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E-Commerce Adoption and Entrepreneurial Orientation as a Catalyst for Sustainable Performance of Indigenous micro and Small Businesses in Jharkhand

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Abstract:

The adoption of e-commerce and entrepreneurship orientation (EO) plays a critical role in enhancing the sustainable performance of indigenous small businesses, particularly in regions like Jharkhand, India, where traditional business practices dominate. This paper examines the relationship between e-commerce adoption, EO, and sustainable business performance within the indigenous communities of Jharkhand. A purposive sampling method was used to select 100 entrepreneurs of small businesses in the west Singhbhum districts of Jharkhand. The results indicate that e-commerce adoption has a substantial impact on the sustainability of small business performance, with entrepreneurship orientation acting as a moderating factor between the two variables. These insights can help in identifying and understanding entrepreneurs' preferences regarding both e-commerce adoption and entrepreneurship orientation, which in turn can enhance small business performance. Additionally, the findings provide valuable information for policymakers, especially in developing strategies aimed at supporting indigenous small businesses. By addressing both the adoption of e-commerce and fostering an entrepreneurial mindset, government policies can more effectively drive the growth and sustainability of these enterprises, contributing to broader economic development.

Key Words: *Sustainable performance; Small business; E-commerce adoption; entrepreneurship orientation*

1. Introduction:

In the contemporary business landscape, the adoption of e-commerce and entrepreneurship orientation (EO) has become essential for the sustainable performance of small businesses, especially in economically marginalized regions. Indigenous small businesses in Jharkhand, a state rich in natural resources and cultural heritage, face unique challenges in terms of limited access to markets, technology, and infrastructure. However, with the rapid expansion of digital technologies, these businesses have a significant opportunity to overcome traditional barriers and leverage e-commerce for growth and sustainability.

E-commerce adoption enables small businesses to expand their reach beyond local markets, access new customer bases, reduce operational costs, and improve overall business efficiency (Beck, Wigand, & Ko, 2001; Martin & Matlay, 2003). In regions like Jharkhand, where indigenous communities often rely on traditional methods of commerce, embracing e-commerce is a vital step toward ensuring economic resilience and competitiveness in the global marketplace. This is particularly important in the context of growing economic globalization, which has intensified competition among micro, small, and medium enterprises (MSMEs) both at the national and international levels (Etemad, 2004; Julien & Ramangalahy, 2003; Lu & Beamish, 2001).

Entrepreneurship orientation, defined by characteristics such as innovation, proactiveness, and risk-taking, plays a pivotal role in determining the success of small businesses in adopting new technologies like e-commerce (Covin & Slevin, 1991). Indigenous entrepreneurs who display a high EO are more likely to experiment with e-commerce platforms, adopt innovative business practices, and strategically position themselves to seize new market opportunities. Studies suggest that businesses with higher EO tend to be more agile and

capable of leveraging digital tools for long-term sustainability (Rauch et al., 2009).

Despite the potential benefits, the adoption of e-commerce among indigenous small businesses in Jharkhand remains limited due to factors such as a lack of digital literacy, infrastructural challenges, and inadequate entrepreneurial support systems. Preliminary research indicates that only a small percentage of these businesses actively engage in e-commerce, highlighting the need for targeted interventions to promote digital adoption and entrepreneurial development.

This paper aims to explore the critical role of e-commerce adoption and EO in driving the sustainable performance of indigenous small businesses in Jharkhand. By examining the barriers and opportunities these businesses face, the study provides insights into how entrepreneurial mindset and digital tools can contribute to the long-term success and socio-economic development of indigenous communities in the region.

2. Literature Review:

2.1. E-commerce Adoption and small businesses Performance

In their 2003 study, Martin and Matlay investigate how small firms can strategically utilize the internet to improve their business performance and access new market opportunities. They emphasize the significance of knowledge management and organizational learning in helping small businesses maximize the benefits of internet use for innovation, competitiveness, and long-term growth. The authors found that small businesses that embrace internet technologies can expand their market reach and boost operational efficiency, but success depends on effective knowledge management and continuous learning. They highlight the importance of a strong learning orientation in adapting to digital advancements and seizing emerging opportunities. The study also identifies barriers to internet adoption for small firms, such as financial constraints, technical knowledge gaps, and resistance to change, suggesting that investing in knowledge management systems is crucial for competitiveness in a dynamic marketplace. Martin and Matlay stress the importance of fostering innovation and proactive learning to maintain a competitive edge in the realm of e-commerce for small businesses.

Kurnia, Choudrie, Mahbubur, and Alzougool (2015) explore the integration of e-commerce technology in Malaysian grocery SMEs, uncovering challenges and advantages. The mixed-methods study combines quantitative and qualitative data to understand the factors influencing e-commerce adoption in the sector. Despite recognizing the benefits of e-commerce, such as wider market reach and efficiency, Malaysian grocery SMEs face barriers like limited resources and expertise hindering adoption. External factors like competition, customer demand, and government support play a significant role in adoption decisions. The study suggests that coordinated efforts from public and private sectors are needed to overcome adoption barriers. Governments should offer infrastructure support and digital literacy training, while businesses must invest in organizational learning. Addressing internal and external factors is crucial for successful e-commerce adoption in SMEs, especially in developing nations like Malaysia.

Akhter (2019) explores the impact of e-commerce on micro, small, and medium enterprises (MSMEs) in developing countries, emphasizing its potential to address gaps in traditional markets. The study delves into the challenges and opportunities faced by MSMEs in adopting e-commerce, particularly in regions with limited digital infrastructure. Issues like poor internet connectivity, low digital literacy, and mistrust in online transactions hinder MSMEs from fully utilizing e-commerce, limiting their market expansion and operational efficiency. However, embracing e-commerce can lead to benefits like cost reduction, market expansion, and improved customer service. Factors influencing e-commerce adoption among MSMEs include the owner's education, tech awareness, and openness to innovation. The study emphasizes the need for government support in fostering an e-commerce-friendly environment. To unlock the full potential of e-commerce, enhancing digital infrastructure, providing training, and building trust in online transactions are imperative. In conclusion, e-commerce holds promise for MSMEs in developing

countries by bridging service gaps and promoting sustainable growth.

2.2. Entrepreneurship Orientation and E-commerce Success

Covin and Slevin (1991) introduce a model of entrepreneurship as firm behavior focusing on entrepreneurial orientation (EO) as a key factor in driving innovation, risk-taking, and proactiveness. They emphasize EO as a firm-level phenomenon with three core dimensions: innovation, risk-taking, and proactiveness. The study highlights how firms with high EO challenge norms, pursue new opportunities, and adapt to uncertain ventures for success in dynamic markets. The model suggests that EO influences strategic decisions and overall success, particularly in industries with rapid change and competition. Covin and Slevin's research explores the link between entrepreneurial behavior and firm performance, indicating that firms with strong EO outperform conservative counterparts, especially in volatile markets. They underscore the importance of environmental factors in shaping EO's impact on performance, concluding that fostering a culture of innovation, risk-taking, and proactiveness is crucial for long-term success. Their model has been widely used in studying entrepreneurship, solidifying EO as a key concept in understanding firm behavior.

Jones et al. (2014) study attitudes and responses of sole-proprietor micro-enterprises towards ICT adoption. They highlight challenges and motivators influencing small business owners in utilizing digital technologies for business improvement. Through qualitative and quantitative methods, the authors analyze how micro-enterprises perceive benefits and risks of ICT, along with external factors shaping their decisions. Key adoption factors include owner attitudes, ease of use, costs, and digital literacy levels. Limited resources and individual decision-making structures lead micro-enterprises to approach ICT cautiously. Concerns about costs, implementation complexity, and ROI hinder adoption. However, those adopting ICT report efficiency and communication enhancements, aligning with digital transformation trends. Owner attitudes play a crucial role, as positive outlooks drive integration for growth, while traditional mindsets impede adoption. Overcoming practical and psychological barriers is crucial for successful ICT adoption. Targeted support and training are necessary to encourage micro-enterprises to embrace digital tools for sustainability and competitiveness.

2.3. Sustainable Performance through E-commerce

Raymond, Bergeron, and Blili (2005) explore how e-business technology is adopted in manufacturing small and medium-sized enterprises (SMEs) and its impact on growth and internationalization. The study analyzes factors influencing e-business adoption and its effects on business performance, focusing on the manufacturing sector. Key determinants of e-business assimilation in SMEs include organizational readiness, external pressure, and strategic alignment with overall goals. Organizational readiness involves internal resources like technology and skills. External pressure, such as competition and demand, drives SMEs to adopt e-business. Successful integration leads to improved efficiency, market reach, and competitiveness. The study shows that SMEs prioritizing e-business experience faster growth and are more globally competitive. E-business helps streamline supply chains, enhance customer relationships, and reduce costs for improved performance. Overall, the study emphasizes aligning e-business strategies with firm objectives and having necessary resources for successful implementation, highlighting the benefits of prioritizing e-business for long-term success in a digital, global market.

In their 2006 study, Zhu and Sarkis conduct a comparative analysis of green supply chain management (GSCM) practices in various industrial sectors in China. They explore the drivers influencing the adoption of GSCM strategies and aim to understand how environmental considerations are integrated into supply chains. Key motivators identified include regulatory pressure, market demand, and internal factors like cost reduction and corporate social responsibility. Industries with more advanced technological capabilities, like electronics and automotive, show higher levels of GSCM adoption compared to traditional sectors. Collaboration along the supply

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chain is emphasized as critical for successful GSCM implementation, with practices like eco-design and recycling highlighted as effective strategies for reducing environmental impact. The study underscores the importance of industry-specific approaches to GSCM, tailored to the unique challenges and opportunities within each sector. Overall, while GSCM adoption is driven by external pressures and internal motivations, the degree of implementation varies significantly across industries.

3. Research Frame works

The conceptual framework suggests a direct relationship between e-commerce adoption and the sustainable performance of Indigenous small businesses. Meanwhile, entrepreneurial orientation has an indirect effect on sustainable performance by moderating the impact of e-commerce adoption. Thus, while e-commerce adoption directly drives performance, entrepreneurial orientation enhances this relationship by facilitating more strategic use of e-commerce tools.

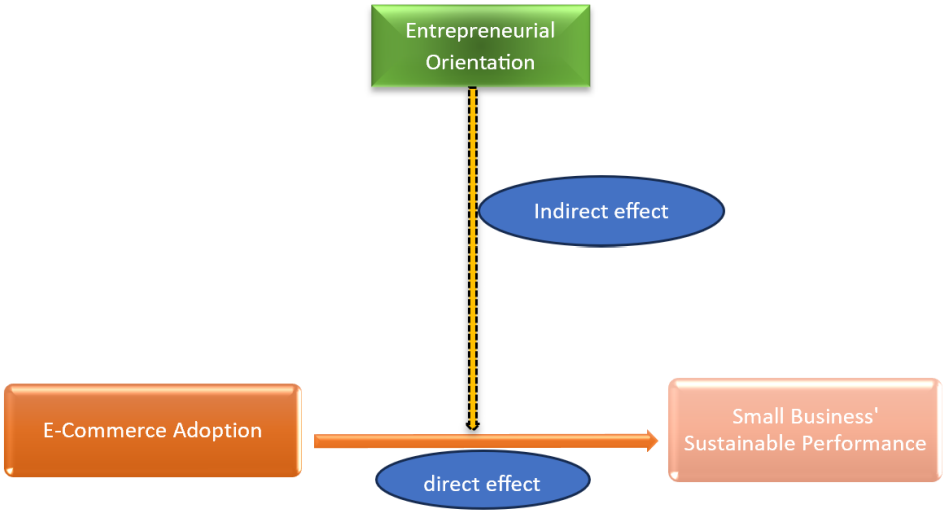

Figure 1:Research Model

4. Objectives

i. To examine the impact of e-commerce adoption on the sustainable performance of HO indigenous small businesses**.**
ii. To assess the role of entrepreneurial orientation in moderating the relationship between e-commerce adoption and sustainable performance in HO indigenous small businesses.
iii. To evaluate the effect of e-commerce adoption on different dimensions of sustainability (economic, environmental, and social) in HO indigenous small businesses.

5. Hypothesis

i. **H1**: E-commerce adoption has a significant positive impact on the sustainable performance of HO indigenous small businesses.
ii. **H2**: Entrepreneurial orientation positively moderates the relationship between e-commerce adoption and sustainable performance in Indigenous small businesses.
iii. **H3**: E-commerce adoption leads to improved economic, environmental, and social sustainability in Indigenous small businesses.

6. Methodology:

The study was conducted in the West Singhbhum district, targeting small business owners from urban, suburban, and remote regions. Participants

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represented a diverse range of Indigenous small business owners to provide a comprehensive understanding of the research context. A survey-based approach was used to collect quantitative data through a structured questionnaire, with purposive sampling to recruit respondents. Additionally, interviews with various stakeholders, including HO Indigenous business owners, provided qualitative insights. The population included Indigenous small business owners from different areas of West Singhbhum, representing a well-defined target group relevant to the study's objectives. A sample of 100 HO Indigenous entrepreneurs from West Singhbhum was selected.

The study looked at how e-commerce adoption, entrepreneurial orientation (EPO), and sustainable performance of HO Indigenous small businesses are related. Initially, e-commerce adoption (ECA) was seen as the independent variable, with sustainable small businesses performance (SBP) as the dependent variable. Entrepreneurial orientation was identified as a moderating variable influencing the relationship between E-Commerce adoption and sustainable business performance. Using Smart PLS version 4.0, path analysis was done with Indigenous Small Business Performance as the dependent variable and e-commerce adoption and entrepreneurial orientation as independent and moderating factors.

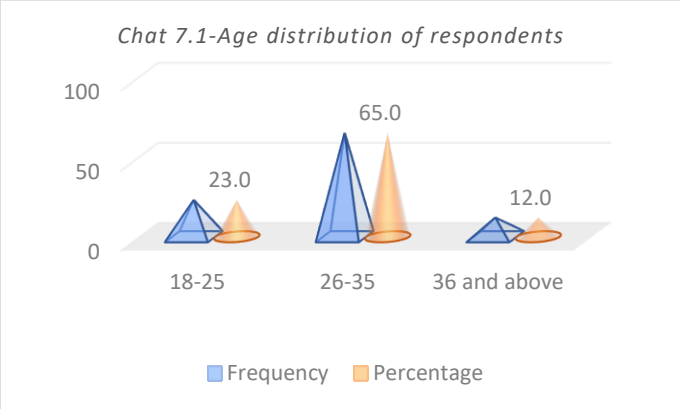
7. Data Analysis

7.1. Respondent overview

The age distribution of respondents in the study provides insights into the demographic composition of indigenous micro and small business entrepreneurs in Jharkhand. The majority of respondents (65%) belong to the **26-35 age group**, indicating that young adults in this range are the most actively engaged in e-commerce adoption and entrepreneurial activities. This suggests a strong inclination towards digital business models among relatively younger entrepreneurs.

Table 7.1-Age distribution of respondents

		Frequency	Percentage
Age	18-25	23	23.0
	26-35	65	65.0
	36 and above	12	12.0



Source: Author's own field source

The age distribution highlights a youth-driven entrepreneurial landscape, dominated by mid-career individuals (26-35 years) with the skills and resources to leverage digital commerce. The lower participation of older entrepreneurs emphasizes the need for targeted digital literacy programs and policy support to expand e-commerce adoption across all age groups.

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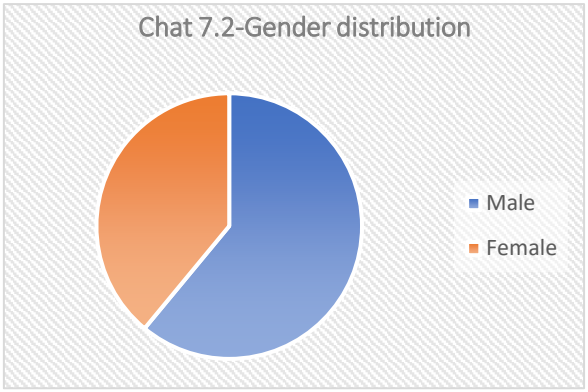
7.2. Gender Distribution of Respondents

Table -7.2-Gender distribution

		Frequency	Percentage
Gender	Male	61	61.0
	Female	39	39.0



Source: Author's own field source

The gender distribution of respondents indicates that 61% are male and 39% are female, highlighting a male-dominated entrepreneurial landscape among indigenous micro and small businesses in Jharkhand. This suggests that men are more actively engaged in e-commerce adoption, possibly due to greater access to digital resources, financial independence, and societal norms favoring male entrepreneurship. However, the 39% female participation reflects a growing involvement of women in digital commerce, signaling progress toward gender inclusivity. Despite this, challenges such as limited digital literacy, financial constraints, and socio-cultural barriers may still hinder higher female participation, necessitating targeted support programs for women entrepreneurs.

7.3 Educational distribution of the respondent

The educational qualification distribution reveals that **34% of respondents have completed secondary education**, forming the largest group. This suggests that a significant portion of indigenous entrepreneurs enter business with basic formal education. 28% have higher secondary education, indicating a considerable number with intermediate-level academic exposure. 22% are graduates, highlighting the role of higher education in fostering entrepreneurial engagement. Only 16% possess post-graduation or higher qualifications, reflecting limited access to advanced education among indigenous entrepreneurs. The data suggests that while education plays a role in e-commerce adoption, many entrepreneurs engage in business activities even with minimal formal education, emphasizing the need for digital literacy and skill-based training programs.

Table 7.3-Education qualification of the respondents

		Frequency	Percentage
Educational Qualification	Secondary education	34	34
	Higher Secondary	28	28
	Graduate	22	22
	Post Graduation and above	16	16

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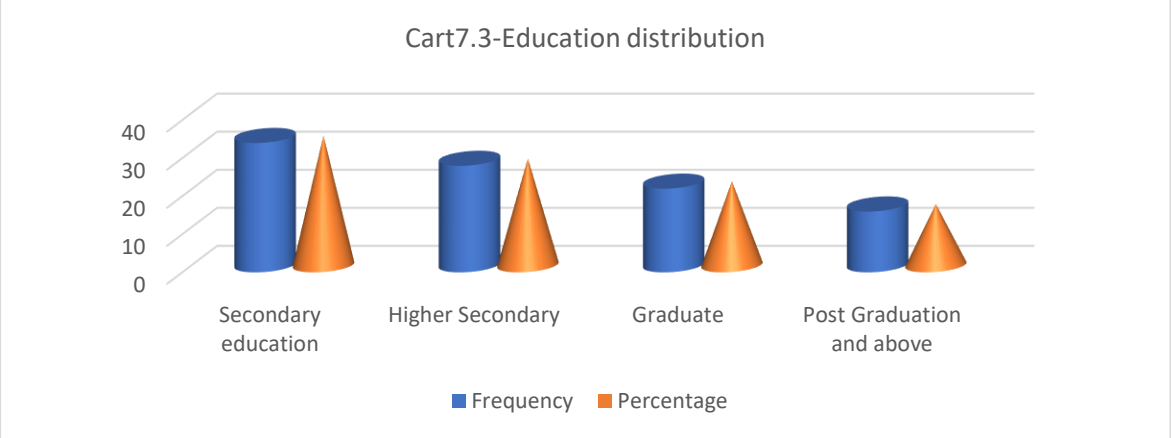


Source: Author's own Field Source

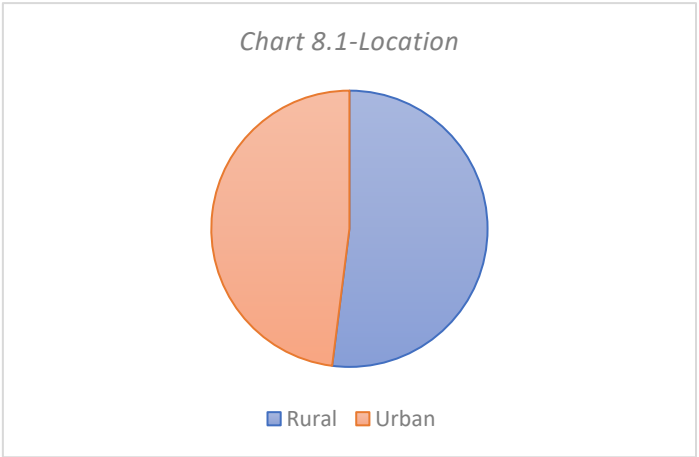
8. Overview of Business Organisations

Table 8.1-Organizational description

Organisational description			
		Frequency	**Percentage**
Business Location	Rural	52	52.0
	Urban	48	48.0
Tenure of business	Less than 2 years	21	21.0
	2-5 years	32	32.0
	6-10 years	36	36.0
	More than 10 years	11	11.0
Business Sector	Retail	39	39.0
	Manufacturing	31	31.0
	Agriculture	23	23.0
	Service	7	7.0
Business Investment	Under ₹50,000	11	11.0
	₹50,000 - ₹1,00,000	31	31.0
	₹1,00,000 - ₹5,00,000	51	51.0
	Above ₹5,00,000	7	7.0

Source: Author's own field survey

8.1. Location Distribution of the Businesses



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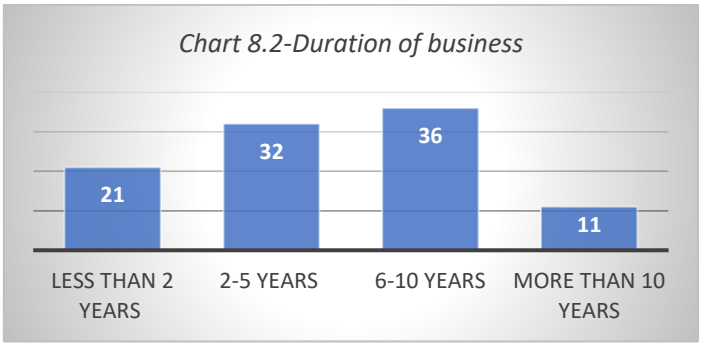
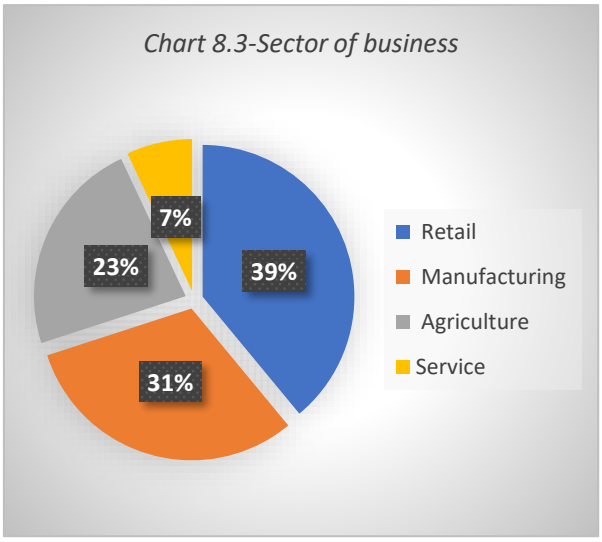
The location distribution of businesses reveals that 52% operate in rural areas, while 48% are based in urban regions. This near-equal distribution highlights the growing presence of indigenous micro and small businesses in both rural and urban settings. The slightly higher rural representation (52%) suggests that entrepreneurs in remote areas are increasingly leveraging e-commerce, mobile commerce, and digital payment systems to overcome geographical barriers and access broader markets. Meanwhile, the urban businesses (48%) benefit from better infrastructure, internet connectivity, and customer reach. The data emphasizes the need for improved digital infrastructure and policy support to enhance e-commerce adoption, particularly in rural areas.

8.2. Business Duration/Tenure of the Respondents



The tenure distribution of businesses shows that 36% have been operating for 6-10 years, making it the largest group. This suggests that many indigenous entrepreneurs have established stability and sustained operations over time. 32% of businesses have been running for 2-5 years, indicating a strong presence of relatively young enterprises adapting to e-commerce trends. 21% are startups with less than 2 years of operation, reflecting the emerging entrepreneurial interest in digital commerce. Meanwhile, only 11% have existed for more than 10 years, highlighting fewer long-established businesses. The data underscores the need for continued support, skill development, and financial assistance to ensure long-term business sustainability.

8.3. Business Sector Distribution of Respondents



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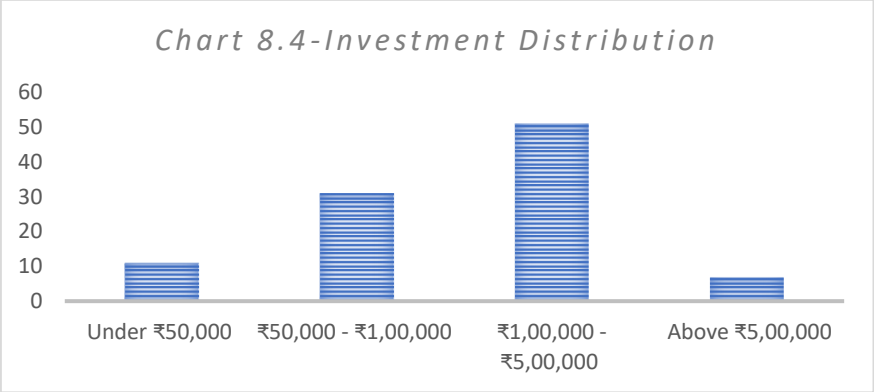
The business sector distribution indicates that 39% of respondents operate in the retail sector, making it the most dominant category. This suggests that indigenous entrepreneurs leverage e-commerce for selling goods through digital platforms, social media, and mobile commerce. 31% are engaged in manufacturing, highlighting a strong focus on producing goods locally and utilizing digital tools for supply chain management and sales. 23% belong to the agriculture sector, reflecting the role of agri-preneurship and digital platforms in selling farm products. Only 7% are in the service sector, indicating relatively lower adoption of e-commerce in service-based businesses. The findings emphasize the need for sector-specific digital strategies to enhance online business growth.

8.4. Business Investment Distribution:



The investment distribution of businesses shows that 51% of respondents have invested between ₹1,00,000 - ₹5,00,000, indicating that most indigenous entrepreneurs make moderate financial commitments to establish and grow their businesses. 31% have invested ₹50,000 - ₹1,00,000, suggesting a significant number of small-scale ventures with limited capital. 11% have started with investments under ₹50,000, reflecting micro-businesses and startups with minimal financial resources. Only 7% have invested above ₹5,00,000, showing that higher investment levels remain rare among indigenous entrepreneurs. These findings highlight the need for better access to credit, financial support programs, and digital tools to help small businesses scale up effectively.

9. Data Interpretation and Analysis

9.1. Constructs Validity and Reliability Analysis

The construct reliability and validity of the study were assessed using Cronbach's alpha, Composite Reliability (rho_a and rho_c), and Average Variance Extracted (AVE) for the key constructs: E-Commerce Adoption, Entrepreneurial Orientation, and Sustainable Business Performance.

Construct Reliability and Validity				
	Cronbach's alpha	**Composite reliability (rho_a)**	**Composite reliability(rho_c)**	**Average variance extracted (AVE)**
E-Commerce Adoption	0.916	0.936	0.936	0.747
Entrepreneurial Orientation	0.852	0.853	0.894	0.63
Sustainable Business Performance	0.791	0.789	0.857	0.545

Source: Authors own Compliance

Above Table 9.1 illustrate that the E-Commerce Adoption demonstrates high reliability, with a Cronbach's alpha of 0.916 and composite reliability (rho_c) of 0.936, ensuring strong internal consistency. Its AVE of 0.747 confirms good convergent validity. Entrepreneurial Orientation also shows strong reliability, with a Cronbach's alpha of 0.852 and rho_c of 0.894, while its AVE of 0.63 supports acceptable convergent validity. Sustainable Business Performance has a moderately strong Cronbach's alpha of 0.791 and rho_c of 0.857, indicating acceptable reliability. Although its

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AVE of 0.545 is slightly below the ideal threshold of 0.50, it still meets the criteria for sufficient variance explanation.

All constructs demonstrate adequate reliability and validity, confirming that the measurement model is internally consistent and capable of explaining the underlying constructs effectively. However, Sustainable Business Performance (AVE = 0.545) could be further improved by refining the measurement items or increasing the number of indicators to enhance variance explanation.

9.2. R square and Adjusted R square test

The R-square value of 0.479 indicates that 47.9% of the variance in Sustainable Business Performance is explained by the predictor variables, such as E-Commerce Adoption and Entrepreneurial Orientation. This suggests a moderate explanatory power of the model in predicting business performance.

	R-square	R-square adjusted
Sustainable Business Performance	**0.479**	**0.463**

Source: Authors own Compliance

The adjusted R-square of 0.463 accounts for the number of predictors and sample size, indicating a slight reduction in explained variance (46.3%). This adjusted value suggests that while the model is effective, additional factors not included in the study may also influence Sustainable Business Performance, highlighting opportunities for further research.

Path Coefficients and Hypothesis test Analysis: The path coefficient analysis results shown in the Table 5, Figure 2 shows the graphical output of the path coefficient and Figure 3 reveal the T statistics values which are required to interpret the hypothesis of the study. According to results, e-commerce adoption (ECA) and entrepreneurial orientation (EO) have significant positive impacts on business performance (SBP).

Hypothesis		***β*** Value	**Standard deviation STDEV)**	**T statistics**	**P values**
H1	E-Commerce Adoption -> Sustainable Business Performance	0.611	0.064	9.546	0.002
H2	Entrepreneurial Orientation -> Sustainable Business Performance	0.643	0.074	8.696	0.001
H3	Entrepreneurial Orientation x E-Commerce Adoption -> Sustainable Business Performance	0.494	0.089	5.55	0.001

Source: Authors own Compliance

The hypothesis **H1**-E-commerce adoption has a significant positive impact on the sustainable performance of indigenous micro and small businesses, is strongly supported by the given statistical results. The β value of 0.611 indicates a strong positive relationship between e-commerce adoption and sustainable business performance, where a 1-unit increase in e-commerce adoption leads to a 0.611 increase in business performance. The low standard deviation (0.064) suggests consistency in this effect across observations. A high T-statistic (9.546) confirms statistical significance, as it exceeds the 1.96 threshold. Additionally, the p-value of 0.002 is well below 0.05, reinforcing that the impact of e-commerce adoption on business performance is highly significant and not due to chance. These findings confirm that e-commerce adoption plays a crucial role in enhancing the sustainable performance of indigenous micro and small businesses. Entrepreneurs leveraging mobile commerce, social media, and digital payments experience improved market reach, efficiency, and long-term business sustainability. This underscores the importance of digital inclusion, training, and infrastructure support to further boost e-commerce adoption among indigenous businesses.

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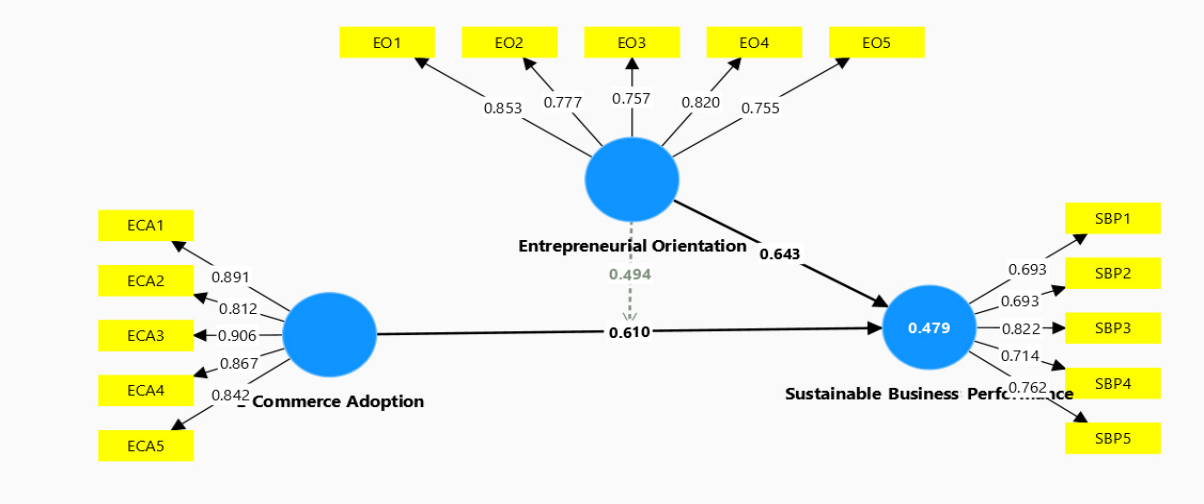

Figure 2: Path Coefficients

The hypothesis **H2**-"Entrepreneurial orientation has a significant positive impact on the sustainable performance of indigenous micro and small businesses" is strongly supported by the given statistical results. The β value of 0.643 indicates a strong positive relationship between entrepreneurial orientation and sustainable business performance, where a 1-unit increase in entrepreneurial orientation leads to a 0.643 increase in business performance. The low standard deviation (0.074) suggests a consistent and reliable effect across the sample. A high T-statistic (8.696) further confirms statistical significance, as it exceeds the 1.96 threshold. Additionally, the p-value of 0.001 is well below 0.05, reinforcing that the impact of entrepreneurial orientation on business performance is highly significant and not due to random chance. These findings confirm that entrepreneurial orientation—characterized by innovation, proactiveness, and risk-taking—significantly enhances the sustainable performance of indigenous micro and small businesses. Entrepreneurs with a strong orientation towards seizing market opportunities, adopting new technologies, and making strategic decisions experience higher business growth and long-term success. This underscores the need for entrepreneurial skill development programs, access to financial resources, and policy support to further encourage entrepreneurial initiatives among indigenous business owners.

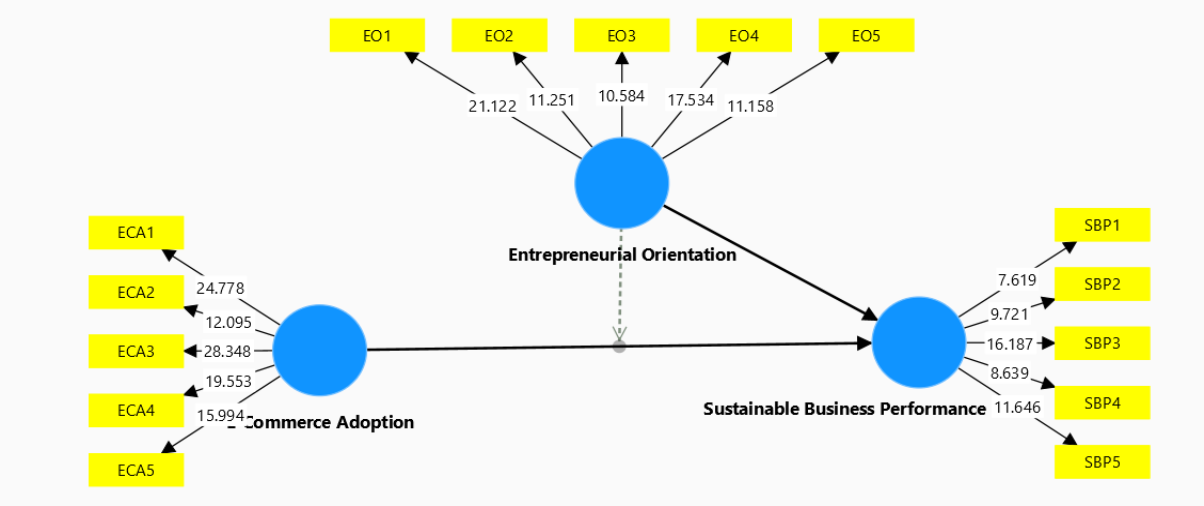

Figure 3- T statistics value

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The hypothesis **H3-**"Entrepreneurial orientation moderates the impact of e-commerce adoption on the sustainable performance of indigenous micro and small businesses" is strongly supported based on the statistical results. The β value of 0.494 indicates a moderate positive interaction effect between entrepreneurial orientation and e-commerce adoption on sustainable business performance, suggesting that entrepreneurial orientation enhances the impact of e-commerce adoption. The low standard deviation (0.089) confirms consistency and reliability across observations. A high T-statistic (5.55) further validates statistical significance, as it exceeds the 1.96 threshold. Additionally, the p-value of 0.001 is well below 0.05, confirming that the moderating effect is highly significant and not due to chance. These results highlight that entrepreneurial orientation strengthens the positive impact of e-commerce adoption on business sustainability. Entrepreneurs with higher levels of proactiveness, risk-taking, and innovation are better able to leverage digital platforms, mobile commerce, and online transactions, leading to enhanced business growth, competitive advantage, and long-term sustainability. This underscores the importance of integrating entrepreneurial mindset development with digital skill training to maximize the benefits of e-commerce for indigenous micro and small businesses.

10. Conclusion

This study has demonstrated the significant impact of e-commerce adoption on the sustainable performance of indigenous micro and small businesses in Jharkhand. The findings indicate that entrepreneurial orientation not only contributes directly to business sustainability but also strengthens the positive effect of e-commerce adoption. Entrepreneurs with higher levels of innovativeness, proactiveness, and risk-taking are better equipped to utilize digital tools effectively, enabling them to expand market reach, improve operational efficiency, and achieve long-term success. The results underscore the importance of fostering both e-commerce adoption and entrepreneurial orientation to enhance business performance. Indigenous entrepreneurs who embrace mobile commerce, digital payment systems, and social media marketing can overcome traditional market limitations and achieve greater financial stability and growth. However, the study also highlights challenges such as digital literacy gaps, infrastructure limitations, and financial constraints, which need to be addressed to ensure inclusive e-commerce participation. Additionally, the study emphasizes the crucial role of government and policymakers in supporting the sustainable performance of indigenous micro and small businesses. Strengthening policy initiatives, financial support programs, and digital infrastructure can help indigenous entrepreneurs leverage e-commerce more effectively. Capacity-building programs focused on digital skills and entrepreneurial training will further empower businesses to adapt to changing market conditions. Moreover, the integration of e-commerce with entrepreneurial strategies enables indigenous business owners to better understand and target their customers, thereby improving marketing effectiveness and overall business performance. Finally, this research provides valuable insights for both academics and practitioners, offering guidance on refining marketing strategies, management practices, and digital adoption frameworks specifically tailored for indigenous micro and small businesses. The study contributes to a broader understanding of how digital transformation and entrepreneurial mindset drive business sustainability and long-term economic empowerment.

11. Limitation:

The study's limitations include its focus on HO Indigenous small businesses in the West Singhbhum district, which may limit the generalizability of the findings to other regions with different socio-economic and cultural contexts. It also relies on self-reported survey data, which could introduce bias, and the sample size may not fully capture the diversity of Indigenous businesses. Additionally, the cross-sectional design restricts insights into the long-term effects of e-commerce adoption and entrepreneurial orientation on business performance. The study does not explore other moderating factors, such as technological infrastructure or government support, suggesting opportunities for future research.

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