digitisation of manufacturing processes. Overcoming these challenges requires public policies that encourage worker training and technology improvements. The agricultural scene is changing due to emerging technologies like digital twins, precision agriculture, and AI-integrated smart farming. Ideas like Agriculture 4.0, which makes use of data infrastructure, and Agriculture 5.0, which integrates AI and unmanned aerial vehicles, provide viable ways to improve farming methods. Increased production capacity, lower prices, and better resource efficiency are all possible with AI integration in agriculture. The poor acceptance rate among farmers and the expensive cost of AI technology, however, continue to be major issues. Through the simplification of marketing, supply chain management, and manufacturing processes, AI-powered digital apps have the potential to revolutionise rural marketing. These technologies will be essential for fulfilling the needs of an expanding population, guaranteeing high-quality agricultural goods, and minimising food waste. A systematic strategy that includes infrastructure development, digital literacy programs, and legislative backing is necessary to fully realise AI's promise.

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