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APPLICATION OF E-COMMERCE IN THE CHINESE TEXTILE INDUSTRY

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ABSTRACT

E-Commerce, defined as online trading of goods and services through electronic means, has broadened the scope of business transactions and modified the entire language of doing business by allowing the formation, modification, and even redefinition of the interface between organizations and between individuals, and enabling a new way to create value. Two prominent examples This paper discusses the Chinese textile industry's e-commerce advancement in the last decade, which greatly influenced the industry on a global scale. While at the same time, the most important factor of change came from the prevailing global trend of e-commerce. This specific focus on the Chinese context allows for a more detailed analysis of e-commerce applications which are increasingly reshaping the supply chain of the textile industry. Although e-commerce channels seem to have long-term benefits for cost reduction and for entering new markets zones, they also cause problems such as conflicts in distribution members of the channel and investments in digital transformation. Furthermore, it helps shed light on how e-commerce in the Chinese textiles industry is developing amid changing global trends. Considering the case of e-commerce's effects and creative application on the Chinese textile industry this research seeks to find out ways in which digital platform can be utilized for competitive advantages, more so, in responding to specific demands of the market while simultaneously aiding in the further globalization of the textile value chain. This study intends to assist target groups in understanding the changing paradigms of the digital economy and make use of the new possibilities in the industry.

KeyWords

E-commerce, Chinese textile industry, Digital transformation, Textile supply chain, Online business platforms, Global marketing opportunities, Digital economy, Textile and apparel globalization.

1. Introduction

The Chinese textile market is one of the most important industries and markets in the world as it represents more than 40% of the global textile and clothing production and trade market. As of 2022, the total export volume of the Chinese garment and textile industry was around USD 315 billion, reinforcing the country's supremacy in the sector [1]. Such a dominance can be attributed to its strong infrastructure, a large pool of available labor, and proactive government policies [2]. Yet the sector is under increasing pressures arising from rising labor costs, the need to be environmentally friendly, and competition from developing nations such as Bangladesh, India and Vietnam [3]. In turn, a slew of businesses has turned to e-commerce technologies so as to deal with the challenges and maintain their edge in international markets.

E-commerce encompasses the processes of doing business transactions through electronic communications and digital technologies, and it revolutionized conventional industries around the world. In China, the surge in E-commerce is outstanding due to the large-scale penetration of mobile internet, national policies and the growing middle class as consumers [4]. Major outlets such as Tmall from Alibaba, JD.com and Pinduoduo, helped businesses reach and interact with customers and to operate and grow internationally [5]. The impact of e-commerce on the textile industry is huge as it enhances the market presence, allows for better management of the supply chain and optimally meets the dynamic market needs [6].

Global e-commerce has caused drastic change in the operations of China's textile industry. It has opened the door for companies to

transform their logistics and supply chains, increase efficiency, and serve the international market. Given that the competition in the market is very strong, so it is important for every business monitor trends within the industry and well as changes that occur from time to time, ecommerce gives this opportunity through the provision of data analytics tools [7]. This transition is nothing like the older methods and only goes to show how eCommerce can augment an industry's revolution and its economy at large. However, the Chinese textile industry is not without the challenges, as it currently has the largest share in the global arena. Severe competition from countries with cheap labour has been blamed for shrinking profit margins as a result of globalization [3]. Small and medium sized businesses (SMEs) are particularly hard pressed as traditional supply chains are associated with a host of challenges such as inefficiencies, high costs of operations and delays in delivery leading to poor scale of operations [8]. There is an increasing pressure on the industry from consumers and regulations to go green as eco-sustainability becomes the new normal this would require the industry incurring huge cost on green technologies [9]. Many SMEs are unable to leverage digital tools effectively and this has created a digital gap which confines their business operations in the e-commerce marketplace [10]. It is imperative to overcome these hurdles in order to enhance the prospects of sustainability and development of the textile sector in the coming times.

This paper seeks to investigate the role of e commerce in the Chinese textile industry, particularly looking at the efficiency, profitability, and competitiveness aspects. The objectives of the study include:

1.   E-commerce platforms streamline supply chain management and boost operational efficiency in the textile industry.
2.   Studying the use of e commerce integration for business expansion and market penetration.
3.   Determining the challenges which hinders the utilization of e commerce, particularly in Small and Medium Enterprises.
4.   Formulating strategies for different actors aimed at improving the utilization of e commerce in the textile industry.

This study focuses on the Chinese textile sector and how it interacts with its major e commerce platforms such as Alibaba, JD.com and Pinduoduo. The analysis covers both big corporations and small and medium enterprises demonstrating the variances of e commerce usage across different operating scales. The study further explores the use of e commerce in specific supply chains, in the increase in market scope, and in active relation with clients. Consequently, this particular study on China enriches knowledge on the dynamics of e commerce within the context of one of the biggest textile economies.

The organization of the rest of the paper is as follows. Section 3 provides an overview of previous studies on e-commerce diffusion in the textile sector and highlights the gaps that exist in knowledge and future studies. In section 4, the research design is explained with emphasis on data collection and analysis techniques used. Section 5 explains the results and consequences of e-commerce adoption in China's textile industry in terms of advantages and disadvantages associated with its use. At last, Section 6 summarizes the main findings and offers suggestions for measures that can be taken by stakeholders and offers insights into recommendations for future research activities.

3. Literature Review

Through the internet, goods, services, data, and money can be bought and sold; this is described as e-commerce. Such includes many forms such as Business to Customer (B2C), Consumer to Business (C2B), Business to Business (B2B), and Consumer to Consumer (C2C) transactions [11]. Over the years, e-commerce has been seen as the quickest on course causing transformation in how people do business globally since the past two decades [12]. It can be viewed as removing the constraints imposed by distance, creating low-cost alternatives to solutions and giving access to decision making by providing last data [13]. With the rising number of mobile phones as well as access to the internet, e-commerce has been on the rise making it an essential part of modern business [14].

In 2022, the business volume of e-commerce in China accounted for more than 50% of the global market, this makes China the most developed e-commerce market worldwide. The fast pace of expansion of e-commerce in China is attributed to the government's policies, growing technologies and the modern customers. The government measures such as the Digital Silk Road within the framework of the Belt and Road Initiative (BRI) and tax breaks to e-commerce entrepreneurs have been most favorable for the sector's development. Currently, China e-commerce sector is dominated by the key players which include Alibaba, JD.com, Pinduoduo which utilizes artificial intelligence (AI), big data and cloud-computing among others in satisfying their clients' needs. These platforms also include Alibaba Tmall incorporates millions of businesses with potential consumers creating a footprint in marketing, sales, and logistics management. With the help of these platforms, consumers have bridged the gap between accessing a variety of goods at reasonable prices and the retailers growing their market presence while cutting back on inefficient parts of their business processes.

E-commerce has had a colossal effect upon traditional industries such as manufacturing, agriculture, and retail by fully digitizing supply chains, diminishing the middlemen and enhancing market reachability [21]. For example, in the case of agriculture, the farmers get direct access to the e-commerce platforms without the need for traditional distribution methods which allow them to get fair prices [22]. In all sectors, there are newly emerged trends, in manufacturing too e-commerce drives JIT and demand forecasting thus reducing wastes [23]. However, introduction of e-commerce also brings new challenges such as modifying legacy systems, addressing cybersecurity threats concerns and meeting the estimations of costs for the digital economy transformation [24]. For industries like textiles, where production and supply chains are complicated, e-commerce provides a way out for inefficiencies while providing new opportunities for customer interaction and international trade [25].

The chinese textile sector although being amongst the countries that excel in the global textile industry, still has a lot of challenges

that it needs to address. The increase in the cost of employment has led to a decrease in the cost benefit for the nations and thus many companies have started searching for alternatives such as automation [26]. The international market regulations together with the rise in demand for green clothing pushes the boundaries for eco-friendly solutions to be implemented into the business model which would then require heavy investments [27]. Alongside that the industry also suffers from the problems of logistic inefficiencies, fragmented supply chains among many more and these issues make it extremely difficult for the industry to reach its potential [28]. A large section of the apparel industry comprises of Small and medium sized enterprises (SMEs) and these organizations are unable to keep up with rapid technological advancements and this further deepens the issues for them in an already cut throat market [29]. This coming together of problems urges the demand for new and unique strategies such as the implementation of e-commerce in order to maintain the growth of the industry.

Online marketplaces, digitization of the supply chain, and models of selling goods directly to consumers are some of the e-commerce applications in the textile industry. Alibaba's 1688.com and JD.com offers businesses the features of inventory control, demand prediction, and international shipping which helps to improve the overall efficiency and scale of the business [29]. Studies claim that the use of e-commerce in the textile supply chain can achieve lead-time reductions of 30% or greater while also improving order accuracy [30]. In addition, there is a growing trend to utilize AI and Blockchain technologies in order to assist in demand forecasting and improving supply chain transparency [31]. Still, there are a lot of unanswered questions, especially regarding the influence that e-commerce will have for sustainability with focus on the adoption of e-commerce by SMEs [32]. More work needs to be done with regard to understanding the impact of e-commerce in the textile industry especially in economies that are resource deficient and lowly digitally competent.

4. Research Methods

The research methodology employed within this thesis is crafted in such a way so as to give a complete picture of the extent of e-commerce incorporation in China's textile sector. As it is shown in the figure, the process is diagrammed into three major aspects which are data collection, analytical framework and study scope.

Data Collection forms the foundation of this study, employing both primary and secondary data sources for a comprehensive approach to the topic. Surveys and interviews conducted with stakeholders in the sector e.g. textile manufacturers, e-commerce platform operators, and logistics providers assisted in the collection of primary data. These interactions took place in the major textile hubs of Jiangsu, Zhejiang, Guangdong, and Hebei provinces. The surveys collected quantitative metrics such as revenue growth, order proportions, and increase in the amount of e-commerce users, while operational interactions provided qualitative information concerning the difficulties and strategies of organizations. On the other hand, secondary data was sourced from Industry reports, quantitative surveys, and government data available from the Ministry of Industry and Information Technology (MIIT), analytical literature on the China Textile Industry Federation (CNTAC), quantitative analyses done on major advertising platforms such as Alibaba, JD.com and Pinduoduo. Further, global datasets from Statista, UN Comtrade and World Bank were also employed towards evaluating market scope and placing the results in relation to the international e-commerce market.
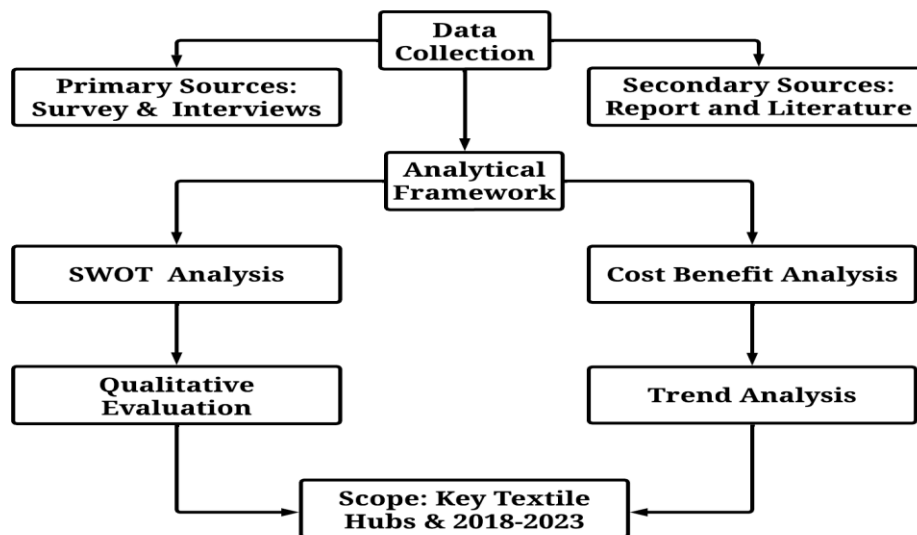

Fig.1. Research Methodology Framework for Analyzing E-Commerce in the Chinese Textile Industry

The research methodology in this casecase examines the applications of e-commerce in the implementation of various functions. First, a SWOT analysis was carried out to determine the potential strengths, weaknesses, opportunities and threats posed by the adoption of e-commerce. This analysis pointed out such advantages as increased ability to penetrate global markets and such problems as risk of cyber-attack and increased competition. Second, a cost-benefit analysis was used to estimate the costs and the benefits in the economy

of using e-commerce, incorporating elements such as the costs of acquisition of e-resources, changes in workforce structure and training, and expected increase in revenue and supply chain efficiency. Third, a qualitative evaluation was done based on interviews and case studies to find out how the SMEs perceived the barriers to adoption and the success enablers in such adoption. Lastly, trend analysis was conducted during the period from the year 2023 to the year 2023 using the available data to reveal trends in the growth of e-commerce usage and the revenue generation over the years. This analysis gave useful perspectives of a shift in the e-commerce environment within this timeframe.

The textile producing areas of Jiangs, Jiangsu, Zhongshan, Hebei, and Guangdong Provinces First focuses in region of the Study Scope. These regions are famous in the textile industry since they feature some traditional manufacturing centers, and enterprises with e-commerce capability. For now, the study period considers the years from 2018 to 2023, which is a time period where rapid digital transformation scales over COVID 19 global pandemic, which increased the pace of insurance of e-commerce around different global spheres. This focus captures the period of growth e-commerce before the COVID-19 outbreak, the increase in e-consumption during COVID-19, and post-pandemic consolidation of digital consumption practices.

This Methodology is best summarised by figure 1. It shows the logical succession from gathering information through data collection all the way to analysis and scoping A combination of quantitative and qualitative methods are also incorporated in the research making it useful in evaluating the impact of e-commerce development on the Chinese textile industry. Setting out these guidelines advance the robustness and relevance of the findings for industry practitioners and policymakers.

5. Results and Discussion

The findings of this research exemplify a dramatic change and progress existing in China's e-commerce scene especially in the clothing market and the B2B aspects. The accomplishments in this regard are corroborated by a number of graphs that give an outline of some of the key patterns as well as projections.

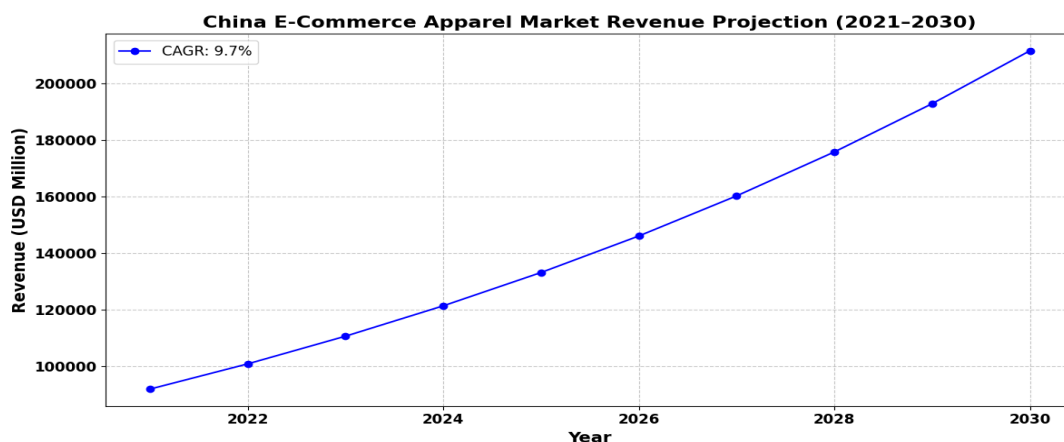### 5.1 Increase in the Chinese E-Commerce Apparel Market

Fig.2. China E-Commerce Apparel Market Revenue Growth Projection (2021–2030)

The figure 2 illustrate the impressive growth of the China e-commerce apparel market starting from earnings of $91960.4 million in 2021 to a prediction of USD 211,967.7 million by the year 2030, with a compound annual growth rate of 9.7%. This increase reflects the growing importance of e-commerce portals such as Alibaba and JD.com in generating sales and attracting consumers. The e-commerce industry, especially the women's wear segment which is ranked as the largest category and also the fastest growing piece of various segments attests to strong consumer appetite and the assortments available in the online sphere. More importantly, enhanced automation of various logistics processes and AI marketing technologies have also aided to this expansion. All these developments point to the remarkable and holistic changes which e-commerce is bringing to bear in the apparel market as well as cementing China's position as the leader of the global digital retailing space.

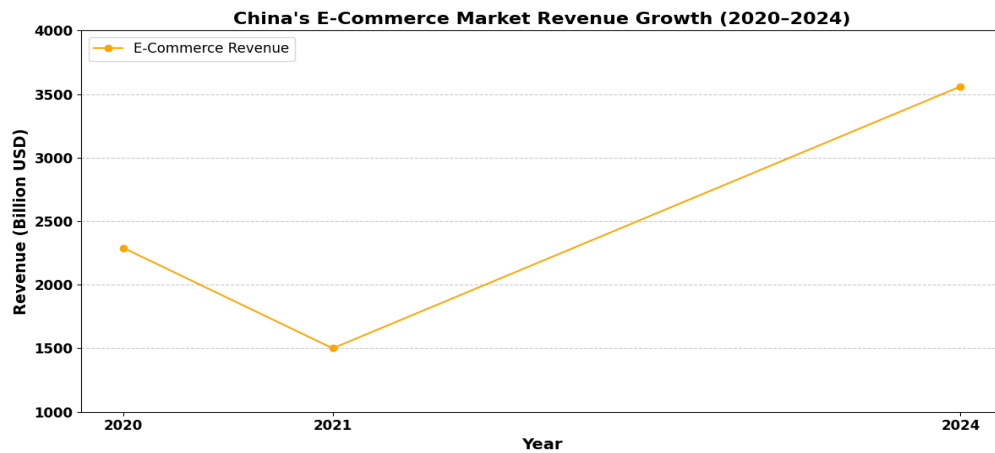### 5.2 Growth of the E-commerce in Overall China's Economy

Fig.3. China's E-Commerce Market Revenue Growth (2020–2024)

As shown in figure 3, there was a rapid increment in the Chinese e-commerce' market revenue from 2020 to 2024. In 2020, the market was USD 2.29 trillion and then in 2021 it reached USD 1.5 trillion while 2024 is predicted to be USD 3.56 trillion. This trend serves to underscore China as the world's largest e-commerce market accounting for almost one half of the total e-commerce like international trade. The statistics is anticipated to increase because of factors that include increased digitalization, an increased number of online shoppers which was 710 million in 2020, and the presence of the largest markets like Tmall by Alibaba, JD.com and Pinduoduo. In addition to this, new modes of cross border e-commerce and important shopping days for customers like Singles Day helped accelerate this amazing trajectory. This highlights the impact of digital commerce on the Chinese economy and the country's capacity to set the pace of evolution of e-commerce worldwide.

5.3 Stages of Digital Transformation in B2B E-Commerce
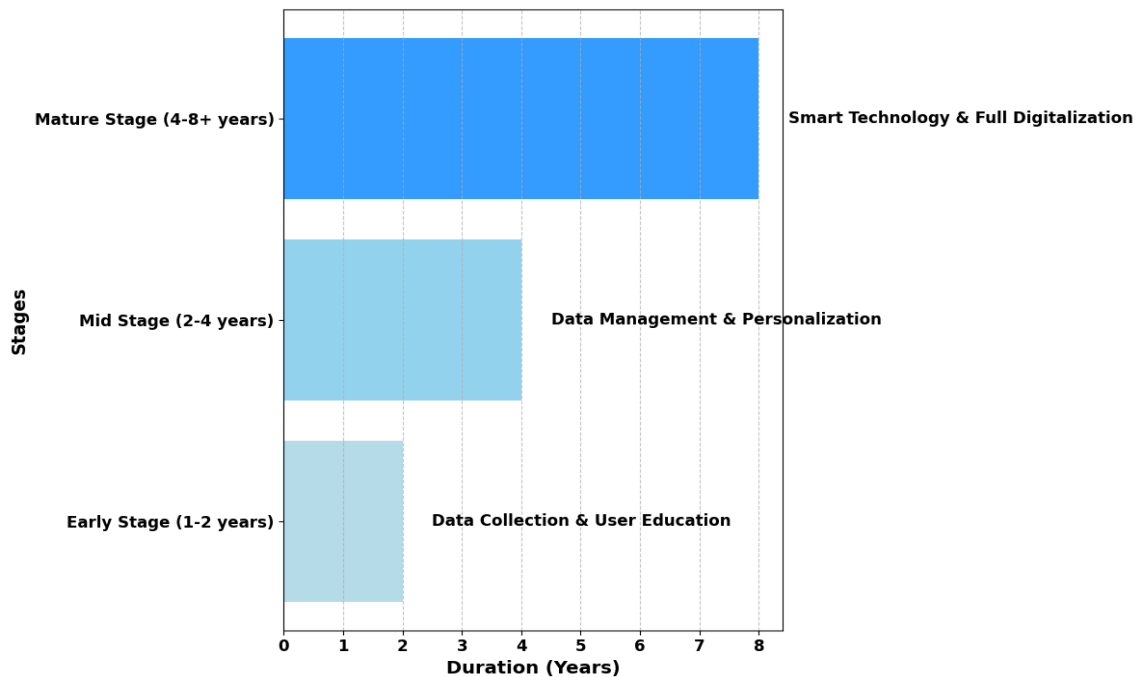

Fig.4. Digital Transformation Stages in China's B2B E-Commerce Sector

As shown in Figure 4, in China's B2B e-commerce sector, a digital transformation occurs in three phases. The Early Stage (1-2 years) focuses on data capturing and users' schooling in order to create conditions for digital adoption. The Mid Stage (2-4 years) focuses on data aggregation and provides users with a personalized experience that aims to improve the customers' experience. Last but not the least, the Mature Stage (4 to 8+ years) focuses on the adoption of smart technologies and complete internalization which increases efficiency and induces the adoption of new business models. More so, these stages prove that the transformation of processes through

Digital technologies in the B2B sector is incremental and does have a strong effect.

5.4 Usage of Key B2B Trends

Ranking the importance of B2B trends in the ecommerce landscape in China, Figure 5 presents the findings. Digital self-service emerges at the top with the highest adoption rate 90% – followed by Remote interactions (85%) and online procurement (83%). Adoption of other trends including the use of mobile phones as primary shopping devices (80%) and smart logistics networks (75%) have also been encouraging. This data depicts the eagerness in the pace of change and innovation in Chinese B2B environments forced by technology adoption and client leaning changes.
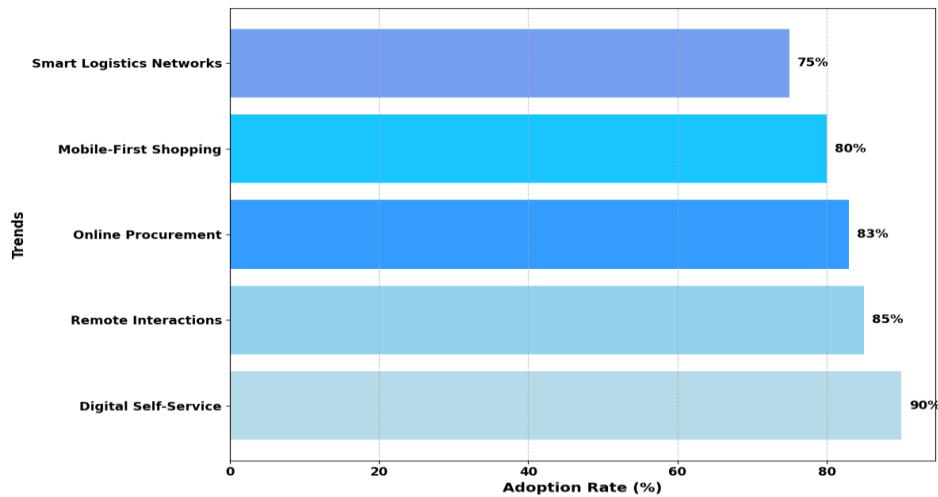

Fig.5.Adoption Rates of Key B2B Trends in China's E-Commerce Sector

5.6 Demand for E-Commerce Job Roles in China

In China, demand for the workforce with requisite e-commerce skills as depicted in Figure 6 is uneven with virtually no competition amongst foreigners. The peak level is held by Marketing and Branding Experts30%, Data Analysts 25%, and Product Managers 20% second and third position respectively. Customer Support Managers15% and Logistics and Supply Chain Managers10% also provide fair level of opportunities. This data indicates the number of professions that one can pursue while working in China, which as already noted, is a very dynamic e-commerce market.

The results confirm that China has actively entered the global e-commerce market focusing on the supportive factors of growth such as B2C and B2B market expansion, digitalization and innovation. The forthcoming tendencies and development of created job positions outline the financial and scientific-technical development of the world's digital trading superpower; China.
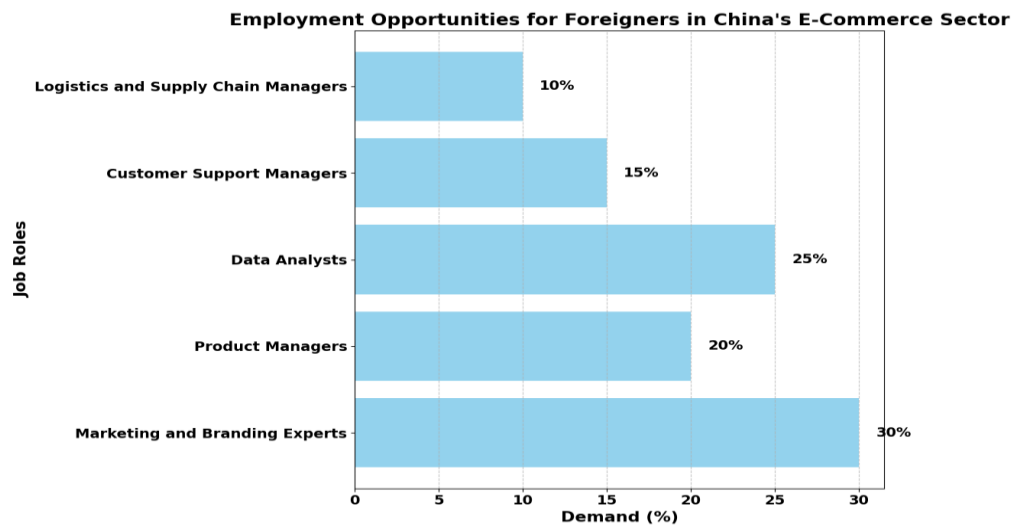

Fig.6.Demand for E-Commerce Job Roles for Foreigners in China

6. Case Studies

The bar chart Fig.7 shows that in Gaoyang County, a total of 254.84 million parcels were sent in 2023 which is equal to 51.12% increase as compared to the previous year marking a growth in the e-commerce logistics of Gaoyang County. For the same duration in 2024, starting from the first seven months, 190 million packages were delivered marking a 43.39 % increase against the same range last year.

Gaoyang County's growth can be attributed to the strengthening of e-commerce brought about by the county's textile industry, logistics, and the growing of strategies like livestream sales and cross-border sales. The increasing number of parcels sent only further goes to show how effective Gaoyang has been in merging e-commerce with its manufacturing base.
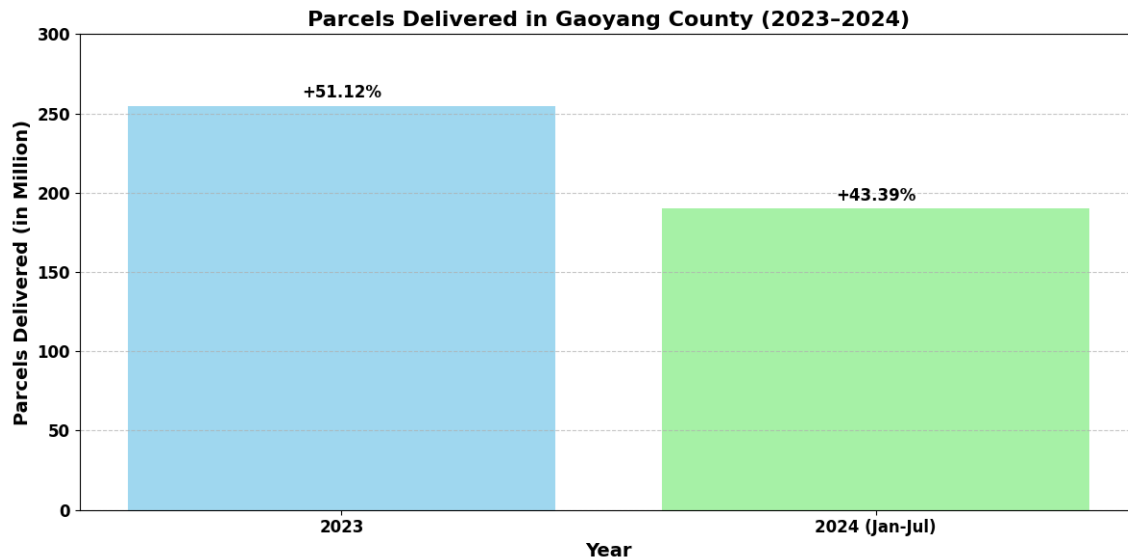

Fig.7. Parcels Delivered in Gaoyang Growth in E-Commerce Logistics (2023–2024)

7. Conclusion and Recommendations

The paper elaborates on the prospective development of e-commerce in China over the coming years, with the most manifest shift being in apparel and the last mile logistics that is more AI driven and automated. Textiles companies should take advantage of these innovations by incorporating big data, exploiting market inefficiencies in cross-border global trade and collaborating with strong ecommerce allies. This is an area which as a country both government and the private sector must indeed focus on to leverage this growth by providing adequate funding on e-commerce digitalization, simplifying the trade policies and skilling the market. Use looking done by this paper it could be possible to research implications of artificial intelligence, blockchain and other up-and-coming technologies within the framework of e-commerce in textiles and investigate the behavioral patterns of consumers as well as biodegradable aspects in the given market.

Acknowledgment

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