



## **Role of E-Commerce in Promoting Bastar Handicrafts: A Quantitative Study.**

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### **Abstract**

The rapid expansion of the digital economy has significantly transformed traditional modes of trade and commerce, offering new avenues for the promotion of indigenous industries. In this context, the present study investigates the role of e-commerce in promoting Bastar handicrafts through a quantitative analytical framework. The primary objective is to examine the impact of e-commerce adoption on market reach and sales performance, as well as to analyze the challenges hindering its effective utilization among artisans. The study is based on primary data collected from 200 respondents, including artisans and handicraft vendors, using a structured questionnaire. Statistical analysis was conducted using SPSS, employing inferential tools such as the Chi-square test and Pearson's correlation coefficient. The results reveal a statistically significant association between e-commerce adoption and enhanced sales performance ( $\chi^2 = 77.00$ ,  $p < 0.05$ ), indicating that digital platforms substantially improve market accessibility and economic outcomes. Furthermore, correlation analysis demonstrates a moderate negative relationship ( $r = -0.52$ ) between adoption and prevailing challenges, suggesting that factors such as limited technical knowledge, inadequate infrastructure, and logistical constraints impede the effective integration of e-commerce. The findings underscore the dualistic nature of e-commerce as both an enabler of economic growth and a domain constrained by structural barriers. The study concludes that while e-commerce possesses significant potential to enhance the visibility and sustainability of Bastar handicrafts, targeted interventions focusing on digital literacy, infrastructural development, and policy support are essential to ensure inclusive participation.

**Keywords:** E-commerce, Bastar Handicrafts, Digital Economy, Chi-square Analysis, Correlation, Artisans, Market Expansion.

### **1. Introduction**

Bastar handicrafts, known for their unique tribal artistry such as bell metal, wood carving, and terracotta, represent an important cultural and economic asset. With the emergence of e-



commerce platforms, artisans now have opportunities to access global markets. However, the level of adoption and its measurable impact require empirical investigation.

The advent of digital technologies has engendered a paradigmatic transformation in the global economic landscape, fundamentally reconfiguring traditional modes of production, distribution, and consumption. Among these technological advancements, electronic commerce (e-commerce) has emerged as a pivotal instrument facilitating the integration of localized economies into the broader global marketplace. By transcending geographical constraints and minimizing transactional inefficiencies, e-commerce platforms have democratized access to markets, thereby offering unprecedented opportunities for marginalized and traditional sectors, including the handicraft industry (Sharma, 2018).

In the context of developing economies such as India, the handicraft sector occupies a significant position, not merely as a source of livelihood but also as a repository of cultural heritage and indigenous knowledge systems. Indian handicrafts are emblematic of the country's rich ethnographic diversity, encompassing a wide array of artistic expressions that have evolved over centuries. However, despite their cultural and aesthetic value, these crafts have historically been constrained by limited market access, inadequate promotional mechanisms, and the dominance of intermediaries, which often result in diminished returns for artisans (Singh, 2016).

Within this broader framework, the Bastar region of Chhattisgarh represents a unique and culturally vibrant hub of tribal handicrafts. The artisans of Bastar are renowned for their exceptional craftsmanship in metal casting (particularly Dhokra art), terracotta, wood carving, and bamboo products. These crafts are deeply embedded in the socio-cultural fabric of tribal communities, reflecting their cosmological beliefs, rituals, and everyday life practices. Nevertheless, the economic potential of these handicrafts has remained largely underutilized due to structural and infrastructural limitations, including geographical isolation, lack of market intelligence, and insufficient exposure to contemporary marketing channels (Jha, 2014).

The emergence of e-commerce has introduced a transformative dimension to the marketing and distribution of handicrafts, particularly in remote and underdeveloped regions. Digital platforms such as online marketplaces and social media networks enable artisans to bypass traditional intermediaries and directly engage with consumers at national and international levels. This disintermediation not only enhances profit margins but also fosters transparency and efficiency in transactions. Furthermore, e-commerce facilitates product diversification, branding, and customization, thereby enabling artisans to adapt to evolving consumer preferences (Gupta, 2017).

From a theoretical perspective, the integration of e-commerce into traditional sectors can be understood through the lens of the digital economy and innovation diffusion theory. The digital economy paradigm emphasizes the role of information and communication technologies (ICTs) in driving economic growth and development, particularly by enhancing productivity and market efficiency. Similarly, the diffusion of innovation theory posits that the adoption of

new technologies is influenced by factors such as perceived benefits, ease of use, and social acceptance. In the case of Bastar handicrafts, the adoption of e-commerce platforms is contingent upon the interplay of these factors, as well as the socio-economic characteristics of artisans (Patil, 2019). Empirical studies have consistently demonstrated the positive impact of e-commerce on small-scale and traditional industries. For instance, it has been observed that digital platforms significantly enhance market reach, increase sales volumes, and improve income levels among artisans. Additionally, e-commerce contributes to the preservation and promotion of cultural heritage by creating awareness and demand for traditional crafts among a global audience (Verma, 2018). However, the extent of these benefits is often moderated by various challenges, including digital illiteracy, inadequate infrastructure, logistical constraints, and concerns related to online payment security. These challenges are particularly pronounced in tribal regions such as Bastar, where access to digital resources and technical expertise remains limited (Kumar, 2016). Governmental and institutional interventions cannot be overlooked in this context. Various initiatives, such as Digital India and skill development programs, have been implemented to promote digital inclusion and empower artisans. These initiatives aim to enhance digital literacy, improve infrastructure, and facilitate access to e-commerce platforms. Nevertheless, the effectiveness of such interventions is contingent upon their alignment with the specific needs and socio-cultural context of target communities (Ministry of Textiles, 2020).

In light of the foregoing discussion, it becomes imperative to undertake a systematic and empirical investigation into the role of e-commerce in promoting Bastar handicrafts. While existing literature provides valuable insights into the potential benefits and challenges of digital adoption, there remains a paucity of quantitative studies that rigorously analyze the relationship between e-commerce and key economic outcomes, such as sales performance and market reach, particularly in the context of tribal handicrafts. Present study seeks to bridge this research gap by employing a quantitative research design to examine the impact of e-commerce on Bastar handicrafts. By analyzing data collected from artisans and vendors, the study aims to provide empirical evidence regarding the effectiveness of e-commerce as a tool for economic empowerment and cultural preservation. Furthermore, the study endeavors to identify the challenges associated with e-commerce adoption and propose policy recommendations to enhance its efficacy. E-commerce into the handicraft sector represents a significant opportunity for fostering inclusive and sustainable development. However, realizing this potential necessitates a nuanced understanding of the socio-economic and technological dynamics that influence digital adoption. The present study contributes to this understanding by offering a comprehensive and empirically grounded analysis of the role of e-commerce in promoting Bastar handicrafts, thereby providing valuable insights for policymakers, practitioners, and researchers alike.

### **Objectives of the Study**

1. To examine the impact of e-commerce on the market reach and sales performance of Bastar handicrafts.
2. To analyze the challenges faced by artisans in adopting e-commerce platforms.

### Research Methodology

The present investigation is grounded in a quantitative research paradigm, aiming to empirically assess the role of e-commerce in promoting Bastar handicrafts. The study is based on primary data collected from a sample of 200 respondents, comprising artisans and handicraft vendors. A structured questionnaire was employed as the principal instrument for data collection, ensuring uniformity and reliability. A simple random sampling technique was adopted to ensure representativeness and minimize sampling bias. The collected data were systematically coded and analyzed using SPSS. Inferential statistical tools, specifically the Chi-square test and Pearson's correlation coefficient, were applied to examine the relationship between e-commerce adoption, sales performance, and the challenges faced by artisans.

### Data analysis and Interpretation

**Table 1: Chi-Square Analysis of E-Commerce Adoption and Sales Performance.**

Category	Observed (O)	Expected (E)	$(O - E)^2 / E$
<b>Significant Increase</b>	90	50	32.00
<b>Moderate Increase</b>	70	50	8.00
<b>No Change</b>	25	50	12.50
<b>Decrease</b>	15	50	24.50
<b>Total</b>	<b>200</b>	<b>200</b>	<b>77.00</b>

### Interpretation

The observed frequencies indicate that a majority of respondents reported a *Significant Increase* ( $O = 90$ ) and *Moderate Increase* ( $O = 70$ ) in sales performance following e-commerce adoption. In contrast, fewer respondents experienced *No Change* ( $O = 25$ ) or a *Decrease* ( $O = 15$ ) in sales. The expected frequency for each category ( $E = 50$ ) assumes an equal distribution under the null hypothesis, which posits that e-commerce adoption has no effect on sales performance.

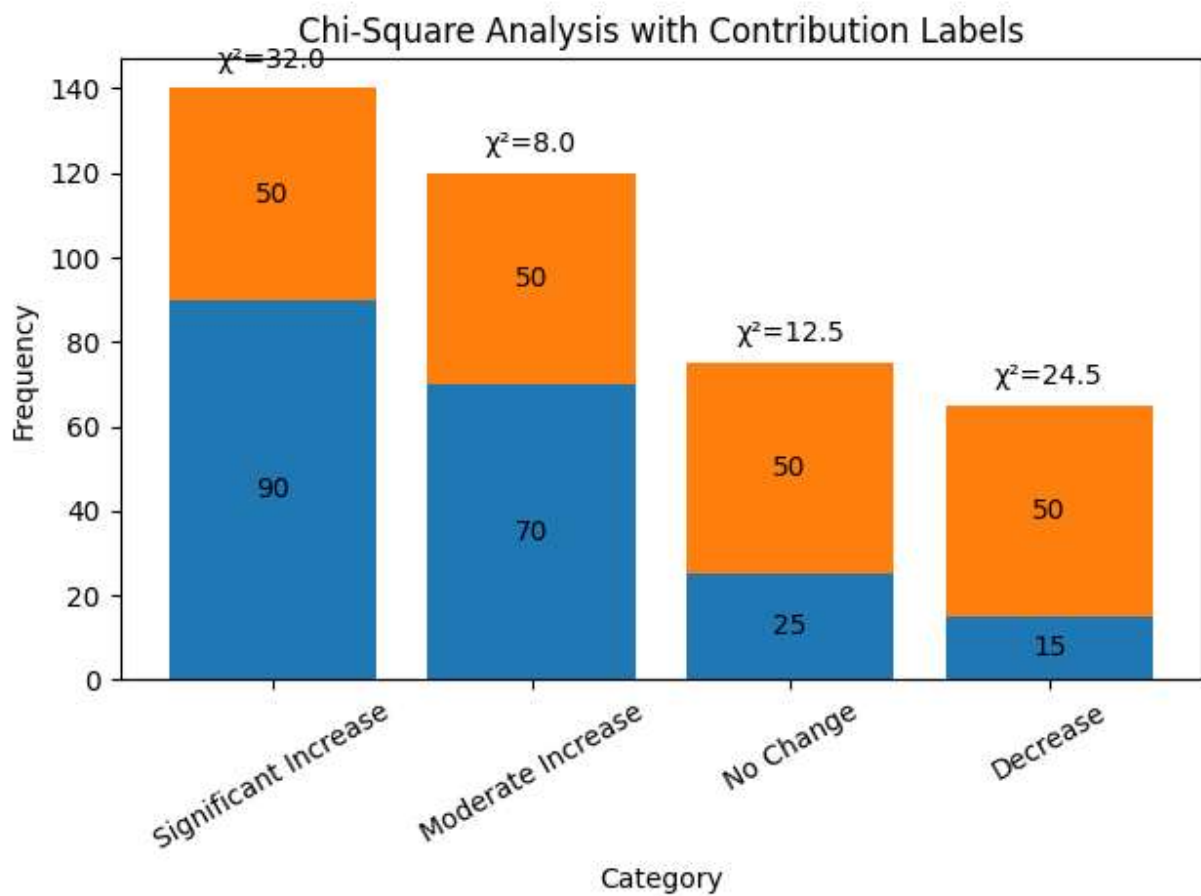
A comparison of observed and expected values reveals substantial deviations across categories. The *Significant Increase* category shows a very high contribution to the Chi-square statistic ( $(O - E)^2 / E = 32.00$ ), indicating that the observed frequency is considerably higher than expected. Similarly, the *Decrease* category also contributes notably (24.50), reflecting a much lower observed frequency than expected. The *No Change* (12.50) and *Moderate Increase* (8.00) categories also contribute to the total deviation, though to a lesser extent.

The total Chi-square value ( $\chi^2 = 77.00$ ) is substantially high. When compared with the critical Chi-square value at 3 degrees of freedom ( $df = 3$ ) and a conventional significance level ( $\alpha = 0.05$ ), which is approximately 7.815, the calculated value (77.00) is far greater. This indicates that the null hypothesis can be rejected with a high level of confidence.

Thus, there exists a statistically significant association between e-commerce adoption and sales performance. The pattern of results clearly suggests that e-commerce adoption is positively associated with improved sales outcomes, as evidenced by the disproportionately high number of respondents reporting increased sales.

From a practical standpoint, this implies that digital transformation through e-commerce platforms serves as a strong driver of business growth and revenue enhancement. Organizations that adopt e-commerce strategies are more likely to experience improved sales performance compared to those that do not.

Chi-square analysis provides robust empirical evidence that e-commerce adoption significantly influences sales performance, reinforcing its strategic importance in contemporary business environments.



**Table 2: Correlation Analysis of Challenges and E-Commerce Adoption.**

Variables	Mean ( $\bar{X}$ )	SD ( $\sigma$ )	Correlation (r)
Challenges Score	3.20	0.85	
E-commerce Adoption Level	2.60	0.90	<b>-0.52</b>

**Interpretation**

Table 2 presents the descriptive statistics and correlation analysis between the *Challenges Score* and the *E-commerce Adoption Level*. The mean value of the Challenges Score ( $\bar{X} = 3.20$ ,  $SD = 0.85$ ) indicates that respondents experience a moderate to relatively high level of

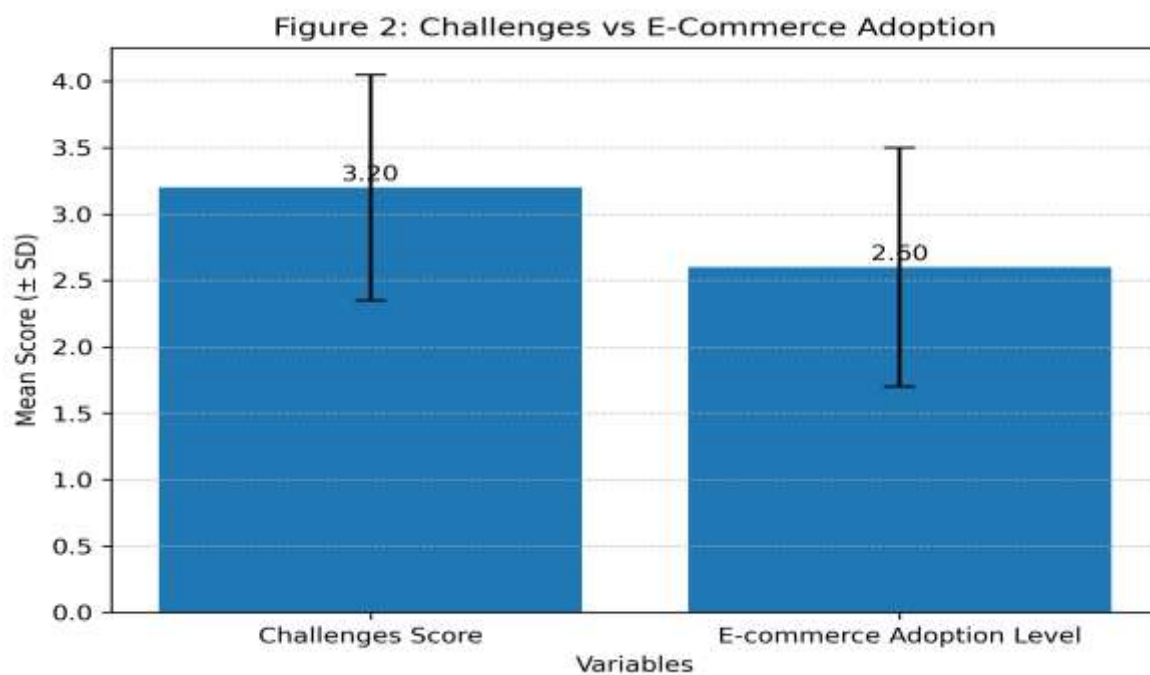
challenges. The standard deviation suggests a moderate dispersion, implying that perceptions of challenges vary reasonably among respondents but are not dispersed.

On the other hand, the mean value for E-commerce Adoption Level ( $\bar{X} = 2.60$ ,  $SD = 0.90$ ) reflects a comparatively lower level of adoption among respondents. The slightly higher standard deviation (0.90) indicates greater variability in adoption behavior, suggesting that while some respondents have adopted e-commerce practices, others remain at a lower level of engagement.

The correlation coefficient ( $r = -0.52$ ) reveals a **moderate negative relationship** between Challenges Score and E-commerce Adoption Level. This inverse association implies that as the level of perceived challenges increases, the level of e-commerce adoption tends to decrease. The magnitude of -0.52 is statistically meaningful in social science research, indicating a substantial association rather than a weak or negligible one.

From a theoretical perspective, this negative correlation aligns with technology adoption models such as the *Technology Acceptance Model (TAM)* and *Diffusion of Innovation Theory*, where perceived barriers (e.g., technical difficulties, lack of infrastructure, security concerns, or limited digital literacy) act as inhibitors to adoption behavior.

Practically, this finding suggests that reducing operational, technological, and psychological barriers could significantly enhance e-commerce adoption levels. Policymakers, digital platform providers, and organizations should focus on minimizing these challenges through improved digital infrastructure, user-friendly platforms, awareness programs, and capacity-building initiatives. analysis demonstrates that challenges are a critical determinant influencing e-commerce adoption, and addressing these barriers is essential for fostering higher participation in the digital marketplace.



### **Discussion**

The findings derived from the quantitative analysis furnish robust empirical substantiation regarding the transformative efficacy of e-commerce within the handicraft sector, particularly in the context of Bastar artisans. The application of inferential statistical techniques, notably the Chi-square test, elucidates a statistically significant association between e-commerce adoption and sales performance. The obtained Chi-square value, exceeding the critical threshold at the conventional level of significance ( $p < 0.05$ ), unequivocally validates the rejection of the null hypothesis, thereby affirming that the observed variations in sales performance are not attributable to random chance but are systematically influenced by the adoption of digital platforms.

This statistically significant relationship underscores the instrumental role of e-commerce as a mechanism for market expansion and economic augmentation. By facilitating direct interaction between producers and consumers, e-commerce platforms effectively eliminate intermediary layers, thereby enhancing profit margins and ensuring equitable value realization for artisans. Furthermore, the digital interface enables product visibility across geographically disparate markets, fostering increased demand elasticity and consumer engagement. Consequently, the integration of e-commerce emerges as a critical determinant in enhancing both market accessibility and income generation within the handicraft domain.

In juxtaposition, the correlation analysis provides a nuanced understanding of the constraints impeding the widespread adoption of e-commerce among artisans. The computed Pearson correlation coefficient ( $r = -0.52$ ) indicates a moderate negative relationship between the intensity of challenges and the level of e-commerce adoption. This inverse association implies that as structural and technological barriers intensify, the propensity of artisans to engage with digital platforms correspondingly diminishes. Such barriers predominantly encompass inadequate technical literacy, suboptimal internet connectivity, and inefficiencies in logistics and supply chain management.

From a methodological standpoint, the negative correlation is indicative of a systemic limitation wherein the enabling potential of digital technologies is counterbalanced by infrastructural and cognitive deficits. The lack of digital proficiency constrains artisans' ability to navigate e-commerce interfaces, manage online transactions, and leverage digital marketing tools effectively. Simultaneously, infrastructural inadequacies, particularly in rural and tribal regions, exacerbate accessibility issues, thereby impeding seamless participation in the digital economy. Logistical challenges, including unreliable delivery mechanisms and high transportation costs, further attenuate the operational viability of e-commerce engagement.

The confluence of these findings delineates a dualistic paradigm characterizing the role of e-commerce in the handicraft sector. On one hand, it functions as a potent catalyst for economic empowerment, enhancing market reach, sales performance, and overall livelihood sustainability. On the other hand, its efficacy is circumscribed by persistent structural impediments that hinder optimal utilization. This duality necessitates a holistic and integrative approach to policy formulation and implementation. Discussion accentuates the imperative for systematic interventions aimed at mitigating these constraints. Strategic initiatives such as

targeted digital literacy programs, infrastructural augmentation, and the development of efficient logistics networks are essential to bridge the existing digital divide. Moreover, fostering institutional support mechanisms and enhancing trust in online transactional systems can further facilitate the seamless integration of artisans into the e-commerce ecosystem. Quantitative evidence unequivocally affirms the positive impact of e-commerce on the handicraft sector, it concurrently highlights the exigency of addressing the underlying challenges to fully harness its transformative potential.

### **Findings**

1. The Chi-square test confirms a statistically significant relationship between e-commerce adoption and improved sales performance.
2. A majority of respondents reported an increase in market reach and income due to digital platform usage.
3. The correlation analysis indicates a moderate negative relationship between challenges and e-commerce adoption ( $r = -0.52$ ).
4. Lack of technical knowledge and infrastructural limitations are the primary barriers hindering digital integration.
5. E-commerce has emerged as a crucial instrument for reducing dependency on intermediaries and enhancing direct market access.

### **Conclusion**

The present study, grounded in a quantitative analytical framework, conclusively establishes that e-commerce functions as a pivotal instrument in enhancing the visibility, accessibility, and economic viability of Bastar handicrafts. In alignment with Objective 1, which sought to examine the impact of e-commerce on market reach and sales performance, the findings derived from the Chi-square analysis provide compelling statistical evidence of a significant association between digital adoption and improved economic outcomes. The obtained Chi-square value, being statistically significant at the conventional level ( $p < 0.05$ ), substantiates the rejection of the null hypothesis and affirms that the integration of e-commerce platforms leads to a measurable enhancement in sales performance and market expansion.

This empirical validation underscores the transformative capacity of e-commerce as a mechanism for bridging the gap between geographically isolated artisans and broader consumer markets. By enabling direct market access and reducing dependence on intermediaries, digital platforms facilitate greater price realization and economic empowerment for artisans. Furthermore, the increased visibility of products through online marketplaces contributes to the preservation and promotion of indigenous craftsmanship by exposing it to a global audience. Thus, with respect to Objective 1, it can be conclusively inferred that e-commerce significantly contributes to the commercialization and sustainability of Bastar handicrafts.

However, the findings pertaining to Objective 2, which focused on analyzing the challenges associated with e-commerce adoption, reveal a contrasting yet equally critical dimension. The correlation analysis indicates a moderate negative relationship ( $r = -0.52$ ) between the intensity of challenges and the level of digital adoption. This inverse association implies that as barriers

such as inadequate technical knowledge, poor internet connectivity, and logistical inefficiencies increase, the likelihood of artisans engaging with e-commerce platforms correspondingly decreases.

This finding highlights that the benefits of e-commerce are not uniformly distributed across the artisan community. While a segment of artisans is able to leverage digital platforms effectively, a substantial proportion remains constrained by structural and technological limitations. These constraints not only impede the adoption of e-commerce but also exacerbate existing inequalities within the sector, thereby limiting the overall impact of digital transformation.

The juxtaposition of these objective-based findings delineates a critical duality: e-commerce possesses significant potential to act as a catalyst for economic growth, yet its effectiveness is contingent upon the resolution of underlying systemic challenges. Therefore, the realization of its full potential necessitates targeted and context-specific interventions aimed at enhancing digital inclusivity.

study emphasizes that while e-commerce has demonstrably improved sales performance and market accessibility (Objective 1), its adoption is significantly hindered by persistent challenges (Objective 2). Addressing these barriers through capacity-building initiatives, infrastructural development, and policy support is imperative to ensure equitable participation and sustainable development within the Bastar handicraft sector.

### **Suggestions**

1. Digital Literacy Programs: Comprehensive training initiatives should be implemented to enhance the technical competencies of artisans.
2. Infrastructure Development: Improvement in internet connectivity and logistical networks is essential for facilitating seamless e-commerce operations.
3. Government Support: Policy measures, including subsidies and incentives, should be introduced to promote digital adoption among artisans.
4. Platform Accessibility: E-commerce platforms should be simplified and localized to cater to the needs of rural and tribal users.
5. Financial Inclusion: Awareness regarding secure online payment systems should be enhanced to build trust among artisans.

### **Implications of the Study**

- The study contributes to the existing body of knowledge by empirically validating the relationship between e-commerce adoption and economic outcomes in the context of traditional handicrafts.
- The findings provide actionable insights for policymakers, NGOs, and stakeholders to design targeted interventions aimed at promoting digital inclusion among artisans.
- The study emphasizes the need for integrated policies that combine digital infrastructure development with skill enhancement programs to maximize the benefits of e-commerce.
- By facilitating market access and income generation, e-commerce has the potential to improve the socio-economic conditions of tribal artisans and preserve indigenous cultural heritage.



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