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Artificial Intelligence and Agritourism Development: Mixed Feelings on Digital and Social Media Marketing in Africa

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ABSTRACT

The emergence of artificial intelligence and its progressively wider impact on many sectors requires an assessment of its effect on the achievement of the Sustainable Development Goals. Artificial intelligence has been advancing rapidly in recent years, measured both in terms of the quantity of resources devoted to it and also in terms of its outputs. Artificial intelligence is increasingly reshaping businesses by performing various tasks, constituting a major source of innovation, yet threatening human jobs. The article reviews recent research in this area that suggests that AI and robotics have the potential to increase productivity and growth of agritourism, but may have mixed effects on labor, particularly in the short run. Using the positivism research philosophy, the study also sought to examine the insights, attitudes, and involvements of participants toward AI-driven marketing technologies in agritourism. Further, it assessed the socio-cultural, economic, and environmental influences of digital and social media marketing on African agritourism destinations. It also sought to ascertain paramount practices, challenges, and opportunities for leveraging AI technologies to stimulate sustainable agritourism development in Africa. The study considered current and potential policies around AI that could potentially help boost agritourism development while also mitigating any labor market downsides, including evaluating the pros and cons of AI on African agritourism development. The study finds that organizational factors, positive socio-cultural factors, economic factors, and environmental factors play a crucial role in the adoption of artificial intelligence by agritourism industries. Based on the study findings, the paper recommended that the fast adoption of AI needs to be supported by the necessary regulatory insight and oversight for AI-based technologies to enable agritourism sustainable development. Failure to do so could result in gaps in transparency, safety, and ethical standards. The findings also informed recommendations for further study and guided the discourse on implications for policy and practice, which other researchers, policymakers, and practitioners could potentially draw learning points from.

INTRODUCTION

Artificial intelligence (AI) technologies are greatly effective in monitoring social media to get a comprehensive knowledge of what people interacting on social networks are discussing about a brand in their posts and comments (sentiment analysis) (Bobitan et al., 2024). They are useful as well to determine how they can be approached with personalized content (audience analysis) and how the images they share enable savvy marketers to recognize the logos of brands or companies active in social media content (image analysis). Artificial intelligence (AI) tools provide effective support to social media marketers in their tasks to optimize audience, image, and sentiment analyses by identifying the branded content that carries out high

customer engagement with social media (Dwivedi et al., 2021). Agriculture and tourism are two vital sectors in many African economies. Agritourism, which involves activities that incorporate tourism with agricultural practices, has been growing in popularity as it offers prospects for income generation and rural development. According to (Karthik & Gajanand, 2019), agritourism allows a tourist to visit an agricultural setting or a working farm, whereas (Ait-Yahia Ghidouche et al., 2021) are of the opinion that agritourism is used by farmers as a strategy to contribute and enhance agricultural development on their farm; in some cases, they even use it as a way to stimulate sustainable rural development. Some of the first forms of agritourism in the world were found in the United States of America (US) and Italy. Agritourism gained popularity in the 1920s in the US, when travel became more common (van Zyl & van der Merwe, 2021).

In recent years, the convergence of artificial intelligence (AI), digital media, and agritourism began as a dynamic field with vast potential for economic growth and sustainable development, particularly in the African context. Agritourism, which involves the assimilation of agricultural activities with tourism proficiencies, offers a unique opportunity to showcase Africa's rich cultural heritage, diverse landscapes, and traditional farming practices to domestic and international visitors. Africa, endowed with rich natural resources and cultural diversity, is increasingly looking towards agritourism as a means to diversify its economy, alleviate poverty in rural areas, and encourage sustainable agriculture practices. However, the effective promotion and marketing of agritourism experiences pose significant challenges on a continent characterized by digital gaps, infrastructural limitations, and socio-economic inequalities.

The advent of digital and social media platforms has transformed the way industries engage with customers, market their products, and build brand awareness. In the context of agritourism, digital and social media marketing offers unparalleled opportunities to reach a global audience, showcase unique experiences, and facilitate an uninterrupted interface between farmers, tourists, and other stakeholders. Customers continuously network with social media sites such as Facebook, Twitter, LinkedIn, Pinterest, Instagram, TripAdvisor, WhatsApp, TikTok, Weibo, YouTube and Chatbots. Social media is one of the key sectors where the agritourism industry can both skyrocket performance and efficiency by using artificial intelligence. With the help of artificial intelligence (AI), data about agritourism activities on social media is constantly being compiled and analyzed. Social media is presently being used to infer social behavior and derive tendencies in combination with big-data analysis tools (Wang et al., 2025). For example, social media users can share their travel experiences on TripAdvisor or Booking.com. In addition, social media customers (e.g., influencers) can serve as endorsers to promote travel destinations on social sites (Shan et al., 2020). However, the adoption of digital and social media marketing strategies in African agritourism is met with mixed feelings and presents a complex set of opportunities and challenges. While these platforms have the potential to amplify the visibility of agritourism destinations, empower local communities, and foster sustainable development, they also raise concerns related to cultural commodification, digital exclusion, and environmental sustainability. The literature indicates that social media marketing in general has gained significant momentum across all sectors, with micro-hospitality establishments having fully embraced it in more economically developed countries (Choo & Park, 2022; Nkosana & Skinner, 2022; Sharma et al., 2020).

Despite the rising interest in the intersection of artificial intelligence (AI), digital media, and agritourism in Africa, there remains a scarcity of empirical investigation examining the effects, obstructions, and prospects associated with the adoption of digital and social media marketing strategies in this context. Zimbabwe, like many other African nations, faces unique challenges and opportunities when it comes to leveraging artificial intelligence artificial intelligence (AI) and digital/ social media marketing for agritourism development. Agritourism in Zimbabwe presents a promising avenue for economic development, rural revitalization, and cultural preservation. However, the integration of artificial intelligence artificial intelligence (AI) and digital/social media marketing into agritourism is fraught with challenges and mixed perceptions among stakeholders. The digital

divide, technological barriers, economic constraints, perceptual challenges, inconsistent policies, and a lack of government support for digital infrastructure development and artificial intelligence (AI) innovation further complicate the landscape (Dwivedi et al., 2021). There is a need for coherent strategies and policies that encourage the adoption of these technologies while addressing the concerns of various stakeholders. Despite the potential benefits of these technologies in enhancing the efficiency of agricultural practices, improving visitor experiences, and expanding market reach, several issues hinder their adoption and effective utilization. It is from this background that this paper seeks to explore the role of artificial intelligence in shaping digital and social media marketing practices in the context of agritourism development in Africa. By adopting a positivism approach, this paper aims to investigate the current landscape of digital and social media marketing strategies employed in African agritourism operators. The study examines the insights, attitudes, and involvements of participants towards artificial intelligence (AI)-driven marketing technologies in agritourism. It further assesses the socio-cultural, economic, and environmental influences of digital and social media marketing on African agritourism destinations. The study also ascertains paramount practices, challenges, and opportunities for leveraging artificial intelligence (AI) technologies to stimulate sustainable agritourism development in Africa. Through these objectives, this paper endeavors to contribute to the theoretical understanding of the complex interplay between artificial intelligence (AI), digital media, and agritourism in Africa while also providing practical insights and policy commendations for interested parties involved in the development and management of agritourism destinations.

METHODS

This study adopted a positivist philosophy. Positivism was used as it relies on the hypothetico-deductive method to verify priori hypotheses that are often stated quantitatively, where functional relationships can be derived between causal and explanatory factors (independent variables) and outcomes (dependent variables) (Park et al., 2020). It was decided to use a cross-sectional survey because it provides an assessment of exposure and outcome in a sample of the population at a certain moment in time (Wang et al., 2025). Respondents in the study were agritourism owners in Zimbabwe. The population comprised male and female participants in the agritourism business. The total number of population was not known due to the fact that most agritourism businesses operating in Zimbabwe are not registered and they operate informally. Therefore, 146 agritourism businesses were used. The sample was chosen as it is within the range of similar studies conducted by (Bhatta & Ohe, 2020), (Choo & Park, 2022), (Tew & Barbieri, 2012) who used sample sizes of 85, 164, and 196 respectively. Convenience sampling was used to select respondents since some of the agritourism businesses were scattered and not reachable by the time of the study. Primary data were gathered using a standardized questionnaire with a five-point Likert scale. The responders used a Likert scale with 1 being strongly disagree and 5 being strongly agree. The Likert scale ranged from 1 strongly disagree to 5 strongly agree and the respondents were asked to show their response by the use of a tick or a visible mark. The instrument design components were adapted to fit the current studies from related prior research.

RESULTS AND DISCUSSION

Respondents Rate

Agritourism businesses were the targeted respondents during data collection with regard to artificial intelligence and agritourism development. A total of 146 questionnaires were physically administered to the agritourism industry in Zimbabwe. Eighty-four percent (84%) of the distributed surveys were returned and deemed usable. Table 1 represents the demographic data of the respondents by age, marital status, and level of education.

Table 1. Demographic data

Characteristic	%
Age	
Less than 30	2.4
30 – 39	14.1
40 – 49	23
50 – 59	39
59 and above	21.4
Total	100
Sex	
Female	68
Male	32
Total	100
Education	
Below diploma level	52.6
Diploma	36.6
Degree	8.7
Masters	2.2
Total	100

Source: Authors (2024)

Table 1 results indicate that the majority of agritourism owners (39%) belonged to the 50–59 age range, with 23% following in the 40–49 age bracket. Only 2.4% of the people in agritourism said they were under 30 years old, while 14.1% said they were between 30 and 39 years old. Given that 68% of the respondents were women with only 32% being male, it is implied that women are more active in agritourism as they age. These results are consistent with research conducted in Kenya by (Uduji et al., 2021). They discovered that women began to consider launching a business in their late thirties. There may be various reasons for it such as lack of support from family, need to look after extended family, involvement in other jobs, child care, and others may be few of them.

Table 1 shows that 52.6% of the respondents had below diploma level of education. Another 36.6% of them indicated that they have attained a diploma education level while 8.7% of them had degrees. Only 2.2% of them had a master's level of education. Arguably it can be deduced that a good percentage of agritourism entrepreneurs in Zimbabwe have attained basic education.

Convergent Validity Test Results

Measuring model fit indices, composite reliability, standardized factor loadings, individual item reliabilities (squared multiple correlations), critical ratios, and average variance extracted (AVE) were used to evaluate convergent validity. Constructs, standardized factor loadings, and critical ratios are shown in Table 2.

Table 2. Constructs, standardized factor loadings, and critical ratios

Construct	Items	Standardized Factor Loadings	Critical Ratios
Positive organizational factors	OF1	.695	-
	OF2	.759	22.139***
	OF3	.796	28.796***
Positive socio-cultural factors	SCF1	.727	-
	SCF2	.948	37.215***
	SCF3	.949	39.464***
	SCF4	.947	38.253***
Economic factors	EF1	.740	-
	EF2	.843	20.922***
	EF3	.910	20.922***
	EF4	.870	20.922***
Environmental factors	EMA1	.723	-
	EMA2	.832	25.514***
	EMA3	.957	37.564***
	EMA4	.811	25.234***
	EMA5	.753	20.534***

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 17 iterations.
Total variance explicated 79.88%

Note: - CR is fixed; *** $p < 0.001$

Source: Authors (2024)

According to Table 2, standardized factor loadings and critical ratios were acceptable and the total variance explicated was way above the standard limit of 60% as postulated by (Platin, 2017). Thus, convergent validity was achieved.

The measurement model fit indices, namely, χ^2/DF-1.987, Goodness of Fit Index (GFI)-0.912, Adjusted Goodness of Fit Index (AGFI)-0.903, Normed Fit Index (NFI)-0.921, Tucker-Lewis Index (TLI)-0.917, Comparative Fit Index (CFI)-0.948 and root mean square error of approximation (RMSEA)-0.043 were acceptable. χ^2/DF should be less than 3, and GFI, AGFI, NFI, TLI, and CFI should be close to 1 while RMSEA should be less than 0.07 if the model is to be accepted (Segars, 1997). All individual item reliabilities were above the minimum cut-off point of 0.5 (Segars, 1997) and composite reliabilities for all the constructs were above the minimum cut-off point of 0.7. Significant at p<0.001, all standardized factor loadings for all items were above the minimum cut-off point of 0.6 (Segars, 1997). All critical ratios for the items were sufficiently large (W2) and significant at po0.001 (Segars, 1997). All AVEs for the constructs were greater than the minimum cut-off points of 0.5 (Fornell & Larcker, 1981) as shown in Table 2.

Discriminant Validity

AVEs and squared inter-construct correlations (SICs) were examined to evaluate discriminant validity. Table 2's results demonstrate the presence of discriminant validity. Comparable SICs were smaller than AVEs (Fornell & Larcker, 1981; Segars, 1997). The results of discriminant validity are shown in Table 3.

Table 3. Mean (M), standard deviation (SD), AVE and SICC

Construct	M	SD	PUOT	PEOU	VIUT	EDWE
Positive organizational factors (OF)	4.75	4.75	.631			
Positive socio-cultural factors (SCF)	4.98	4.98	.258	.652		
Economic factors (EF)	4.95	4.95	.158	.325	.334	.593
Environmental factors (EMA)	4.53	4.53	.298	.228	.214	.276

Note: Diagonal elements in bold represent AVEs

Source: Authors (2024)

Testing Research Hypotheses

Structural equation modelling was conducted in AMOS V22 to test the structural relationships proposed in Figure 1 (H_1-H_3). The structural model displayed acceptable fit (χ^2/DF=1.991; GFI-0.936; AGFI-0.907; NFI-0.944; TLI-0.929; CFI-0.951; RMSEA-0.047). Table 4 represents hypothesis testing results.

Table 4. Hypotheses testing

Hypothesis	Hypothesised Relationship	SRW	CR	Remark
H_1	Positive Organisational factors⟶ Agritourism development	.305	17.85***	Supported
H_2	Positive socio-cultural factors ⟶ Agritourism development	.287	12.041***	Supported
H_3	Economic factors ⟶ Agritourism development	.274	11.451***	Supported
H_4	Environmental factors ⟶ Agritourism development	.307	17.95***	Supported

Source: Authors (2024)

Results in Table 4 show that organizational factors, sociocultural factors, economic factors, and environmental factors all have a direct and positive effect on agritourism development. Therefore, H_1-H_4 were supported. The results imply that artificial intelligence (organizational, socio-cultural, economic, and environmental factors) has a positive effect on agritourism development.

Table 5. Coefficients of moderated regression model

Variable	Beta	t-statistic	p-value
Artificial intelligence	.482	3.031	.000
Age	.424	3.138	.000
Artificial intelligence × Age	.521	4.364	.000

Source: Authors (2024)

H_5 were tested using moderated regression analysis. As for H_5, coefficients for the interaction terms (Artificial intelligence x Age) were significant ($p<0.001$). This suggests that age moderates the effect artificial intelligence has on agritourism development. Thus, H_5 was supported.

CONCLUSIONS

The findings of the study have theoretical, practical, and future research implications.

Theoretical implications

The theoretical implications of applying artificial intelligence (AI) to agritourism development in Africa are multifaceted, particularly concerning digital and social media marketing. Key challenges include bridging the digital divide, ensuring data accessibility and privacy, and maintaining cultural sensitivity. While AI can enhance marketing, the lack of adequate infrastructure in many rural areas raises concerns about equitable benefit distribution and potentially widening existing disparities. The long-term success of agritourism hinges on environmental sustainability. AI offers data-driven insights to optimize resource allocation and minimize ecological impact. However, the environmental footprint and energy consumption of AI technology itself must be carefully considered. For AI to be effectively integrated, there's a critical need for skills and capacity development. This requires investing in educational and training initiatives to equip local communities and stakeholders with both specialized AI knowledge and essential critical thinking and ethical judgment skills. Governments and regulatory agencies play a crucial role in guiding AI research and ensuring its benefits are equitably distributed. This involves establishing legal frameworks that foster innovation while mitigating potential risks and unforeseen consequences. In essence, integrating AI into agritourism in Africa demands an integrated strategy that addresses technological, social, cultural, and environmental dimensions. By tackling these complex issues, AI has the potential to enhance the resilience, inclusivity, and sustainability of agritourism in the region. However, realizing this promise requires a careful balance between technological innovation and deep consideration of ethical, social, and political factors.

Practical implications

The integration of AI into agritourism in Africa has significant practical implications for all stakeholders. Key areas include the urgent need for focused training and capacity-building programs to encourage farmers and agritourism businesses to adopt AI technologies. Crucially, robust infrastructure development, including reliable electricity and internet access in rural areas, is essential for successful AI implementation, alongside facilities for data collection and processing to enable AI-driven decision-making. Governments must also establish clear regulations addressing data privacy, cybersecurity, and ethical AI use to ensure transparency and accountability. Furthermore, promoting community engagement and inclusivity is vital, ensuring local communities actively participate in decision-making and benefit from agritourism growth, with a focus on marginalized groups. AI can also practically enhance market access and promotion through data-driven insights for targeted marketing, personalized recommendations, and market trend analysis, requiring collaboration between technology providers and industry players. Finally, ensuring environmental sustainability is a practical imperative, using AI to optimize resource use, promote sustainable farming, and monitor the

environmental impact of AI adoption in agritourism, with mitigation plans in place for any negative outcomes. By addressing these practical considerations, stakeholders can leverage AI to drive equitable, eco-friendly, and robust agritourism development in Africa while navigating the unique challenges and opportunities of this technological convergence.

Future research

Among the numerous topics developing in artificial intelligence and agritourism development, future research can concentrate on artificial intelligence (AI) enabled precision agriculture, smart agritourism destinations, ethical and governance challenges, innovation ecosystems and partnerships, social and cultural impacts, and others. Researchers, policymakers, industry stakeholders, and members of civil society can help shape a more resilient, inclusive, and sustainable future for agritourism development in Africa by participating in these future discussions. These discussions will address the ethical, social, and environmental implications of artificial intelligence while leveraging its transformative potential.

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