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# A STUDY ON USAGE OF ICT TOOLS IN MANUFACTURING, SELLING AND DIGITIZATION OF KHADI PRODUCTS IN INDIA

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**Abstract:**

*In India digitization has emerged as a transformative force across industries, including traditional sectors like Khadi. Khadi (also known as khaddar) is one of the vital segments of the Indian textiles sector. Khadi is a hand-woven natural fibre cloth. Khadi, a symbol of India's self-reliance and heritage, has faced challenges in keeping pace with modern technological advancements. By integrating computers and digital ICT tools in manufacturing, production, and selling processes, the Khadi industry has the potential to enhance productivity, ensure quality, and expand market access. Information and Communication Technology (ICT) tools present opportunities to enhance the efficiency, quality, and market reach of Khadi products into global market.*

*This study investigates the adoption and impact of ICT tools in the manufacturing and selling processes of Khadi products in India. The role of digitization in the Khadi sector, focusing on its benefits, challenges and future potential. Research also examines how ICT influences productivity, market expansion, and the sustainability of the Khadi industry.*

**Keywords:** *Computer, ICT, Software, CAD, Design, Manufacturing, Digital marketing.*

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## Introduction:

Khadi, the hand-spun and hand-woven fabric, is a cornerstone of India's cultural and economic history. Despite its significance, the Khadi industry has often lagged behind in adopting modern technology. However, it faces challenges in competing with modern textiles due to inefficiencies and limited market reach. ICT tools, including software, e-commerce platforms, and digital marketing techniques, have revolutionized various industries, providing new avenues for growth and development. Digitization, powered by computers and associated technologies, offers solutions to such challenges.

Information and Communication Technology (ICT) is now playing important role. ICT simply makes desirable ends like sustainability, higher quality, faster construction, lower cost and making competitiveness more attainable. In modern design and manufacturing, ICT is a useful support tool because it can make design and manufacturing more robust, effective and efficient by using computer-based systems.

This paper explores how the Khadi sector can leverage digital ICT tools to modernize Khadi's manufacturing, production, selling and digitization processes to improve operational efficiency and access broader markets while preserving its artisanal essence.

**Objectives of the Study:**

1. To analyze the current state of ICT and level of digitization adoption in the Khadi sector.
2. To identify the benefits of using ICT tools in the manufacturing, selling and digitization of Khadi products.
3. To propose strategies for enhancing the role of ICT in the Khadi industry.

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4. To evaluate challenges in adopting digital solutions and propose recommendations for overcoming by stakeholders in integrating ICT tools.

**ICT Tools:**

ICT means Information Communication Technology. A good way to think about ICT is to consider all the uses of digital technologies that are already in existence to help individuals, business and organizations. ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form for example, personal computers, digital televisions, emails, robots etc.

ICT is concerned with the storage, retrieval, manipulation or transmission of digital data. More so, it is also concerned with the way these different uses can be linked. According to Orlikowski and Iacono (2001), Information Technology (IT) is a tool intended to generate value, whether productivity enhancement, cost reduction, competitive advantage and improved supplier relationships.

**Key features of ICT Tools:**

The key features of information and communication technology are speed and capacity. This help in the assessment of a vast wealth of information speedily from anywhere in the world using search engines. There is also greater capacity to store and process data including text, sounds and images with computers.

**Literature Review:**

Previous studies on ICT adoption in small-scale industries highlight its potential to increase productivity and market outreach. Research on traditional industries, such as handloom and handicrafts, reveals that technology can bridge gaps between producers and consumers in textile industries. In this digital age digitization has been a game-changer in industries like agriculture, textiles, and handicrafts. Studies on digital interventions in small and medium enterprises highlight improved efficiency and global outreach. Research on handloom and cottage industries indicates that *Computer-Aided Design (CAD), inventory management systems, and E-Commerce (Electronic Commerce)* platforms can significantly benefit traditional industries. However, limited studies focus specifically on the Khadi sector, emphasizing the need for focused research in this area.

**Advantages of ICT Tools:**

ICT tools facilitate the process of manufacturing, dispatching and increased productivity. It speeds up the process of analyzing the demand and supply. Helps in human resource management, reduces cost and procurement time. Expanding your business opportunities, added value versus competition, access to information and analysis capacity. Being a step into global trade, it helps in information sharing, enables data mining and data warehousing. Finally, ICT tools enable colours to be matched to the design, dyes weighed and dispensed and the fabric printed automatically.

ICT enables companies to transmit information between plants and manufacture on a global scale. ICT enables designs to be sent electronically to the print manufacturer and stored on computer to ease repeat printing order. It facilitates the just - in - time ordering of materials and components so they arrive at the factory as they are need i.e. just - in - time for production to start. ICT helps in Cutting - Using computerized cutting table. ICT aids Costing, purchasing, accounts: *MS-Word, MS-Excel and MS-PowerPoint*.

- ✓ **Bridging the culture clash:** More access to technology has made it possible for individuals of different cultures to speak with one another and exchange ideas, increasing awareness and decreasing prejudice.
- ✓ **Communication:** Time and money can be saved since information can be transferred much more quickly. It is now speedier and more effective.

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- ✓ **Complicated structure:** Trainers can explain the complex system and lesson and ensure candidates understand it.
- ✓ **Cost-effectiveness:** Sending an e-mail seems free, even when it isn't, and it is unquestionably less expensive than making a phone call. ICT has also aided in the automation of commercial procedures, reorganizing firms to make them incredibly efficient.
- ✓ **Creation of new employment:** The emergence of new, fascinating occupations has been the most significant benefit of ICT.
- ✓ **Education:** Computers, their programming, and the Internet have made it possible to educate people in ways that were impossible for earlier generations.
- ✓ **Globalization:** Video conferencing reduces travel and lodging costs. ICT has enabled the world economy to become a single interconnected system that allows one to contact a business or family member and bring nations and people closer together.
- ✓ **Greater accessibility:** ICT has enabled businesses to be automated, providing customers access to a site or voicemail seven days a week.
- ✓ **GUI Enhance Learning:** Images may be employed in education to enhance long- term memory and storage using ICT.
- ✓ **Make Things Easier:** Developers may design interactive forms, classrooms using ICT, which makes the lesson more fun to learn.

**Disadvantages of ICT Tools:**

With ICT, several confidential data are at risk of getting shared with the public includes High Initial Costs, Technical Complexity, Limited Access to Infrastructure, Digital Divide, Dependency on External Support, Data Security and Privacy Concerns, Risks of Technology Obsolescence, Resistance to Change, Unreliable Connectivity, Weather- Dependent Limitations and Economic Viability. Unemployment also increases with more automation and usage of technology. Some individuals also face cyber bullying. People get used to ICT and related devices and increase their dependency on them. More engagement with electronic gadgets and the ICT process makes people less physically active, adversely affecting their health in the long run. A high set-up cost is required for setting up the ICT ecosystem. People need personal touch and physical governance for proper governance, but with ICT inclusion, this factor is missing. A large population of India is still illiterate, so it is very difficult for anyone to make them understand the usage of ICT.

- ✓ **Cultures were becoming dominant**: Although ICT could have made the globe more interconnected, it has also led to one society absorbing a weaker one. For instance, it is currently said that digital age teens have an influence on how the majority of young teenagers throughout the world today act, dress, and behave.
- ✓ **Dependency on Technology:** Professor Ian Robertson, a neuropsychology specialist at Trinity College Dublin who conducted the study, said: "People have a lot to remember nowadays, and they're dependent on technology for the memories, but the less you use of your memory, the weaker it becomes. Because they utilize a spell- checker or a calculator to complete simple addition or subtraction, many don't bother learning."
- ✓ **Expensive:** Too expensive to be able to afford.
- ✓ **Information Reliability:** Just because something is online doesn't guarantee it is dependable. Anybody with computer and internet access can create a blog or post something on a website. The open-source encyclopedia Wikipedia is an excellent illustration of this because, although being a good source of knowledge, academic institutions do not accept it as a reliable source of references.

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- ✓ **Lack of work security:** Because technology is constantly evolving, experts in various industries think that ICT has created job security a major problem. If people want to feel comfortable in their work, they must continually learn new things or be aware of developments in their field.
- ✓ **Need Separate Training:** Lack of experience makes it challenging for instructors to utilize ICT technologies.
- ✓ **Privacy:** Information technology may have boosted, simplified, and improved communication, but it has also given rise to privacy concerns. People are increasingly concerned that their formerly private information may become public knowledge due to mobile phone signal interceptions and e-mail hacking. Apart from these issues, Computer worms, Trojan horses, malware, spam, and phishing are a few of the various threats that may ruin our daily lives.

**Findings:**

1. **ICT Adoption in Manufacturing, Marketing and Sales:**
   - Automated spinning and weaving machines, though not widely adopted, have shown improved productivity and consistency. Computer-aided design (CAD) tools are being used to create innovative patterns while retaining traditional aesthetics.
   - Quality control software ensures uniformity in products. Use of inventory management software is minimal, leading to inefficiencies.
2. **Digitization in Manufacturing, Marketing and Sales:**
   - Digital payment systems and inventory management tools have streamlined operations for retailers.
   - E-commerce platforms have enabled small-scale Khadi producers to reach global markets. Social media and targeted advertising have enhanced brand visibility, particularly among urban and younger consumers.
3. **Challenges:**
   - High initial investment costs for digital infrastructure associated with ICT Tools. Inconsistent internet connectivity in rural areas.
   - Limited digital literacy among artisans. Resistance to change due to fear of losing traditional craftsmanship of cultural and operational inertia

The integration of digital tools in Khadi manufacturing, production, selling and digitization has shown promising results. CAD and automated production tools enhance efficiency without compromising artisanal quality. Digital platforms bridge the gap between producers and consumers, eliminating intermediaries and ensuring fair pricing. Digital platforms can connect artisans directly with consumers, reducing dependency on intermediaries. Inventory management and quality control software can streamline manufacturing processes, ensuring consistency and scalability. However, widespread adoption requires overcoming financial, educational, and infrastructural barriers includes:

1. **Skill Development (Capacity Building):**
   - Conduct training programs to improve digital literacy among artisans and stakeholders.
   - Introduce computer-aided design (CAD) training workshops to help artisans innovate.
2. **Infrastructure and Subsidies Support:**
   - Provide financial support for ICT tool adoption through government schemes and partnerships.
   - Improve rural internet connectivity to facilitate e-commerce and online marketing.
3. **Policy and Collaboration:**
   - Formulate government policies promoting digitization in traditional industries.

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- Encourage partnerships between tech firms and Khadi institutions for customized solutions.

4. **Awareness Campaigns:**
   - Highlight success stories of digitization in Khadi to motivate hesitant stakeholders.
   - Use social media and online platforms to showcase the cultural and sustainable aspects of Khadi.

**Future of Khadi industry:**

The integration of ICT tools in the Khadi industry can rejuvenate this traditional sector, ensuring its relevance in the modern marketplace. By addressing existing challenges and leveraging technological advancements, the Khadi industry can achieve sustainable growth, benefiting artisans and preserving India's cultural heritage.

Digitization with the help of computers has the potential to revolutionize the Khadi sector, enhancing its competitiveness in a global market while preserving its cultural significance. By addressing existing challenges and fostering collaboration among stakeholders, the Khadi industry can achieve sustainable growth and continue to support rural livelihoods.

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