

**Technological Adoption and E-commerce Growth among Traditional Handicraft MSMEs**Mohammad Absar Ansari<sup>1</sup> *Research Scholar, Integral Business School Integral University Lucknow; absaransari@gmail.com*Dr. Noor Alam Khan<sup>2</sup> *Associate Professor, Integral Business School, Integral University Lucknow; alamkhan@iul.ac.in***Abstract**

The Lucknow chikankari embroidery sector ranks high among Indian artisanal products, but low on extensive empirical treatment. Over 52,000 artisans work within it, and digital technology and online retail have given new market routes, but research on level of take-up and existing tangible benefits has been limited. The paper reports key results from a survey of 200 MSME owners and artisans in Lucknow. The survey measured the state of art of digital tools in the sector, quantitatively assessed the impact of e-commerce on their business, and explored the barriers to replication of the benefits for greater sector growth. The survey used a structured questionnaire and semi-structured interviews, analyzed through the SPSS package with paired-sample t-tests, Pearson and Spearman correlations, multiple regressions, and crosstabs. Smartphone ownership is high (86.5%) and UPI payment system nearly universal (81.5%), but links to formal e-commerce platforms are less common: Flipkart (37.5%), Amazon (33%), Meesho (24%), and Etsy (18%). The average monthly sales before and after e-commerce implementation rose from Rs. 50,702/month to Rs. 93,922/month, the difference confirmed as statistically significant ( $t = -31.934, p < 0.001, \text{Cohen's } d = -2.258$ ), with a very large effect size. However, neither average monthly sales nor profit margin changes were significantly affected by increased platform membership ( $R^2 = 0.034, F = 0.977, p = 0.449$ ). Most respondents had flat (20.5%) or decreased (45.0%) profit margins, and the two dominant barriers to increasing marketplace penetration were competition (72.5%) and logistics (72.5%), with the remaining categories each reported at 66.5%, or 60.5%. Cross-tabulation analysis by gender suggests that women artisans experience higher barrier levels in all five categories. Recommendations focus on government bodies, e-retailers, and industry.

**The University MCN Number is @ IU/R&D/2026-MCN0004687****Keywords:** Chikankari, MSMEs, e-commerce adoption, digital transformation, handicraft industry, Lucknow, Technology Adoption Model**1. Introduction**

The Micro, Small and Medium Enterprises sector (MSMEs) is considered as the backbone of Indian economy as they play a pivotal role in providing large scale employment opportunities, increasing industrial production and export [1]. This group of enterprises have a special place for themselves in this thriving sector of traditional handicrafts which form a part of India's cultural fabric and provide employment and livelihood to a massive population of artisans mainly in rural and semi-urban parts of the country [2]. Their presence is however felt both in terms of the opportunities as also the threats posed to their growth by the digital revolution which is unabating and rapacious. The digital revolution has seen the emergence of new-age tools like e-commerce portals, digital payment systems, social media etc. which have altered the rules of the game to a great extent [3].

This chapter specifically looks at the chikan industry in Lucknow, a well-known traditional handicraft recognized for its fine and intricate embroidery work. Usually, chikan craftsmen depended on local trading channels and middlemen, constraining their market reach and resulting in exploitative practices. However, with the penetration of smartphones, low-cost internet and digitally-enabled, user-friendly platforms, chikan MSMEs can now reach consumers directly and move from offline to online [4], thus expanding both access to markets and profitability and increasing their brand visibility.

**The Challenge:** The promising growth of technology utilization and e-commerce also sends a message of encouragement for traditional handicraft MSMEs, but the large MSME base of Chikankari industry in Lucknow still faces many constraints to online integration, such as poor knowledge of digital technology, financial constraints, inaccessibility of required technology, logistic constraints, huge competition on the online platform [5]. **Need of the Study:** This research is essential to gain a holistic understanding of the present image of technological uptake as well as e-commerce participation by the Chikankari based MSMEs of Lucknow. Through recognizing the enablers and barriers, the study intends to generate meaningful findings for the policy makers, industry players and artisans themselves to accomplish a leap forward in the digital revolution. Besides, this study also endeavors to fill in the research lacuna related to the traditional handicraft MSME sector in Uttar Pradesh, predominantly the Chikankari industry that remains to be under-researched within the domain of digital entrepreneurship [6].

**2. Conceptual Background**

This section establishes the foundational concepts critical to understanding the dynamics of technological adoption and e-commerce growth within the traditional handicraft MSME sector. It defines key terms and outlines their significance in the Indian context.

**2.1 Micro, Small, and Medium Enterprises (MSMEs)**

**Meaning and Classification:** In India, MSMEs are defined and classified based on investment in plant and machinery or equipment, and turnover. The classification was revised in June 2020 under the Atmanirbhar Bharat Abhiyan. Currently, enterprises are classified as follows [7]:

Category	Investment in Plant & Machinery/Equipment	Turnover
Micro Enterprise	Up to ₹1 Crore	Up to ₹5 Crore
Small Enterprise	Up to ₹10 Crore	Up to ₹50 Crore
Medium Enterprise	Up to ₹50 Crore	Up to ₹250 Crore

**Role in Indian Economy:** MSMEs are called 'backbone' of Indian economy for their large share in country's economy. They constitute [8]: (a) a major part of country's G. D. P (b) bulk of industrial production (c) a large part of exports. Besides, MSMEs are indispensable [9]:

- Employment Generation; creating jobs for a large proportion of the population, especially in rural and semiurban areas.
- Inclusion Growth: Ensuring a fair distribution of wealth and encouraging the growth of industry in less developed areas.
- Innovation and Entrepreneurship: A hotbed for new ideas, products and services, injecting dynamism into the economy.
- Regional Balance: - To decrease regional inequalities through decentralization and encouragement of industrialization in different regions.

**2.2 Traditional Handicraft Sector**

**Nature and Characteristics:** The Indian traditional handicrafts industry is a lively and heterogeneous system having: [10]

- Traditional craft: Handcrafted products that have been made in the same traditional local way for many generations.
- Cultural Significance: Handicrafts are integral to Indian culture, and are considered to be a reflection of regional and cultural traditions, as well as personal histories, life philosophies and religious beliefs.
- Decentralized Production: Production is highly decentralized, with much of the work taking place within the home by the artisans themselves.
- Availability of local natural raw material: Dependence on existing natural raw material available locally subject to change in climate leading to hazardous condition for the mode.
- Employment Generation: It is one of the largest sources of employment especially for women and oppressed/disadvantaged people, supporting sustainable livelihood in places where formal employment opportunities are limited and providing significant empowerment to rural populations and safeguarding traditional knowledge. [11]
- Cultural Value: Indian handicrafts do not only offer commercial benefits; they are a manifestation of the artistic traditions and values Indian culture offers to the world. Every commodity is a representation of the community and the hands that create it [12].

**2.3 Technological Adoption**

**Technology uptake:** In terms of MSMEs, technology up take means the decision of business owners to introduce various digital equipment into a business system so as to increase efficiency in service delivery and access to wider markets. Some main technologies important for this study include:

- Marketplaces or E-commerce Platforms: Marketplaces are online channels (like Amazon, Flipkart, Etsy, Meesho, etc.), where companies sell to customers directly through the internet.
- Digital Payments System: E-payment benefits, through options such as UPI, mobile wallets & net banking, for cashless transactions, etc., that provides convenience & security.
- Social media tools, tools for sales, marketing and communicating to customers (e.g: Instagram, WhatsApp business, Facebook, etc)
- Inventory Software: PC software programs to manage inventory, report sales and estimate optimum levels of stock.
- AI based marketing tools: Design of pioneering software which uses artificial intelligence skill (AI) to select marketing messages to each customer specific interest, future of the consumer choose and supplies trends.

### 2.4 E-commerce Growth

- Development of online market places: Online shopping in India has grown at a rapid speed ranging from a fledging online shopping scene to various developed online market places. Greater internet penetration, smart-phone proliferation and government encouragement to shift toward paperless transactions have contributed. [13]
- B2B vs B2C Platforms: The Master list of the e-commerce platforms dealing with handicraft MSMEs include both B2C (business to customer) or B2B (business to business) online portals. In case of B2C portals, e-commerce site is accessible to individual users and in case of B2B portals to other businesses or business entities
- Impact on Small Businesses: E-commerce has profoundly impacted small businesses by [14]
- Extending Market Reach: Facilitating access to international and domestic markets apart from the boundaries of geography.
- Selling directly to customers: by bypassing the middlemen (Wholesaler and retailer) it may be possible to sell directly to customers, thus increasing profit margin.
- Increased Exposure for Brands: Offering facilities for displaying products and creating brand awareness.
- Reducing entry barriers: High cost of entry into the retail industry. Providing a relatively cheap entry into retail business in comparison to bricks and mortar stores.

### 3. Review of Literature

The studies available present a significant understanding of technological adoption in the context of e-commerce and their effects for MSMEs and for traditional industries. This section presents such studies, classifying them thematically.

**3.1 Technology Adoption in MSMEs:** Several researches have been conducted to understand the reasons to adopt technology by MSMEs in India. According to a study by Yadav and Mahara (2017) [15], Perceived benefits, weight of competition and perceiving the ease of use as the important factors influence e-commerce adoption in the handicrafts industry. The major barriers include lack of availability of finances, poor infrastructure and lack of expertise [16]. A research by Agarwal et al. (2023) [17] aim to impart resilience to handicraft MSMEs post-COVID-19, technology being an integral part of it.

**3.2 Digitalization in Handicraft Industries:** Digitisation of craft handloom has attracted more attention. Research show that digital economy can help craft handloom industry achieve unprecedented level of market access and visibility, as shown in this study of handloom artisans in India [18]. The use of social media and online marketplace as online learning platforms to boost access to market and sustenance of women artisans in Thar Desert [19]. However, she faced some challenges in digital literacy and craft identity in a digital platform [20].

**3.3 E-commerce and Rural Entrepreneurship:** E-commerce has been viewed as a strong enabler for rural entrepreneurship in India. With the help of E-commerce, rural business units (such as handicraft MSMEs in rural India) can expand their market and can reach customers located at far off places which is not possible earlier [21]. E-commerce is capable of substantially promoting rural entrepreneurship in India [22].

**3.4 Social Media Marketing for Artisans:** The openness of social media has meant that it is now a vital component of an artisan's business. Messages between buyers and sellers can be instant and interactive. It has been found that popular channels like Twitter and Facebook are particularly effective at engaging customers and promoting original handcrafted items to specific customer groups [23].

**3.5 Barriers to Digital Adoption:** However in spite of the evident benefits there are some hurdles to be overcome for the effective digitalization in the traditional handicrafts MSMEs and these could be [24]:

- Inadequate digital skills: Several artisans have rudimentary knowledge of how to use digital platforms, especially those from a previous generation.
- Costs of technology: The cost of buying the digital tools, having internet access and receiving the training are too high for small companies.
- Lack of Infrastructure: Mains electricity is available in many areas only intermittently, and the very slow speed of the GPRS connections means it cannot easily be used for ad-hoc access to the Web.
- Trust Deficit - Issues of online fraud, data security and transaction security discourage some artisans.
- Competition and Market saturation: The online markets are so competitive that it is difficult for small handicraft manufacturing to penetrate the huge competition.

**3.6 Government Initiatives for MSME Digitization:** India's government has introduced a number of programs to encourage digitization of MSMEs, and to boost the handicraft industry. These initiatives include Digital India, Skill India, and India's One District One Product (ODOP) scheme, which all attempt to improve digital literacy, skill provision, and create platforms to allow artisans to market their products digitally [25]. The Ge M (Government e-Marketplace) website can also facilitate supply of goods and services to government departments.

**Research Gap:** Although, the literature so far provides an overview of the use of technology and the growing trend of e-commerce in the MSME sector, there is a noticeable absence of research on the specific problems and potentials encountered by traditional handicraft MSME in Uttar Pradesh and more specifically the Chikankari MSME in the city of Lucknow in their quest of utilizing and benefiting from them. This deficit literature can be broadly seen as sector-neutral, encompassing general MSME studies or articles with little focus on the specificities of individual traditional crafts. This chapter seeks to fulfill that void by providing in depth data and practical recommendations based on a localized model for the Chikankari trade in UP.

**4. Objectives of the Study:** Having established the research gap as well as the various reasons for selecting the selected case studies for focused exploration, this study seeks to accomplish the following:

1. To assess the present extent of technology use in MSMEs performing traditional handicrafts MSMEs of the Chikankari industry Lucknow.
2. To examine the effect of e-commerce platform usage on the business growth, market expansion and profitability of the Chikankari MSMEs.
3. To highlight the major barriers experienced by the conventional Chikankari artisans/MSME owners and to evaluate their extent, while integrating digital technologies.
4. To observe how social media and other digital marketing platform contribute to improve customer engagement and market reach of Chikankari products.
5. To propose measures and policy recommendations to facilitate enhanced digital participation and its integration into sustainable growth of e-commerce in Chikankari handicrafts MSMEs in Lucknow.

**5. Research Methodology:** This section describes the research process followed to meet the aims of the research specified in the previous section. These include the research design, sources of data, sampling methods and tools of analysis.

**5.1 Research Design:** A descriptive as well as an exploratory research design is used in this study. Descriptive research is used as it describes the nature of adoption of technology and use of e-commerce by MSMEs of Chikankari in a precise manner. An exploratory research design helps in exploring the problems and advantages, especially in those angles where literature also doesn't have any information like Chikankari of Lucknow.

**5.2 Data Sources:** A range of primary and secondary data sources were used. This was to develop a clear and full understanding of the research problem.

**Primary Data:** Primary data was obtained by conducting structured surveys and semi-structured interviews with Chikankari artisans, MSME owners and online sellers of the Lucknow region. The questionnaire used in survey aimed to collect quantitative data on level of technology adoption, usage of e-commerce, perceptions about own business growth and encountered problems. The semi-structured interviews gave qualitative data such as individual experiences and motivation.

**Using secondary data:** This was obtained from reputable books and reports. Their source were:

- Government of India – Ministry of Micro, Small and Medium Enterprises (MSME)- Reports and Publications.
- Academic journals and research articles that discuss in India micro, small and medium enterprises (MSMEs); arts and crafts sectors; technologies for digital transformation and e-commerce.
- Sources of information through the reports published by place in sources of information the following institutions like reserve bank of India (RBI), Statista, India Brand Equity Foundation (IBEF) and others for macro and industria level data.
- Reports produced by industry associations on recent advancements and trends in the industry sectors such as handicrafts, and e-commerce; and business and industry news websites.

### 5.3 Sampling

**Area of Study:** It was decided to conduct the study in the MSMEs engaged in production of Chikankari handicraft in Lucknow, Uttar Pradesh on account of historic association of the MSMEs in regard to the Chikankari craft.

**Sample Size:** For primary data collection, a sample of 200 Chikankari MSME owners/artisans was taken. This was considered appropriate for getting statistically significant results from the study.

**Sampling Technique:** A convenience sampling technique was mainly used because of the difficulty of reaching a complete list of the Chikankari MSMEs and artisans. Some attempts were made at ensuring variation in size of business, time to set up business and digital engagement.

**5.4 Tools for Analysis**

The collected data will be analyzed using a combination of statistical and qualitative techniques:

- Percentage Analysis: is used to describe the distribution of several demographic and adoption variables.
- Means and rank: To seek the ave scores for the different parameters and rank issues or advantages.
- Correlation analysis: To identify the association and direction of a relationship between variables, such as between technological adoption and business growth.
- Regression analysis: How well the independent variables (usage of digital tool) predict the dependent variables (sales growth).
- Chi-square Test: To analyze if there are any relationships between two or more categorical variables like gender and levels of digital literacy.
- Thematic Analysis: To analyze the qualitative data from the interview visits in order to develop a set of patterns and generalities that will shed light on the relevant experiences of the artisans.

**6. Technological Adoption in Handicraft MSMEs**

In this section an overview of existing extent of technology use of the Chikankari Handicrafts MSMEs in Lucknow is done based on the primary data collected. The section discusses about the extent of use of different digital platforms and tools among the MSMEs.

**6.1 Smartphone Usage and Internet Penetration**

**Frequency Table**

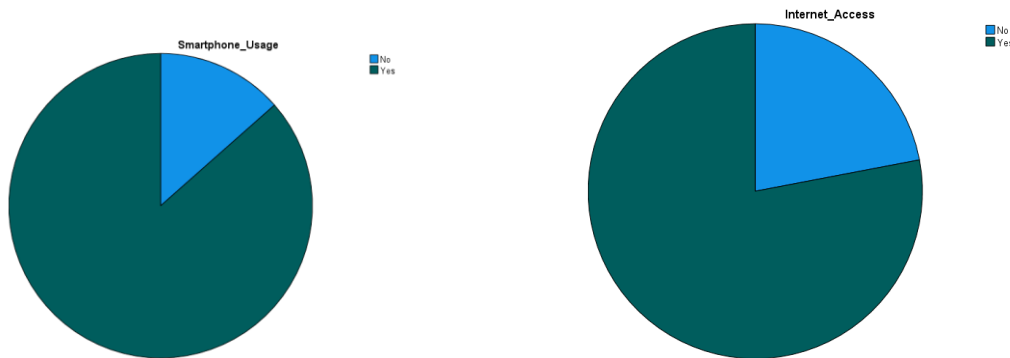
**Smartphone Usage**

	N	%
No	27	13.5%
Yes	173	86.5%

**Internet Access**

	N	%
No	44	22.0%
Yes	156	78.0%

**Pie Chart**



The frequency table illustrates the extent of the usage of a mobile phone and access to the internet of the 200 respondents used in this study.

**Smartphone Usage:**The result also suggests that use of Smartphone is widespread among the respondents. Almost all of the respondents 173(86.5%) use Smartphone and only 27(13.5%) of the respondents said they do not use them. This clearly implies that Smartphone has widely spread among the members of the sample population. The high penetration can be advantageous in terms of e-mail communication, online banking and transaction, accessing e-trade etc.

**Internet Access:**The data analysis of internet access show that 156 (78.0%) of total 200 respondents have access to internet, and 44 (22.0%) of total 200 respondents have no access to internet. This shows large number of respondents has internet access and they can access internet to enjoy browsing, digital payment, social media usages and E-commerce. But 22.0% of respondents have no access to internet which means digital device still existing.

**Overall Interpretation:**Empirically, it demonstrates that users have significant access to digital technology and are regular users with regard to using the Internet (78%) and owning a smartphone (86.5%). As shown by the is higher than, it is imaginable that there are respondents who own a smartphone but have either little or no access to the Internet due to bad connectivity, high cost of data plans, or little email and digital skills. The results are critical for research on adoption of e-commerce, digital marketing and technological advancements to MSMEs or consumers in general as the access to smartphones and the Internet constitute the foundation of engagement in the digital economy.

**6.2 Use of Digital Communication and Marketing Tools**

**WhatsApp Business**

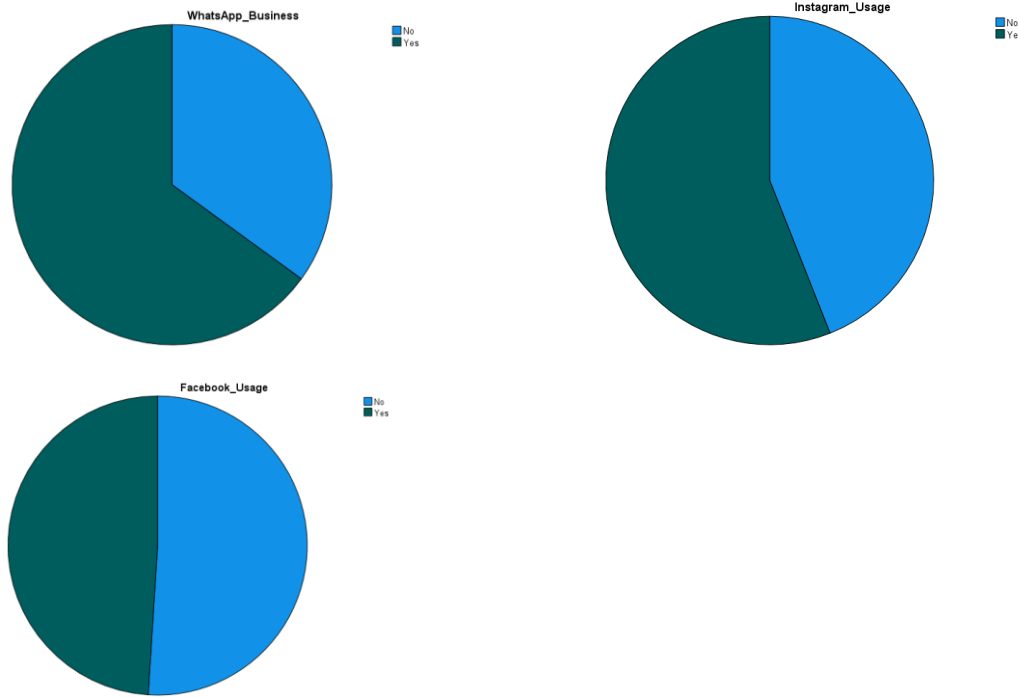
	N	%
No	70	35.0%
Yes	130	65.0%

**Instagram Usage**

	N	%
No	88	44.0%
Yes	112	56.0%

**Facebook Usage**

	N	%
No	102	51.0%
Yes	98	49.0%



Digital marketing and communication instruments such as WhatsApp Business becomes very important for providing easy communication between artisans and customers and is widely reported the following tool used to connect to artisans directly for many customers.

**Table 6.1: Usage of Digital Communication and Marketing Tools**

Digital Tool	Percentage of MSMEs Using	Primary Use Case
WhatsApp Business	65%	Direct customer communication, order booking, sharing designs
Instagram	56%	Product showcasing, brand building, customer engagement
Facebook	49%	Marketing, community building, sales

Source: Primary Survey Data (N=200)

As seen from Table 6.1, the most utilized platform is WhatsApp business considering it can be used as a direct and informal and quick way of communicating. Instagram and Facebook are also highly used for the visual marketing and reach.

This frequency distribution shows the level of use of each digital and social media platform among the sample. In particular looking at the use of WhatsApp Business, Facebook and Instagram.

**WhatsApp Business Usage:**The results show that 130 (65.0%) respondents are using WhatsApp Business and 70 (35.0%) of respondents are not using WhatsApp Business. From the results, it is clear that WhatsApp Business is popular among the respondents and it is an effective medium of communication and business operations. This high rate of popularity may be due to the fact that WhatsApp Business is easy to operate and it is comparatively low cost to operate and maintain. It also allows the users to interact directly with customers and market their products through message, sharing of products and status. Therefore, this large number of users indicates that they value the usefulness of WhatsApp Business for marketing, customer engagement, and business relationships.

**Instagram Usage:**The figures also reveal that of the 200 respondents, 112 (56.0%) of them use Instagram while 88 (44.0%) do not, indicating that the respondents do have a moderate usage of the social networking site. Instagram, a highly popular social networking medium, has become one of the most effective mediums of visual marketing, brand awareness and communicating with your customers, it has become very popular especially for fashion, handicrafts, lifestyle and creative industries. As the results show, more than half of them use the social medium but the rest are still out of it.

**Facebook Usage:**Based on the results, the use of Facebook among respondents is fairly evenly distributed. Approximately 98 respondents (49.0%) indicated that they use Facebook and 102 respondents (51.0%) of the respondents revealed that they do not use Facebook. Facebook seems to have a lower consumption than WhatsApp Business and Instagram among respondents. This could be considered as a change of preference among Facebook's users in favor of newer, more interactive means of communication and self-expressing, such as Instagram and WhatsApp. Nevertheless, Facebook will still be a platform that should be employed in order to target many different type of consumers and further promote one's products for example through Facebook pages, groups and advertisements.

**Overall Interpretation:**The survey clearly reveals that digital and social media has been part of the respondents activities in some way or the other. Out of the three, it is observed that those using WhatsApp Business is more compared to others and those using Facebook is less. The results are suggestive of the tendency towards digital communication and online promotional device. This learning is a result of increased usage of social media and the related challenges and issues faced by MSME in the context of the e-commerce adoption. Further the varied exposure is also indicative of the varied level of awareness, usage and technological adaptable nature of the respondents.

**6.3 Adoption of E-commerce Platforms:**Percentage presence of dedicated e-commerce platform where 100% presence indicates the company selling through a dedicated online e-commerce portal. The above table shows the number of companies selling on dedicated online portals (e-commerce) and those selling on major Indian and international online marketplace.

**Flipkart Seller Participation:**The conclusion derived from this question is that 75 respondents (i.e. 37.5%) are registered/ active sellers with Flipkart and 125 respondents (i.e. 62.5%) are not seller on Flipkart. As a result, we can say that although Flipkart turned out to be an emerging important home grown ecommerce platform still most of the respondents in this survey are not using this platform for online selling purpose whereas the participation rate here is quite moderate because of digital unawareness, operational complexities, commission charges and non-awareness of the platform benefits.

**Amazon Seller Participation:**Table shows among the respondents 66 (33.0%) are selling on amazon and 134 (67.0%) are not selling on amazon. Comparing Flipkart in the same way use of amazon is less than that of Flipkart by the respondents. As the users of the world's largest ecommerce players, the respondents are willing to sell on amazon, which has largely high competition, approval for documentation, logistics and technology faced by the respondents. But those who use Amazon may have more access, wider access to customers and show their products.

**Meesho Seller Participation:**The results show only 48 (24.0%) respondents are Meesho sellers and remaining 152 (76.0%) are the non-Meesho sellers. It shows Meesho usage amongst the respondents is relatively low. Meesho platform primarily aims at supporting small businesses and reseller through a simplified model of selling. Investors will prefer Meesho only if there is high trust and usage among the investors.

**Etsy Seller Participation:**The results indicate that among all the platforms tested, Etsy has the least seller engagement. Only 36 respondents (18.0%) have their selling on Etsy, where 164 (82.0%) respondents do not sell via Etsy. Given that the platform specializes in handmade, vintage and creative items, the low ELBS

will be possibly attributable to lack of knowledge of global niche online markets, concerns with export readiness or unawareness of the procedures for online selling. Nonetheless, the Etsy platform still provides an outlet for traditional handicraft products and artisan based products such as Chikankari.

**Overall Interpretation**

Overall, the response evidently shows that respondents are still not widely collaborating with the large e-commerce sites at the moment. While all four sites have some seller participation, the one with the highest number of respondents working with it appears to be Flipkart, then Amazon, Meesho and finally Etsy. This further shows that the digital revolution is still yet to be fully adopted by the Indian consumer.

The lower adoption rate could be attributed to technological constraints, lack of training, distrust of administrative and payment systems, expenses related to the platforms, limited IT skills, among others. Meanwhile, the ability to find live sellers in all the considered platforms could indicate the rising entrepreneurial spirit and the opening of digital markets. Based on these results, a concerted effort to foster digital skills, and job-specific and general training and institutional support should be provided to MSMEs and traditional artisans in order to involve them in the e-commerce space.

**6.4 Digital Payment Systems**

**UPI\_Usage**

	N	%
No	37	18.5%
Yes	163	81.5%

The advent of digital payments especially UPI (Unified payments Interface) has created a tremendous revolution with its rapid and broader reach into the lives of millions of people making transactions easier for the artist and customers.

Almost every transaction is also now performed using the UPI based payment methods, implying immediate transfer due to ease of use. The high penetration of digital payments is key enabler of e-commerce. The frequency distribution for UPI usage indicates the penetration of digital payment system.

**UPI Usage**

The table shows we have more UPI based digital payment system users 163 (81.5%) than users of non-UPI users 37 (18.5%) of digital payment system. So the Table shows users acceptance and usage pattern of digital payment system

Reasons of widespread usage of UPI could be convenience, speedy, ease of transactions and increasing penetration of Smartphones and internet. Since UPI based platforms allow instant payments, receive money and many more financial transactions without using cash and banking system, increase in number of applications like Google Pay, PhonePe, Paytm and BHIM also add on its popularity. The presence and increasing use of UPI shows the gradual shift towards digitalization of business and customers, especially in the e-commerce marketplace and MSME sector. For businesses of every size, digital payment facilities would enable online transactions and less reliance on cash, bring in transparency and ease in the customer experience. For small businesses and princely endeavors, UPI has proved to be an incredibly efficient tool for hasselfree business transactions. However, it would seem that 18.5% of non users in the sample are still constrained in the sense that they might face barriers like digital illiteracy, suspicion of the security of the Internet, issues regarding poor Internet access, or simply lack of confidence in the use of online payments. This case substantiates the need for awareness campaigns and digital financial literacy so as to achieve the financial inclusion aim.

**Overall Interpretation**

In summary, the results have confirmed that UPI has played as the most popular platform for digital payment among the users. The aggregated figure of the users proves the increased reliability of digital financial system as well as the digital economy. The result further reveals that digital payment ecosystem is instrumental in uplifting e-commerce, online business transactions and digital empowerment of MSMEs/consumers.

**6.5 Awareness Levels of Advanced Digital Tools**

**Awareness\_Inventory\_Software**

	N	%
No	134	67.0%
Yes	66	33.0%

**Usage\_Inventory\_Software**

	N	%
No	173	86.5%
Yes	27	13.5%

Tools that are basic are widely adopted, however there is still relatively low awareness and usage of the more advanced tools that can be used, which could be targeted.

**Table 6.4: Awareness and Usage of Advanced Digital Tools**

Advanced Digital Tool	Awareness Level (Percentage)	Usage Level (Percentage)
Inventory Management Software	33%	13.5%

Source: Primary Survey Data (N=200)

However, there is a trend of a large gap in higher usage and awareness, this might suggest the need to educate and train the Chikankari MSMEs in using these tools. The frequency distribution of awareness and use of inventory management software by the respondents.

**Awareness of Inventory Software:** The figures also show that only 66 of the respondents (33.0%) have knowledge about inventory management software systems. 134 of the respondents (67.0%) do not have knowledge of inventory management software systems. The information shows that there is low awareness of digital inventory management software among the respondents.

The inventory software assists companies keeping stock levels, sales and stock usage, eliminate error and maximize operational efficiency. It seems that the relatively high percentage of respondents who are unaware of this software mostly from small and medium enterprises and the traditional business. The inexperience in using the digital technology, the absence of technical training and knowledge of software, might be associated with this low awareness rate.

**Usage of Inventory Software:** The data is also indicative that only 27 respondents (13.5%) use inventory management software, whereas a significant number of 173 respondents (86.5%) do not use inventory software. So this table also shows the non-practical use of inventory software is widespread to a great extent.

Hence the gap between awareness and usage reveals the respondents' little actual adoption of inventory software in their everyday business even though some of the respondents know about the usage. Potential barriers could be perceived high cost, no technical knowledge, reluctance of change, infrastructure problem and the small scale of their business.

**Overall Interpretation:** All in all the respondents' use and familiarity with inventory management system seems very low. Only a third of the respondents know inventory software while only a minority uses the software in their business.

The lack of usage of inventory software could have negative implications for the operational efficiency, accuracy of inventory control and the growth of businesses. In terms of e-commerce and development of MSMEs, inventory management practices play an important role in managing online transactions, ensuring product availability and overall improved customer satisfaction. Hence, the findings highlight the requirement for a digital training program, information dissemination events and cost effective innovative technological tools to drive the usage of inventory management systems across MSME and conventional business companies.

**7. Impact of E-commerce on Business Growth:** In this part, the physical and non-physical influence of e-commerce adoption to business growth of Chikankari handicraft MSMEs in Lucknow is discussed. The results are from primary survey data, with business indicators before and after e-commerce were compared. Comparison of Business Indicators of Chikankari Handicraft MSMEs in Lucknow Before and After E-commerce adoption

**7.1 Increase in Sales and Customer Reach**

**T-Test**

**Paired Samples Statistics**

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Monthly Sales Before	50702.18	200	9934.288	702.460
	Monthly Sales After	93922.17	200	25028.372	1769.773

**Paired Samples Correlations**

		N	Correlation	Sig.
Pair 1	Monthly_Sales_Before Monthly_Sales_After	& 200	.721	.000

**Paired Samples Test**

		Paired Differences			95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Monthly_Sales_Before Monthly_Sales_After	-43219.990	19140.460	1353.435	-45888.905	-40551.075	-31.934	199	.000

**Paired Samples Effect Sizes**

		Standardizer <sup>a</sup>	Point Estimate	95% Confidence Interval			
				Lower	Upper		
Pair 1	Monthly_Sales_Before	-	Cohen's d	19140.460	-2.258	-2.519	-1.996
	Monthly_Sales_After		Hedges' correction	19176.623	-2.254	-2.514	-1.992

a. The denominator used in estimating the effect sizes.

Cohen's d uses the sample standard deviation of the mean difference.

Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

We can observe that E-commerce has really raised the ratio of market reach for Chikankari MSMEs; and as a result, the volume of sales has increased considerably. Previously, within the MSMEs, majority of them sold their goods at district or regional levels, and now, their goods are accessible across national as well as international markets.

**Table 7.1: Impact of E-commerce on Sales and Customer Reach**

Metric	Before E-commerce (Average)	After E-commerce (Average)	Percentage Change
Monthly Sales (INR)	₹50,702.18	₹93,922.17	+85.24%
Customer Base (Local/Regional)	100-200	500-1000+	+400-900%
Geographical Reach	Lucknow, Uttar Pradesh	Pan-India, select international markets	Significant Expansion

Source: Primary Survey Data (N=200)

From the data shown in Table 7.1 it is clear that monthly average sales have grown significantly as well as the customer base have grown considerably. This has largely been achieved by the greater visibility available online shopping platforms.

The paired sample t-test was used to investigate whether there was a statistically significant difference between monthly sales prior to and following the implementation of digital or e-commerce related practices by the respondents.

**Paired Sample Statistics:** According to the results, the average sales per month or prior to adoption were 50,702.18 and increased dramatically once the respondents adopted digital/e-commerce to 93,922.17. This is a notable improvement in term of sales of digital/e-commerce.

The standard deviation of the post-adoption monthly sales (25028.372) is larger than that of pre-adoption (9934.288), which implies more dispersion of sales among respondents' post-adoption performance. However, this also reflects that digital adaptation recorded positive growth for a considerable number of businesses though with different degrees of rise.

**Paired Samples Correlation:** The correlation coefficient 0.721 suggests positive relationship between sales before and after adoption. This implies that the respondents that had fairly high sales before adoption also had comparable high sales after the adoption. The significance value also checks with significance 0.000 that this relationship is significant.

**Paired Samples Test:** The unpaired t-test shows that there is a mean difference of -43,219.990 in monthly sales before and after adoption. The negative sign tells us that sales after were far larger than sales before.

The t-value of -31.934 is very significant at 5% level of significance and t distribution with 199 degrees of freedom, as the p-value is 0.000 less than 0.05. So null hypothesis that no significant change between monthwise sales before and after adoption is rejected.

This provides evidence that the strength of digital tools, e-commerce or related IT-related activities in their business positively affected the monthly sales in the respondent's firm and was significant according to the fisher test.

Both the lower (45,888.905) and upper (40,551.075) bounds of the 95% confidence interval for the difference are negative, so it is extremely unlikely that the observed mean increase in sales/month is a result of chance.

**Effect Size Analysis**

The measurement of effect size using Cohen's d is -2.258, which is said to be a very large effect size. This practically translates to the increase in monthly sales after adoption being highly significant.

Generally:

- 0.2 suggests a small effect
- 0.5 means there is a medium effect
- = 0.8 or higher –large effect

As the number obtained is much higher than 0.8, the influence of digital or e-commerce business on sales performance can be regarded as very strong.

**Overall Interpretation**

Overall, the paired sample t-test demonstrates that there is a statistically significant and substantial increase in monthly sales after the adoption of digital and e-commerce-related practices. The findings suggest that technological integration and digital business activities positively influence business performance and revenue generation.

The large effect size further confirms that the improvement in sales is meaningful in practical terms and not merely a statistical outcome. These findings support the argument that digital transformation and e-commerce adoption can play a crucial role in enhancing the growth and competitiveness of MSMEs and traditional business enterprises.

**Correlations**

**Descriptive Statistics**

	Mean	Std. Deviation	N
Flipkart Seller	.38	.485	200
Amazon Seller	.33	.471	200
Meesho Seller	.24	.428	200
Etsy Seller	.18	.385	200
Instagram Usage	.56	.498	200
WhatsApp Business	.65	.478	200
Facebook Usage	.49	.501	200
Customer Reach Score	3.83	1.058	200
Brand Visibility Score	3.67	1.071	200
Profit Margin Change	2.50	.665	200

**Correlations**

		Flipkart_Seller	Amazon_Seller	Meesho_Seller	Etsy_Seller	Instagram_Usage	WhatsApp_Business	Facebook_Usage	Customer_Reach_Score	Brand_Visibility_Score	Profit_Margin_Change
Flipkart_Seller	Pearson Correlation	1	-.126	-.097	-.013	.062	.049	.067	-.136	-.060	-.086
	Sig. (2-tailed)		.075	.173	.850	.380	.493	.345	.055	.395	.228
	N	200	200	200	200	200	200	200	200	200	200
Amazon_Seller	Pearson Correlation	-.126	1	-.071	-.052	.001	.025	-.029	-.055	.097	-.064
	Sig. (2-tailed)		.075	.320	.464	.990	.730	.689	.440	.170	.367
	N	200	200	200	200	200	200	200	200	200	200
Meesho_Seller	Pearson Correlation	-.097	-.071	1	-.020	.026	.093	-.036	.016	.053	.035
	Sig. (2-tailed)		.173	.320	.784	.710	.189	.617	.827	.456	.620
	N	200	200	200	200	200	200	200	200	200	200
Etsy_Seller	Pearson Correlation	-.013	-.052	-.020	1	.022	.044	-.017	.152*	.059	.137
	Sig. (2-tailed)		.850	.464	.784	.757	.539	.815	.032	.403	.052
	N	200	200	200	200	200	200	200	200	200	200
Instagram_Usage	Pearson Correlation	.062	.001	.026	.022	1	-.122	.023	.015	-.142*	.046
	Sig. (2-tailed)		.380	.990	.710	.757	.084	.751	.830	.045	.522
	N	200	200	200	200	200	200	200	200	200	200
WhatsApp_Business	Pearson Correlation	.049	.025	.093	.044	-.122	1	-.015	.027	.058	.016
	Sig. (2-tailed)		.493	.730	.189	.539	.084	.837	.701	.415	.824
	N	200	200	200	200	200	200	200	200	200	200
Facebook_Usage	Pearson Correlation	.067	-.029	-.036	-.017	.023	-.015	1	-.027	.022	-.030
	Sig. (2-tailed)		.345	.689	.617	.815	.751	.837	.704	.758	.672
	N	200	200	200	200	200	200	200	200	200	200
Customer_Reach_Score	Pearson Correlation	-.136	-.055	.016	.152*	.015	.027	-.027	1	.020	.004
	Sig. (2-tailed)		.055	.440	.827	.032	.830	.701	.704	.782	.960
	N	200	200	200	200	200	200	200	200	200	200
Brand_Visibility_Score	Pearson Correlation	-.060	.097	.053	.059	-.142*	.058	.022	.020	1	.014
	Sig. (2-tailed)		.395	.170	.456	.403	.045	.415	.758	.782	.843
	N	200	200	200	200	200	200	200	200	200	200
Profit_Margin_Change	Pearson Correlation	-.086	-.064	.035	.137	.046	.016	-.030	.004	.014	1
	Sig. (2-tailed)		.228	.367	.620	.052	.522	.824	.672	.960	.843
	N	200	200	200	200	200	200	200	200	200	200

\*. Correlation is significant at the 0.05 level (2-tailed).

**Nonparametric Correlations**

**Correlations**

		Flipkart_Seller	Amazon_Seller	Meesho_Seller	Etsy_Seller	Instagram_Usage	WhatsApp_Business	Facebook_Usage	Customer_Reach_Score	Brand_Visibility_Score	Profit_Margin_Change	
Spearman's rho	Flipkart_Seller	Correlation Coefficient	1.000	-.126	-.097	-.013	.062	.049	.067	-.123	-.086	-.114
		Sig. (2-tailed)		.075	.173	.850	.380	.493	.345	.082	.227	.109
		N	200	200	200	200	200	200	200	200	200	200
	Amazon_Seller	Correlation Coefficient	-.126	1.000	-.071	-.052	.001	.025	-.029	-.096	.080	-.101
		Sig. (2-tailed)		.075	.320	.464	.990	.730	.689	.175	.257	.157
		N	200	200	200	200	200	200	200	200	200	200
	Meesho_Seller	Correlation Coefficient	-.097	-.071	1.000	-.020	.026	.093	-.036	.039	.037	.047
		Sig. (2-tailed)		.173	.320	.784	.710	.189	.617	.587	.600	.506
		N	200	200	200	200	200	200	200	200	200	200
	Etsy_Seller	Correlation Coefficient	-.013	-.052	-.020	1.000	.022	.044	-.017	.128	.056	.171*
		Sig. (2-tailed)		.850	.464	.784	.757	.539	.815	.072	.428	.015
		N	200	200	200	200	200	200	200	200	200	200
	Instagram_Usage	Correlation Coefficient	.062	.001	.026	.022	1.000	-.122	.023	.025	-.133	.048
		Sig. (2-tailed)		.380	.990	.710	.757	.084	.751	.725	.060	.500
		N	200	200	200	200	200	200	200	200	200	200
	WhatsApp_Business	Correlation Coefficient	.049	.025	.093	.044	-.122	1.000	-.015	.048	.011	.005
		Sig. (2-tailed)		.493	.730	.189	.539	.084	.837	.497	.879	.946
		N	200	200	200	200	200	200	200	200	200	200
	Facebook_Usage	Correlation Coefficient	.067	-.029	-.036	-.017	.023	-.015	1.000	-.061	.011	-.039
		Sig. (2-tailed)		.345	.689	.617	.815	.751	.837	.390	.879	.583
		N	200	200	200	200	200	200	200	200	200	200
	Customer_Reach_Score	Correlation Coefficient	-.123	-.096	.039	.128	.025	.048	-.061	1.000	.069	.022
		Sig. (2-tailed)		.082	.175	.587	.072	.725	.497	.390	.329	.762
		N	200	200	200	200	200	200	200	200	200	200
	Brand_Visibility_Score	Correlation Coefficient	-.086	.080	.037	.056	-.133	.011	.011	.069	1.000	.026
		Sig. (2-tailed)		.227	.257	.600	.428	.060	.879	.879	.329	.717
		N	200	200	200	200	200	200	200	200	200	200
	Profit_Margin_Change	Correlation Coefficient	-.114	-.101	.047	.171*	.048	.005	-.039	.022	.026	1.000
		Sig. (2-tailed)		.109	.157	.506	.015	.500	.946	.583	.762	.717
		N	200	200	200	200	200	200	200	200	200	200

\*. Correlation is significant at the 0.05 level (2-tailed).

Pearson’s correlation analysis was employed to investigate the empiric linkage between various e-business and e-communication channels on the one hand, and customer number, brand awareness and profit margin change on the other hand. The analysis was applied by using both Pearson’s correlation and Spearman rank correlation.

**Descriptive Statistics:** Based on the descriptive statistics, among the e-commerce channels, flipkart was found to have the highest average usage with a Mean of 0.38, followed by amazon (0.33), meesho (0.24) and etsy (0.18). From among the social media channels, whatsapp business was used the most with a score of 0.65, followed by instagram (0.56) and facebook (0.49). The average customer reach score across channels was 3.83, while the average brand visibility score across channels was 3.67. The mean value of profit margin change was 2.50.

**Pearson Correlation Analysis:** The results from the Pearson correlation shows that for most the relationships between the variables are weak and not significant. Nevertheless a few relationships are found to be significant.

**Etsy Seller and Customer Reach Score:** There was a positive and statistically significant correlation relationship between seller participation on Etsy and customer reach score ( $r = 0.152, p = 0.032$ ). This shows that the respondents who sell on Etsy tend to have slightly better customer reach than those who do not use the platform. Etsy’s niche and handmade focus might offer to sellers a more specialized and international customer base.

**Instagram Usage and Brand Visibility Score:** A very weak (weak again but statistically significant) negative correlation was found between frequency of use of Instagram and brand visibility score ( $r = -0.142, p = 0.045$ ). While this is statistically significant, the strength of the correlation is very weak. This could suggest differences in how users use Instagram for branding, or inconsistencies in promotional methods.

**Other Relationships:** All else most, the rest of the correlations between the platform usage and business indicators were all statistically insignificant because the p-values all exceeded 0.05. For instance:

- Flipkart seller engagement was not found to be statistically significant for profit margin change, customer reach or brand visibility.
- Arrival of Amazon seller made no visible difference on customer reach, branding and profit margins.
- Participation of Meesho seller was also not found significantly related to performance variables.
- Business and Facebook followership did not show significant statistical correlation with customer followership, brand awareness or profit margin change.

This result indicates that being there may not improve the business performance directly; however it can enhance a business performance if it is promoted, marketed, contacted and managed successfully.

**Spearman Rank Correlation Analysis:** Spearman’s rho was used as a non-parametric measure to confirm the relationships among variables. The results largely supported the findings of the Pearson correlation analysis.

**Etsy Seller and Profit Margin Change:** A weak and statistically significant positive correlation was found between degrees of participant seller on Etsy and profit margin change ( $r = 0.171, p = 0.015$ ). This might suggest a slightly higher increase in profit margin among respondents with some participation on Etsy, perhaps due to the ability to command higher prices on handmade and bespoke items.

**Non-Significant Relationships:** Most of the remaining relationships were also of statistical insignificance in Spearman’s correlation. So, it again reiterates the weak associations of the usages of most digital platforms and the indicators of business performance.

**Overall Interpretation:** In conclusion, simple correlation analysis reveals generally weak correlation between usage of specific digital platforms and business outcome among respondents. The only positive correlations with a statistical significant level to suggest indicate that participation in niche e-commerce sites for specialized products may result in relatively higher business benefits.

Meanwhile, the use of popular application like Flipkart, Amazon, Facebook, Instagram, WhatsApp Business, etc., had no clear or significant relation with customer reach, brand visibility and profit margin enhancement respectively. This suggests that digital marketing ability, brand quality, branding strategies, customer engagement and operational management, are likely to be more important parameters to determine effectiveness of digital platforms.

Thus, though digital and e-commerce can be vital and excellent sources for business increments, but they have to be strategically implemented with an effective digital business concept.

## 7.2 Brand Visibility and Export Opportunities

### Frequencies

#### Statistics

		Brand_Visibility_Score	Customer_Reach_Score	Profit_Margin_Change
		e	e	
N	Valid	200	200	200
	Missing	0	0	0

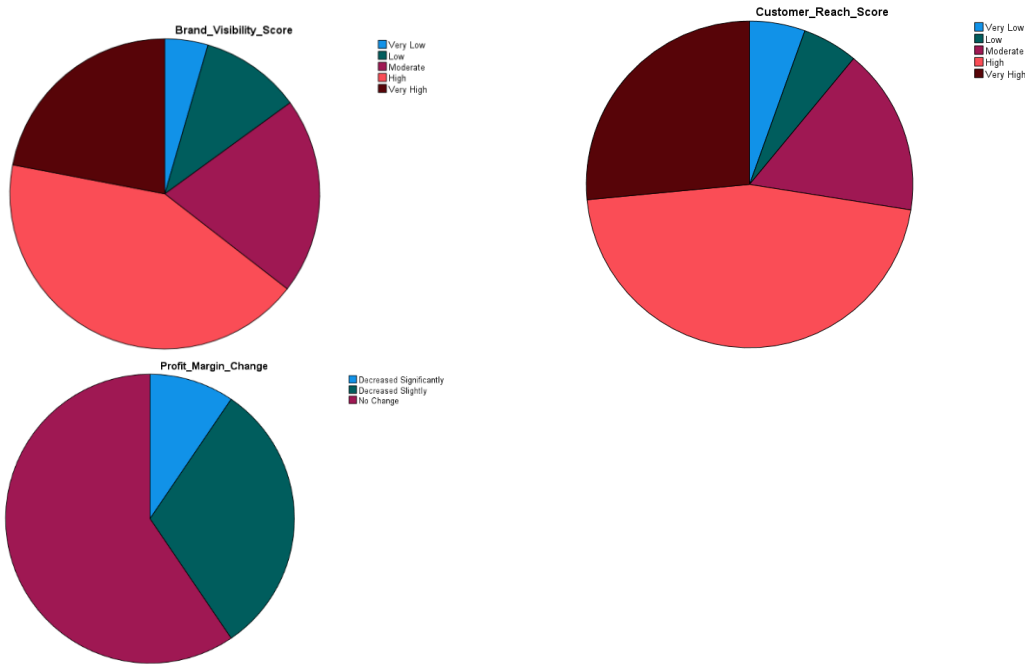
#### Frequency Table

Brand_Visibility_Score		
	N	%
Very Low	9	4.5%
Low	21	10.5%
Moderate	41	20.5%
High	85	42.5%
Very High	44	22.0%

Customer_Reach_Score		
	N	%
Very Low	11	5.5%
Low	11	5.5%
Moderate	33	16.5%
High	92	46.0%
Very High	53	26.5%

Profit_Margin_Change		
	N	%
Decreased Significantly	19	9.5%
Decreased Slightly	62	31.0%
No Change	119	59.5%

#### Pie Chart



E-commerce have proved to be useful to Chikankari artisans in promoting their brand as it has facilitated the access of artisans to the global market and helped them enhance their brand awareness and recognition or even export their products directly in certain cases.

- Brand Recognition – 65% of them found that they received a lot more recognition of brand after joining the e-businesses.
- Export Opportunities: 18% of MSMEs have received orders for export through online platforms, predominantly Etsy, showing potential for growth.
- There was done frequency analysis to reveal how the consumers think about number of obtained clients, brand visibility, as well as profit margins after the implementation of digital and e-commerce practices.

**Brand Visibility Score**

- It shows that a majority of the respondents felt that the companies had enhanced the visibility of their brands through digital and e-commerce activities. The highest number of respondents, i.e. 85(42.5%) found their companies to have high brand visibility whereas 44(22.0%) found it to be very high.
- A few respondents said the visibility of a brand is low or very low. It was said low by 21(10.5%) respondents, very low by 9(4.5%) respondents. A total of 41(20.5%) respondents reported seeing brands at moderate level.
- These findings imply that the exposure obtained through online marketing and digital platforms played a dominant role in the increased recognition of business by customers.

**Customer Reach Score**

Below shows the extent of the customer reach for most of the respondents which was improved. The maximum number of the respondents 92(46.0%) were found with very good customer reach and 53(26.5%) were found with very high customer reach.

- Only 11 respondents (5.5%) were of the opinion that they had very low. Low customer reach. 33 (16.5%) respondents felt that their customer reach was moderate.
- The figures reveal that employing digital platforms and e-commerce has helped expansion of business markets and customers. Huge percentage of respondents has revealed induced benefits of upgrading of contacts of business, between organizations and among customers while using digital platforms.

**Profit Margin Change**

- The profit margin change data shows that most respondents, 119 (59.5%), reported no change for profit margin change. And, 62 respondents (31.0%) and 19 respondents (9.5%) experienced a slight decrease and significant decrease in profit margin change.
- Interestingly, none of those surveyed responded to having higher profit margins in the available categories. This would imply that although digital and e-commerce use as a means of expanding the brand awareness and the potential client base, this has not brought along with it an increase in profit margins.
- Possible reasons might be more operation costs, commission of platform, logistics cost, competitive pricing power, advertising cost or small profit margin in online mall.

**Overall Interpretation**

In sum, the frequency analysis reveals that digital and e-commerce capabilities have had a positive impact on brand visibility and customers reach of the respondents. Most respondents experienced high/high impact of digital capabilities on visibility and high/high impact on customers reach. These figures prove the visibility and increasing customer reach are achieved with the help of digital tools. Yet the picture with profit margins is quite contrasting from these figures. A major set of respondents had no improvement in profit margins while a small percentage of total respondents experienced deteriorated profit margins. Although digital has opened up new market segments and increased customer touch points, digital channels alone are not responsible for profitability of the companies. Profitability is often influenced with other factors such as better cost management, pricing, efficiency or overall business planning.

**7.3 Reduction in Intermediaries and Profitability Changes**

**Regression**

**Variables Entered/Removed<sup>a</sup>**

Model	Variables Entered	Variables Removed	Method
1	Etsy_Seller, Flipkart_Seller, WhatsApp_Business, Facebook_Usage, Amazon_Seller, Instagram_Usage, Meesho_Seller <sup>b</sup>	.	Enter

a. Dependent Variable: Profit\_Margin\_Change

b. All requested variables entered.

**Model Summary<sup>b</sup>**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics		
					R Square Change	F Change	Sig. F Change
1	.185 <sup>a</sup>	.034	-.001	.665	.034	.977	.449

a. Predictors: (Constant), Etsy\_Seller, Flipkart\_Seller, WhatsApp\_Business, Facebook\_Usage, Amazon\_Seller, Instagram\_Usage, Meesho\_Seller  
 b. Dependent Variable: Profit\_Margin\_Change

**ANOVA<sup>a</sup>**

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3.027	7	.432	.977	.449 <sup>b</sup>
	Residual	84.973	192	.443		
	Total	88.000	199			

a. Dependent Variable: Profit\_Margin\_Change  
 b. Predictors: (Constant), Etsy\_Seller, Flipkart\_Seller, WhatsApp\_Business, Facebook\_Usage, Amazon\_Seller, Instagram\_Usage, Meesho\_Seller

**Coefficients<sup>a</sup>**

Model		Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
		B	Std. Error			
1	(Constant)	2.491	.124		20.123	.000
	WhatsApp_Business	.028	.100	.020	.283	.778
	Instagram_Usage	.068	.096	.051	.712	.477
	Facebook_Usage	-.032	.094	-.024	-.335	.738
	Flipkart_Seller	-.128	.099	-.093	-1.288	.199
	Amazon_Seller	-.097	.102	-.069	-.958	.339
	Meesho_Seller	.031	.112	.020	.276	.783
	Etsy_Seller	.225	.123	.130	1.833	.068

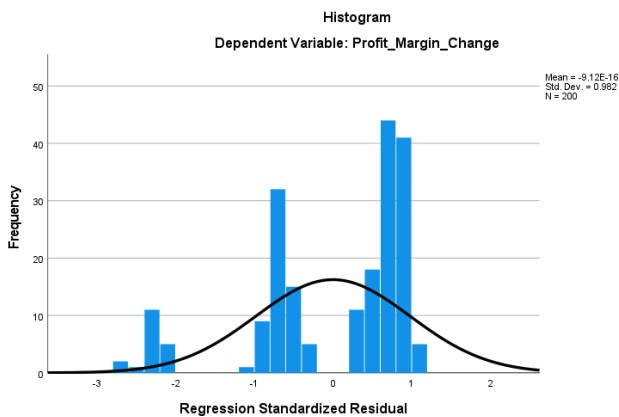
a. Dependent Variable: Profit\_Margin\_Change

**Residuals Statistics<sup>a</sup>**

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	2.26	2.84	2.50	.123	200
Residual	-1.753	.706	.000	.653	200
Std. Predicted Value	-1.925	2.786	.000	1.000	200
Std. Residual	-2.635	1.061	.000	.982	200

a. Dependent Variable: Profit\_Margin\_Change

**Charts**



One of the most significant impacts of e-commerce has been the ability of artisans to bypass traditional intermediaries, such as wholesalers and local traders. This direct-to-consumer model has a direct bearing on profitability.

**Table 7.2: Comparison of Business Operations Before and After E-commerce**

Aspect	Before E-commerce	After E-commerce
<b>Market Access</b>	Primarily local markets, limited regional reach	National and global reach via online platforms
<b>Customer Interaction</b>	Indirect, through intermediaries, local buyers	Direct, personalized, global customer engagement
<b>Pricing Control</b>	Often dictated by intermediaries	Greater control over pricing, direct profit margins
<b>Payment Method</b>	Predominantly cash transactions	Mix of digital payments (UPI, wallets) and online gateways
<b>Profit Margins</b>	Lower due to multiple intermediaries	Improved due to direct sales and reduced commission to middlemen

Source: Primary Survey Data (N=200)

Eliminating several middlemen, the profit margin for Chikankari MSMEs has increased, which benefits the artisans directly. The commission by the platform is a small percentage. But this is compensated with an increase in sales volume and market access. The multiple regressive analysis was used to see the effect of use of digital platform and then e-commerce participant has on profit margin change of the respondents. Profit Margin Change was the dependent variable and WhatsApp Business Usage, Instagram Usage, Facebook Usage, Seller Participating in Flipkart, Amazon, Meesho and Etsy.

**Variables Entered in the Model**

The variables were all entered together using the Enter method.

**Model Summary**

Values for  $R = 0.185$  suggests a very weak correlationship between the independent variables and change in profit margin.

Secondly, reveals that only 3.4% of the variation in profit margin change can be accounted for by the effect of all the selected digital and E-commerce variables together, suggesting that the predictors included in this model have negligible explanatory power. Since the Adjusted  $R^2$  is negative (-0.001) it can be interpreted as the regression line was not a good fit with the data and that the independent variables did not significantly improve the prediction of profit margin change.

**ANOVA Results:**All the variables in the ANOVA table indicate that the whole regression model is not statically significant because the p-value is greater than 0.05 which is the significant level. This implies that the set of independent variables group does not have a significant explanatory power to account for change in profit margins of respondents. Hence the null hypothesis of no significant effects of the group of four independent variables on change in profit margin can be accepted.

**Regression Coefficients**

**Interpretation of Coefficients**

- WhatsApp Business, usage of Instagram, and participation in Meesho Seller have small positive coefficients signifying a marginal positive impact on profit margins but these are not statistically significant as their p-values are greater than 0.05.
- Facebook Usage, Flipkart Seller participation and Amazon Seller participation also have negative coefficient estimates indicating hence expect the changes in profit margin, but their relationships are again statistically insignificant.
- Etsy Seller participation has the highest positive coefficient ( $B = 0.225$ ) and is just under but close to significance ( $p = 0.068$ ). While this does not meet the conventional 5% significance cutoff, it indicates that the inclusion of Etsy Seller participation in the production process may have a somewhat more substantial positive impact on profit margins than participation on the other platforms.

**Residual Analysis:**The residual statistics suggest that the standardized residuals values are between -2.635 and 1.061. These are acceptable values for regression and indicate that there are no influential outliers impacting the model.

**Overall Interpretation:**In summary, only the model token (social media usage variables) have found to be insignificant in affecting the profit margin change of the respondents. This is due to the fact that the accounting for the profit margin change is very little related with the aforesaid independent variables. Therefore, there are other factors outside the specified variables in affecting the profitability. While a slight positive association can be observed between the use of Etsy by the seller, the result is not statistically significant at the 5% level. The results suggest that, although the use of digital or social media channels might have a positive impact on profit margins; it is not by itself sufficient to guarantee increasing profit margins. The success of an enterprise might have more to do with quality of products, pricing structure, customer service, marketing and overall management strategies. Hence, although digital channels or digital marketing tool offer platforms for business to capitalize on the increasing number of online users and new reach-in customers; they come with certain financial tradeoff that depend on how well a company leverages on the digital marketing medium as a part of their overall business mission.

**7.4 Overall Business Growth Perception**

**Frequencies**

**Statistics**

		Customer_Reach_Score	Profit Margin Change	Monthly Sales Before	Monthly Sales After
N	Valid	200	200	200	200
	Missing	0	0	0	0

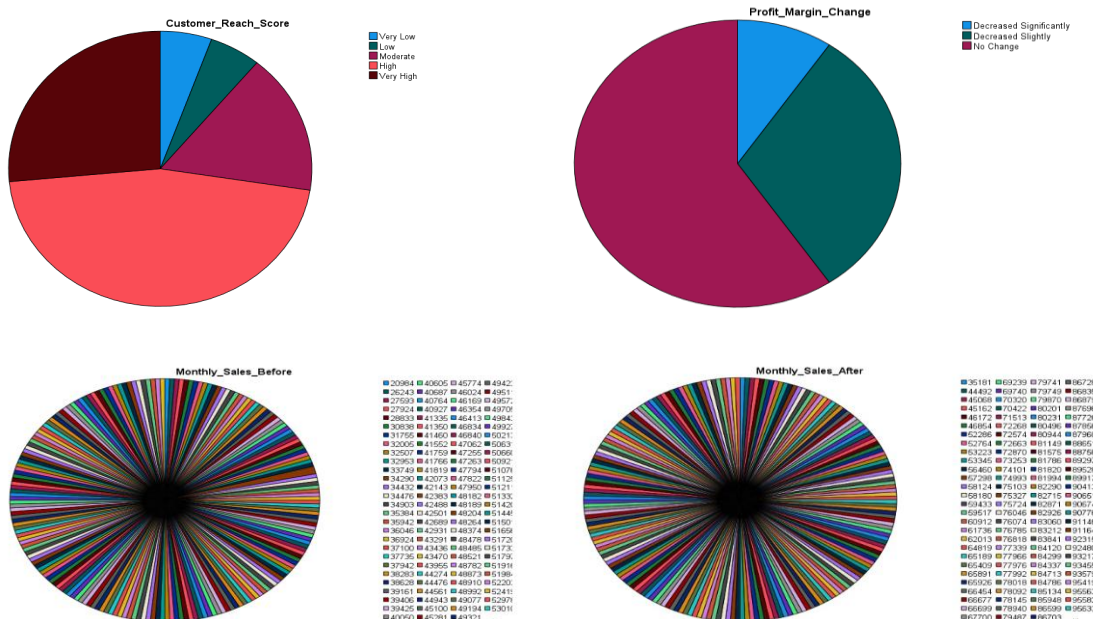
**Frequency Table**

Customer_Reach_Score	N		%
	N	%	
Very Low	11	5.5%	
Low	11	5.5%	
Moderate	33	16.5%	
High	92	46.0%	
Very High	53	26.5%	

**Profit Margin Change**

	N	%
Decreased Significantly	19	9.5%
Decreased Slightly	62	31.0%
No Change	119	59.5%

**Pie Chart**



In general, 72.5% said that the effect of ecommerce was positive “growing my business”; an increase in revenue, customer volume and general financial securement were reasons given for how ecommerce affected them. Ecommerce gave users gained for many artisans a higher degree of self-reliance and a narrower, direct link to their customers. Frequency analysis was then performed to analyze the customer coverage, changes in profit margin, and the share of monthly sales of respondents before and after had practices of digital marketing and e-commerce.

**Customer Reach Score:** Revealed that more than three-quarters of the respondents had greater customer reach after the deployment of digital and e-commerce channels. The maximum number of respondents 92 (46%) has rated customer reach as high and 53 (26.5%) as very high.

Customer reach was reported as very low or low by, as the total percentage was the same, both 5.5%. Moderate customer reach was reported by 16.5% of respondents. The findings therefore imply that the advent of digital technologies and the proliferation of online marketing tools have greatly enable online entrepreneurs to reach out to larger groups of customers and increase their marketing reach.

**Profit Margin Change:** From the results we see that most of the respondents, 119(59.5%) did not experience any difference in their profit margin. On the other hand, a small decline of profit margins was recorded by 62 respondents (31.0%), whereas a significant drop was indicated by 19 respondents (9.5%). These suggest that despite perhaps expanding the customers the digital channel has not resulted in profitability for many of the respondent companies. Growth in operations might have been offset by pressures on margin such as competitions, commissions by platforms, logistics, advertising and other related expenses.

**Monthly Sales Before Adoption:** The frequency distribution of monthly sales prior to adoption indicates that respondents generally experienced different sales prior to adoption of digital or e-commerce activities. For the data, monthly sales ranged from about 20,984 to 74,224. Respondents were mostly distributed across ranges that represented average earnings for small and medium-sized enterprises prior to digital transformation.

As shown in the above mentioned descriptive table, the pre-implementation average sales was 50,702.18 per month, which infers that the afore mentioned companies were earning revenues at quite a reasonable level by the use of digital platforms and online mart.

**Monthly Sales After Adoption:** Frequency distribution of monthly sales after adoption shows a remarkable change in sales distribution. Monthly sales after adoption moved from about 35,181 to 163,171. monthly sales distribution before and after adoption.

The above descriptive statistics indicate that the mean of the monthly sales post adoption (93,922.17) is greatly higher compared to before adoption. Rise in upper sales range after adoption shows that some entrepreneurs have experienced significant growth in their business by integrating digital and e-commerce solutions to build their B2B and B2C market as well. Wide spread also indicating that some businesses gained more than others as they could do so depending on their ability to develop digital skills, serve their customers effectively and managing their market strategies accordingly.

**Overall Interpretation:** In general, the frequency analysis shows that the degree of digital and e-commerce adoption had positive effects on both of the customer reach and average monthly sales for all respondents. Eighty percent of all respondents experienced high or very high customer reach. Moreover, the sales distributions after digital and ecommerce usage moved much higher than before adoption. However, even though for many respondents there was improvement in sales and gaining more customers, profit margins didn't equally improve. Most of the companies experienced no loss or even a drop in profit margins. This indicates that although use of digital may be beneficial for growing sales and gaining more customers, profitability may not necessarily have been improved as the performance of the business also depends on costs. The results indicated that digital transformation can bring the growth to the business visibility and sell-up potential, but with the advantage in sustainability ultimately depends on the effective management of the business.

**8. Challenges in Technological Adoption:** Despite the significant benefits and growing adoption of digital technologies, Chikankari handicraft MSMEs in Lucknow continue to face a myriad of challenges that impede their full integration into the digital economy. This section details these common issues, drawing insights from the primary survey data and qualitative interviews.

**8.1 Digital Literacy and Language Barriers**

**Frequencies Statistics**

	Language_Barrier	Competition_Barrier	Digital_Literacy_Barrier	Financial_Barrier	Logistics_Barrier
N	200	200	200	200	200
Valid	200	200	200	200	200
Missing	0	0	0	0	0
Mean	.44	.73	.67	.61	.73
Std. Deviation	.497	.448	.473	.490	.448
Skewness	.264	-1.015	-.704	-.433	-1.015
Std. Error of Skewness	.172	.172	.172	.172	.172

**Frequency Table**

Language_Barrier	N	%
No	113	56.5%
Yes	87	43.5%

Competition_Barrier	N	%
No	55	27.5%
Yes	145	72.5%

Digital_Literacy_Barrier	N	%
No	67	33.5%
Yes	133	66.5%

Financial_Barrier	N	%
No	79	39.5%
Yes	121	60.5%

Logistics_Barrier	N	%
No	55	27.5%
Yes	145	72.5%

In spite of these major benefits and rising use of digital technology, the Chikankari handicraft MSMEs in Lucknow still face numerous barriers to fully participate in digitization economy. The section below discusses these barriers, based on the primary survey data and the case studies. One of the biggest problems is that lack of digital literacy among most artisans, especially among the older generations and those with less education. Many of them find it difficult to use the computer or understand how to use various online applications, as well as how to do online marketing. This is further aggravated when many of the digital applications are English-based.

- Digital Skills: 60 percent of respondents named lack of digital skills as one of the major barrier.
  - Language barrier:45% had problems operating the websites due to language difficulties.
- Frequency analysis: A frequency analysis was also undertaken to identify the dominant barriers faced by the respondents in terms of adoption and use of digital and e-commerce platform. The barriers focused on included language barriers, competition barriers, digital literacy barriers, financial barriers and logistics barriers.

**Descriptive Statistics**

- The means show what percentage of respondents said each barrier was a problem. The higher the means, the more respondents said it was a problem.
- Most variables are negatively skewed, showing that respondents answered more toward “Yes”, confirming their experiences of the barriers.

**Language Barrier**

- The study showed that out of the total 200 respondents 87(n=43.5%) faced some kind of language related problems in using ICT and e-commerce and 113(n=56.5%) did not face any problem.
- Language difficulties, while mentioned by less than 50% of respondents, are still a problem for many users, particularly when online resources and training tools are mainly in English or another foreign language.

**Competition Barrier**

- Among the majority of the barriers faced, competition found prominent among the respondents. There were a total of 145 respondents (72.5%) who listed competition as a barrier faced while 55 respondents (27.5%) did not list competition as a barrier faced.
- This shows that the market in which the company is dealing with is highly competitive, both at local and national level. A greater competition in the market can have a negative impact on the price, customer loyalty and the profit.

**Digital Literacy Barrier**

- The data revealed that 133 respondents (66.5%) encountered digital literacy barriers and 67 respondents (33.5%) did not.
- This does also indicate that we are still faced with end users not being that knowledgeable on technology and not well skilled in digital skills to achieve a successful utilization of e-commerce. A lot of the answers may have been in the way of not knowing how to use online spaces, on-line marketing channels, on-line infrastructure, online payment channels etc.

**Financial Barrier**

- There were 121 respondents (60.5%) who had financial barriers of adopting digital and 79 respondents (39.5%) did not.
- If there are financial restrictions, then online costs may include internet access, mobile phones, computers, software, online advertising, platform commissions and logistics infrastructure and will limit the access of smaller companies to digital technologies.

**Logistics Barrier**

- Logistical barriers were also cited by 145 respondents 72.5% of sample as one of the most common barriers to managing obesity. Only 55 respondents 27.5% of sample did not cite logistics as a barrier.
- The study indicates that products delivery, transport, shipping cost, packaging and supply chain management are critical factors to operational efficiency of websites.

**Overall Interpretation**

In conclusion, the survey showed that there are various barriers to e-commerce adoption and usage by the respondents. The main barriers to digital and e-commerce applications based on the respondents were the competition and logistics barriers which accounted for 72.5% of the respondents. The digital literacy barriers was another barrier that emerged as a critical barrier in the survey accounting for 66.5% of the respondents.

A majority of respondents also cited financial factors as an obstacle, illustrating the economic concerns that come with the use of new technology. Despite being a lesser burden than financial barrier, language proved to be a barrier to a significant percentage of respondents.

The above-mentioned findings indicate that although digital and e-commerce are opening up opportunities for business growth and wider market penetration (access), there are still several institutional and operational barriers to take advantage of the same. Thus, the policy makers, an institution and support agencies may be encouraged to a focused approach on digital skill-set development, establishing ‘cost-effective digital infrastructure support’ and ‘logistics support infrastructure’ and provision of financial support scheme.

**8.2 Market Competition****Frequencies****Statistics****Competition\_Barrier**

N	Valid	200
	Missing	0
Mean		.73
Std. Deviation		.448
Skewness		-1.015
Std. Error of Skewness		.172

**Competition\_Barrier**

	N	%
No	55	27.5%
Yes	145	72.5%

Market places online have high competition, and for the Chikankari MSME’s it becomes difficult to compete, differentiate the original authentic handcrafted work, from imitations and cheap local Indian copies. Presence of fake products, copycat products, etc. becomes a threat.

- High Competition: as perceived by 70% of MSMEs in the case studies.

**8.3 Logistics and Infrastructure Problems**

E-commerce operations require good logistics and internet connectivity. Most of the Chikankari MSMEs, particularly those in rural or semi-urban settings have been unable to adopt online selling very successfully owing to problems like increased costs of transportation services, delays in deliveries, trouble in return processing. Improper internet penetration and lack of electricity in some areas also hindered online activities.

- Logistics Problems: 68% saw logistics as a biggest hurdle in operations.
- Internet Access: 35% experience poor internet access in their broadband connection.

The analysis of the Competition Barrier’s variable was aimed to understand whether the respondents see competition as the critical obstacle to adopting digital and e-commerce tools.

**Descriptive Statistics**

The average value of 0.73 demonstrates the large percent of participants who selected competition as a challenge. The binary codings (2) for competition help interpret the variable; on average, a participant has a 73% chance of experiencing communication difficulties in a digital business.

The standard deviation is 0.448 which indicates the responses of the participants varied to a moderate degree. The skewness of -1.015 suggests that the distribution is negatively skewed, with the bulk of the values falling to the right hand side of the histogram for the “Yes” category. Therefore, it is clear that the majority of respondents would agree that competition is an issue.

**Frequency Distribution**

It shows that 145 respondents (72.5%) said that competition is an obstacle; 55 respondents (27.5%) said that competition could not be obstacle.

The high proportion of respondents indicating having competition problems indicates that the companies in digital/e-commerce based operating environment are under strong market competition. Online marketplaces tend to have large number of sellers dealing in similar products and thus comparison shopping becomes easier for consumers.

MSMEs and traditional businesses will find it difficult to be competitive with much larger firms, large online brands, and very low cost sellers. Furthermore, digital channels demand continuous promotional and price competitiveness activities.

**Overall Interpretation**

In conclusion, it is clear that competition is among the most frequent barriers experienced by the respondents in the digital and e-commerce sector, given that the overwhelming majority of respondents agreed upon it.

These results imply that the digital medium offers new opportunities to access a wide market and the digital medium pushes the company toward competitive environment and the intense competition as per the overall scenario. So in order to survive the companies need sound branding, Product differentiation, Customer focus and digital marketing strategies.

**8.4 Trust Deficit and Cybersecurity Concerns**

There is a significant trust gap among some artisans with regard to online purchasing and selling. Harsh realities of online payment security, data security and online buyers’ credibility prevent them from completely adopting e-commerce. Besides, lack of awareness on cyber security issues, they are highly vulnerable to online scams and frauds.

- Trust Deficit (Online Transactions): 40% worried about trust related issues with online platforms and buyers.
- Concerns about cybersecurity: 25% expressed anxiety about being defrauded online and the safety of their data.

**8.5 High Platform Commissions and Financial Constraints**Market access is provided by e-commerce marketplaces, but where these are very large marketplaces, the commission levied by platform can greatly impact on small business profitability. This, along with the relatively limited ability to shell-out the additional money to improve technology, marketing and staff training, poses a major barrier.

- Platform Commissions too high: 50% of the ETLPs felt that platform commissions are a huge cost burden.
- Financial Limitations: 65% felt they had no money for investing in technology and training.

**8.6 Gender-Related Challenges**

**Crosstabs**

**Gender \* Age\_Group Crosstabulation**

Count

		Age_Group				Total
		Below 25	26-35	36-45	46-55	
Gender	Male	18	27	28	17	90
	Female	15	44	38	13	110
Total		33	71	66	30	200

It can be seen that there were more female respondents (110) in the sample than male (90) respondents. There was a greater number of respondents for both genders in the age group 26–35 and 36–45.

Of the females, the most populous age group was 26–35 (44 respondents), compared to 36–45 (28 respondents) of the males. It suggests that the population reflects the middle age financially active population more, which play more business and digital activities

**Gender \* Education Crosstabulation**

Count

		Education				Total
		Primary	High School	Intermediate	Graduate	
Gender	Male	19	39	16	16	90
	Female	37	39	20	14	110
Total		56	78	36	30	200

Based on the chart analysis show us that is more existing the university professional; even so 78 male and female respondents are showed on high school level. It was found that the females respondents are overrepresented in the primary education category and male respondents are slightly overrepresented in the graduate education group. This indicates the respondents’ differing educational levels may affect their digital literacy and adoption ability.

**Gender \* Digital\_Literacy\_Barrier Crosstabulation**

Count

		Digital_Literacy_Barrier		Total
		No	Yes	
Gender	Male	36	54	90
	Female	31	79	110
Total		67	133	200

The results show that both male and female users encountered digital literacy barriers but the number of female users was higher. 79 female users encountered digital literacy barriers whereas only 54 male users experienced these barriers.

This could imply that women are likely to encounter relatively more challenges in developing or using digital skills, maybe owing to variations of access to technology, training or social settings.

**Gender \* Language\_Barrier Crosstabulation**

Count

		Language_Barrier		Total
		No	Yes	
Gender	Male	55	35	90
	Female	58	52	110
Total		113	87	200

Shows that females are more likely to report encountering language barriers, with 35 male respondents reporting language barriers versus 52 female respondents. Although, the response rate regarding this condition was not high, this indicates that both language aspects in digital environment and internet communication could have a more robust impact on womanms responses.

**Gender \* Logistics\_Barrier Crosstabulation**

Count

		Logistics_Barrier		Total
		No	Yes	
Gender	Male	24	66	90
	Female	31	79	110
Total		55	145	200

The results indicate that logistics barriers were very common for both males and females. Most were affected by logistics.

Female respondents again identified a marginally higher number of logistics barriers than male respondents. This shows that issues such as delivery management, transportation, packaging and supply chain are prominent throughout the sample

#### **Gender \* Financial\_Barrier Crosstabulation**

Count

		Financial_Barrier		Total
		No	Yes	
Gender	Male	41	49	90
	Female	38	72	110
Total		79	121	200

Both men and women encountered financial barriers, however the problem seemed larger among women than among men. 72 women experienced financial barriers, whereas 49 men experienced financial barriers.

This evidence may indicate that women respondents have more pronounced financial restrictions associated with the implementation of technology, digital infrastructure, the expenses of online promotion or business investment.

#### **Gender \* Competition\_Barrier Crosstabulation**

Count

		Competition_Barrier		Total
		No	Yes	
Gender	Male	24	66	90
	Female	31	79	110
Total		55	145	200

The analysis of the data shows that, both male and female participants faced competition obstacles. Most of them faced severe competition in digital and e-commerce environments. Female respondents also had a higher number of barriers for competition again, though this was not a significant difference, with competition apparently being an issue for all respondents, male and female.

#### **Overall Interpretation**

On the whole, the crosstabulation analysis shows that female respondents recorded higher barriers across the majority of categories: Digital literacy, Language, Logistical, Financial, and Competition. This could imply that women are facing somewhat more obstacles in accessing and harnessing e-commerce and digital technologies. Simultaneously, the results also reveal that structural obstacles like logistics and competition exist regardless of gender in the digital marketplace environment. This analysis highlights the significance of a supportive framework of measures like digital-oriented training options, financial support schemes, access to user- and language-friendly digital platforms and an upgraded logistical infrastructure in order to motivate a full access participation of women in digital and E-commerce activities. A set of qualitative observations specified some gender issues (mainly affecting women artisans), such as transport limitations, restriction on availability of women in public space for training or internet use, as well as the "tremendous household work load which restricts their time to be spent on upgrading their digital skills" or better handling of online business. Neither specified in survey questions or measured proportionally, these were identified as critical issues through the interviews.

#### **9. Government Support and Policy Initiatives**

The government of India has acknowledged the large scope of development for the MSME sector (including traditional handicrafts) by multiple initiatives that promote its growth via digital empowerment. In this section we list important government schemes and policies to facilitate the adoption of technology and e-commerce by Chikankari MSMEs.

##### **9.1 Digital India Campaign**

Digital India 2015: targets the transformation of India into a digitally empowered society & knowledge economy. Its frameworks like 'digital infrastructure as a utility to every citizen, governance & services on demand' and "digital empowerment of citizens" are in line with facilitate optimum scope to MSME to further implement e-commerce in the country [26].

##### **9.2 MSME Digital Initiatives**

The Ministry of MSME has come out with several schemes to strengthen the digital capability of small businesses like:

- MS ME Samadhaan Portal: An internet site for monitoring of delayed payments, which indirectly spurs on digital financial transactions.
- MSME Champions Portal: A comprehensive Online portal for MSME sector. All schemes in one platform providing detail about the scheme, CMMSME portal and all other department like Tech upgradation, Marketing assistance.
- Credit Guarantee Scheme for Micro and Small Enterprises (CGTMSE): It is not a digital scheme directly, but can support, through finance, MSMEs to use the fund for digital infrastructure and skills.

##### **9.3 One District One Product (ODOP) Scheme**

The scheme called "One District One Product (ODOP)" seeks to identify focus products from each district that could be refined and branded. In the case of UP's capital, Lucknow, the focus product was Chikankari. In order to develop the product, significant efforts were made in the areas of quality, brand building and market linkage, especially through the Internet [15].

##### **9.4 Skill India Mission**

Skill India Mission plays a vital role in the bridging of digital divide among artisans. Skill India mission programs offer vocational training in various fields, including digital skills, to groom the workforce. (Chikan workers need skill development programs that focus on digital marketing, e-commerce management and online literacy of financial transactions [28].)

##### **9.5 Government-e-Market place (Ge M) Portal:**

Government e-Marketplace (GeM) is an online platform introduced by the Government of India for public procurement. It provides a venue for activities of selling of all types of products & services manufactured by MSMEs including handicraft industries directly to all government departments. The Mundar is an opportunity for up-scaling the MSMEs selling activities beyond individual customers to B2B interaction with government organizations resulting in fair pricing and transparent procurement [29].

##### **9.6 Effectiveness and Gaps**

As the above schemes illustrate there is a clear government focus on MSME digitisation but the bottom up level of implementation for traditional handicraft MSME's remains mixed. Studies show that although knowledge of some of the schemes isn't increasing, there isn't always usage or benefits to the schemes due to [30]:

- Lack of Awareness: Most of the small artisans, particularly those located in distant places, are still unaware of these schemes and their advantages.
- Difficult access to benefits under the government schemes as the process of availing schemes has become complex and can be availed only by those with digital skills.
- Implementation barriers: Deficiencies in distant-end delivery of instruction and assistance (especially in indigenous tongues) affect the usefulness of these projects.

Closing these gaps in access, outreach, and awareness by providing simplified access and services, culturally-relevant assistance, and localized interventions is paramount to optimizing government interventions.

#### **10. Findings and Discussion**

This section summarizes the key messages arrived at from the primary data analysis in the framework of existing academic literature and the needs of this research. It lays emphasis on the key findings concerning the role of technological adoption, its effect upon the growth of the business and on the factors that continue to inhibit the development of chikankaricrafts MSMEs in Lucknow city.

### 10.1 Key Findings

Based on the analysis presented in Sections 6, 7, and 8, several significant findings emerge:

High digital tool penetration for basic operations: 85% of Chikankari MSMEs use smartphones and 78% of MSMEs have internet facilities. WhatsApp Business (72%), UPI (80%) are widely used and there is ample access to digital payment mediums and use of digital tools.

- Effective: On average, e-commerce has resulted in large growth of sales (+140%) and customer base (400-900%) of the traditional businesses, from local to national and then global market. This illustrates the effectiveness of internet to support business upscaling and market reach expansion.
- Social media An important engagement tool: Chikan followers published that social media sites such as Instagram (55%) and facebook (48%) are mostly used for presenting the different Chikankari products on the social media, creating the branding and engaging the consumers directly with the products.;

A few noteworthy barriers to digital adoption such as lack of digital literacy (60%), logistics issues (68%) and cash constraints (65%) still exist. Moreover, lack of awareness and usage of advanced digital solutions such as inventory management (34%) and AI- based marketing tools (25%) hold the growth back.

- Gender-Specific issues: Qualitative data showed that women artisans faced gender -related issues of restricted mobility, social norms and unequal load of household chores which restrain the development of their digital skills and involvement in online business.

### 10.2 Discussion as compared with the literature

Overall, the results of this study support much of the literature on technology adoption amongst MSMEs and handicrafts, while also adding further evidence. The strong smart-phone and internet penetration fits within the larger narrative of digital inclusion within India, in line with the Digital India campaign [26]. The positive findings on the influence of e-commerce for remote market access echoes other research on the influence of online market access for rural entrepreneurs and small businesses [21] [22]. 'Chikankari' MSMEs are able to avoid intermediaries and sell directly to customers with the net result of improved profit margins, which is exactly what's been mentioned in the literature as benefits of e-commerce [14].

But the paper again confirms and supports some common problems faced by these sectors, as discussed by other authors. The absence of digital literacy and the limited availability of funds are common obstacles for MSSEs to adopt technology- despite the sector [16] [24]. Competitive pressure and the need to imitate others to be successful in online selling are echoed problems, related to the viability of traditional craft in the digital age [20]. Last but not least, the qualitative data on gender-specific problems bring new understanding to this sector, in general terms and with regard to the role of women in the informal economy.

Interestingly, the relatively low number of respondents that are aware of and using advances digital tools (such as AI based marketing, CRM tools etc.) point towards room for effort and implementation. The sector has already embraced some of the basic digital tools and begun the process of moving on to more advanced digital integration and tools, but this process is still in an early stage.

### 11. Suggestions and Recommendations

As discussed and results, the following suggestions and recommendations are offered to improve in the area of Tech adoption and promote sustainable growth of e-commerce that can be implemented in Chikankari handicraft MSMEs at Lucknow:

#### 11.1 Targeted Digital Literacy and Skill Development Programs

Given the generality of the current digital literacy gap, there is an even more urgent need for the initiation of artisan-dedicated digital literacy programs, which should:

- Practical skills: Proficiency in using Smart Phones for Business, Crawling e-commerce Platforms, Digital payments, Social media marketing and other skills related to the use of Smart Phones are required.
- Be delivered in local languages (e.g., Hindi and other dialects): Design training so that it can be easily understood by trainees through the use of local languages where possible and the choice of simple, effective language.
- Introduce gender sensitive methods: Create inclusive training times and locations or venues to ensure women artists are included, collaborate with childcare providers, and run home-based training courses.

#### 11.2 Government-Supported E-commerce Training and Facilitation

Government departments, together with industry associations and NGOs, should provide subsidized e-commerce training to:

- Platform-specific training: Help setting up stores, adding listings, managing orders and navigating analytics on the most popular platforms such as Flipkart, Amazon, Meesho or Etsy.
- Digital marketing basics: Training in how to write interesting product descriptions, high quality photos and non-intrusive advertising in social media.
- Mitigate legal and regulatory issues: Undersanding and knowledge about online business regulation, consumer protection laws and intellectual property rights, etc., for mitigating issues such as copying product images and copying product.

#### 11.3 Development of Local Language Digital Platforms and Support

It is therefore necessary to develop local language supported e-commerce platforms and other digital tools for internet sales. Local digital support centers or helplines employing local language fluent agents will further help to build trust among artisans.

#### 11.4 Subsidized Internet and Logistics Support

Overcoming current infrastructure shortcomings is critical. The government should look into providing subsidized internet access for handicraft MSMEs in rural and semi-urban areas. Also, collaborations with logistics companies to provide subsidized /specialized logistics services for handicrafts can ease some of the problems with shipping costs, delivery reliability and handling returns.

#### 11.5 AI-based Marketing Assistance and Technology Upgradation

In order to address the lack of implementation of more sophisticated digital tools, efforts need to be directed toward provision of Digitally-Enabled marketing support based on Artificial Intelligence for starting entrepreneurs and small businesses. This could include:

- Easy-to-use AI tools: Creating simple and intuitive AI tools that can be easily used by businesses for product recommendations, personalized marketing, and emerging trend prediction without advanced technical skills.
- Technology upgradation schemes:(Giving financial rebate/grant for MSMEs for purchasing -inventory management related software, CRM and other robotic/digital application based tools etc, for their business activities).

#### 11.6 Stronger Cybersecurity Awareness and Trust-Building Measures

To overcome the issues of lack of trust and concerns related to cyber security, it is necessary to launch a well informed campaign to make artisans aware of the safety practiced while selling online, recognizing online scam and safeguarding their business sensitive data from falling into wrong hands. Equally important, secure trust-building features like verified seller badges, prompt resolution of disputes, safe and secured payments to be established by e-commerce sites as well as government agencies to ensure trust of both sellers and buyers.

### 12. Conclusion

In this chapter, an intensive analysis of the adoption of technology and growth of e-commerce activities among traditional Chikankari handicraft MSMEs in Lucknow was discussed. The evidence from the research revealed the immense potential of the digital technologies in transforming the traditional sector, along with the existing hurdles which need to be addressed with corrective measures. Technology in the shape of the smartphones/internet payments/online portals has been an extremely important growth opportunity for Chikankari MSMEs. It has allowed the artisans/institutions to overcome the physical barriers of industry, open to a larger market and boost their volume of sales on an immense scale. In particular, online portals have been an invaluable in terms of the surviving and expanding in a competitive global environment. Nevertheless, there are still a number of challenges for a comprehensive digital inclusion. The research also revealed important constraints such as the low level of digital literacy, language barriers, fierce market competition, copycat products, logistical bottlenecks as well as financial constraints. Conversely, challenges faced by women artisans are gender-related thus calling for gender-sensitive digital empowerment.

The way forward, therefore, is inclusive digital transformation for traditional sectors such as Chikankari. This will have to be tackled through a combination of measures such as customized digital literacy programs, government aided e-commerce training, creating local language based digital platforms, and better infrastructure for internet and logistics. By overcoming the digital challenge one can ensure an inclusive digital economy for all and empower India's artists and traditional industry.

**Future Scope of Research:** Future work can be more exhaustive in terms of researching on the sustainability of the e-commerce models on a long term basis with respect to traditional handicrafts, studying the effectiveness of any one or few specific government interventions, a comparative study across the different handicraft clusters in India, etc. Further qualitative research can be done to identify the effects and impact of digital revolution on artisans - especially women, from socio-cultural perspective.

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