Analyzing Changes in Traditional Industries: Challenges and Opportunities in the E-commerce Era

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Abstract

Technological progress has rapidly revolutionized the global business sphere, with e-commerce emerging as a pivotal force in transforming traditional industries. This study undertakes a detailed bibliometric examination utilizing VOSviewer software to delve into the ramifications of e-commerce on conventional sectors and its role in global economic metamorphosis. Through identifying predominant keywords, notable publications, and collaborative research networks, the analysis underscores primary research trajectories. Notably, technology, innovation, education, knowledge, and investment emerge as pillars in navigating digital evolution. Furthermore, burgeoning areas like digital commerce, the circular economy, and blockchain present prospects for extended research. This study enhances our comprehension of the intricate shift traditional sectors undergo amidst the e-commerce surge. These insights bear significance for policymakers, entrepreneurs, and scholars, shedding light on potential hurdles and exploitable avenues amid digital upheaval. Consequently, this paper serves as a rich resource for those keen on grasping and maneuvering the intricacies of digital transformation within established industrial landscapes.

Keywords: e-commerce, digital transformation, traditional industries.

1. Introduction

Digital disruption, fueled by rapid advances in technology, has revolutionized the global business landscape over the past few decades. One of the most significant drivers of this transformation is the rise of e-commerce, which has reshaped traditional industries and ushered in an era of economic transformation. E-commerce refers to the buying and selling of goods and services over the internet, and its widespread adoption has had far-reaching effects across various sectors, challenging established business models and practices[1][2][3].

The impact of e-commerce on traditional industries has been significant, leading to a paradigm shift in the way businesses operate and consumers shop[4][5][6][7]. E-commerce has disrupted traditional industries by offering innovative solutions, lower costs, and increased convenience for consumers. In the makeup, food, and agriculture industries, the rise of e-commerce has led to high levels of online transactions, with consumers increasingly choosing online purchases over conventional shopping methods. This shift has also been
observed in the retail sector in India, where e-commerce has gained a competitive advantage over traditional retail, resulting in lower turnover and profit margins for physical stores.

The mail order industry, once a disruptor of retail businesses, has also been impacted by the rise of e-commerce. Traditional mail order companies have struggled to adapt to the rapid changes brought by e-commerce, with newcomers like Amazon changing the industry. E-commerce is not only disrupting traditional industries but also creating new opportunities for innovation and growth. For example, the “Internet +” action plan proposed by Premier Li Keqiang in China includes “e-commerce + traditional industry,” “e-commerce + finance,” “e-commerce + new urbanization,” and “e-commerce + import and export”. This plan highlights the potential of e-commerce to drive innovation and development in various sectors. However, the shift to e-commerce also brings challenges to traditional businesses. They must adapt to new technologies, business models and communication approaches to remain competitive in the digital era. This may involve rethinking their strategy, investing in digital infrastructure, and embracing new ways of interacting with customers.

In conclusion, the impact of e-commerce on traditional industries is enormous, leading to disruption and new opportunities for growth. To survive and thrive in this new landscape, traditional businesses must adapt to the changing environment and embrace the potential of e-commerce to drive innovation and development[8].

The emergence of e-commerce has presented opportunities and challenges for traditional industries. On the one hand, this has opened new avenues for businesses to reach global audiences, streamline operations and improve customer experience. On the other hand, traditional companies must face increasing competition, the need to adapt to rapidly changing consumer preferences, and pressure to integrate digital technologies into their operations[9]–[11].

Although there are no specific bibliometric analyzes regarding the impact of e-commerce on traditional industries, there are several bibliometric studies on related topics that can provide insight into research trends and methodologies used in this field. Some of these studies include:

1) The impact of COVID-19 on the service business industry, this bibliometric analysis collects 671 publications from Web of Science and Scopus to understand the impact of COVID-19 on the service business industry. This study uses performance analysis and science mapping techniques to analyze research constituents and collaboration networks.

2) The Impact of Covid-19 on the Islamic Economics & Finance Industry, analyzing 62 documents from 2020-2021 in the Scopus database to understand research developments related to the impact of Covid-19 on the Islamic economics and finance industry. The VoS viewer is used to create a bibliometric map of research progress.

3) Big picture bibliometric study of academic publications from post-Soviet countries: This study analyzes the factors influencing bibliometric indicators of scientific quality and scientific progress in Estonia.

4) Visualizing Research Trends and Identifying Technology Hotspots of Traditional Chinese Medicine (TCM) Nursing for Insomnia, this 18-year bibliometric analysis of the Web of Science Core Collection explores the research hotspots and frontier directions of TCM nursing for insomnia.

5) Bibliometric analysis of CSR in the banking industry, this research uses bibliometric analysis to examine the intellectual structure and progress of knowledge of CSR studies in the banking industry.

7) The impact of tourism promotion in tourist destinations, this bibliometric study assesses tourism promotion in tourist destinations and airports, organizes and classifies the literature on tourism promotion.

8) Mapping the Role and Impact of Artificial Intelligence and Machine Learning Applications in the Digital Transformation of Supply Chains, this bibliometric analysis aims to assess, measure and describe the progress of AI and ML applications in the digital transformation of supply chains.

9) Fashion Industry 4.0: Bibliometric Review in the Fashion Industry, this research aims to search for literature using a bibliometric method regarding the evolution of the current situation of the fashion industry 4.0.

This study can provide valuable insights into the methodology and approaches used in bibliometric analysis, which can be applied to the impact of e-commerce on traditional industries.

As e-commerce's impact on traditional industries continues to grow, understanding the nature and scope of this transformation will be critical for policymakers, business leaders, and researchers\cite{12}, \cite{13}. A comprehensive analysis of the existing literature on this subject can provide valuable insights into trends, patterns and knowledge gaps surrounding the interactions between e-commerce and traditional industries. This research aims to conduct bibliometric analysis, a powerful quantitative research method, to gain a deeper understanding of the growing relationship between e-commerce and traditional industries and its implications for the broader economic landscape\cite{14}–\cite{16}.

2. Research Method

Data for this bibliometric analysis were collected from academic databases, including Scopus, Web of Science, and Google Scholar. Searches were conducted using relevant keywords such as "e-commerce", "traditional industry", "digital disruption", and "economic transformation". Inclusion criteria required that selected publications be peer-reviewed journal articles and conference papers, and must explicitly focus on the impact of e-commerce on traditional industries. The data collection period was limited to the past decade to ensure that the analysis represents recent developments in the field.

a. Data Processing

After data collection, a thorough check of publications was performed to eliminate duplicates and irrelevant articles. Additionally, minor inconsistencies, such as variations in author names and publication titles, were standardized to ensure accuracy of the analysis.

b. Bibliometric Analysis

Bibliometric analysis was performed using VOSviewer, a powerful software for visualizing and analyzing bibliometric networks. VOSviewer enables visualization of networks of co-authorship, co-citation and co-occurrence, providing valuable insights into patterns and relationships among academic publications.

c. Co-authorship Network

Co-authorship networks are built to identify prolific authors and collaborations in the field. The size of the nodes in the network indicates the number of publications authored by each researcher, while the thickness of the lines connecting the nodes indicates the frequency of collaboration between authors.

d. Co-Citation Network

Citation networks are created to identify highly influential publications and their relationship to other works. Co-citation occurs when two publications are cited together by another article, indicating a strong intellectual connection between the two. In co-citation networks, nodes represent individual publications, and the strength of the relationship between two nodes is represented by the closeness and thickness of the line connecting them.
e. Co-Emergence Analysis

To identify key themes and research areas in the literature, a co-occurrence analysis was conducted on keywords and terms extracted from the selected publications. Co-occurrence analysis allows the identification of groups of related terms, providing insight into key topics and trends in the field.

f. Visualization and Interpretation

The results of the bibliometric analysis were visualized using VOSviewer, which allows the identification of groups and patterns in the data. This analysis provides valuable insight into the growth of research on the impact of e-commerce on traditional industries, influential authors and publications, key research themes, and potential research gaps.

2.1 Literature Review

2.1.1 Digital Disruption and Business Understanding

Digital disruption refers to the radical transformation of industries and markets caused by the widespread adoption of digital technologies. E-commerce, as a key driver of this disruption, has revolutionized the way businesses operate and interact with consumers. The digitalization of transactions has facilitated the exchange of goods and services without geographic boundaries, creating a global market that is accessible to both businesses and consumers.

Research has shown that e-commerce has had a major impact on various aspects of traditional industries. In the retail sector, for example, the rise of online shopping platforms has challenged brick-and-mortar stores, leading to a shift in consumer behavior towards greater convenience and personalization. Traditional retailers must adapt their strategies to include e-commerce channels to remain competitive in this rapidly evolving landscape.

Likewise, the financial industry has experienced significant disruption due to the emergence of fintech and online payment systems. Fintech startups and digital payment platforms have introduced innovative ways to handle financial transactions, challenging traditional banking systems and pushing them towards digital transformation.

In manufacturing, e-commerce has facilitated direct access to consumers, eliminating middlemen and enabling just-in-time customization and production. The shift towards a more agile and customer-centric approach has changed the dynamics of supply chains and production processes.

2.1.2 E-commerce’s Effect on Traditional Industries

Retail Sector

A number of studies have explored the impact of e-commerce on the retail sector. They highlight that the convenience of online shopping, coupled with personalized product recommendations and faster delivery options, has led to a surge in e-commerce sales[17]–[19]. As a result, physical retailers are facing a decline in the number of visitors and sales in physical stores. In order to compete effectively, many retailers have implemented an omni-channel strategy, integrating their online and offline channels to offer a seamless shopping experience.

Financial Sector

E-commerce has given rise to a multitude of fintech innovations, such as mobile payment apps, peer-to-peer lending platforms, and robo-advisors. These advances have disrupted traditional banking and financial institutions, forcing them to embrace digital
technology to remain relevant. Fintech has democratized financial services, providing access to banking and investment opportunities to underserved communities.

Manufacturing Sector
The impact of e-commerce on the manufacturing sector is multifaceted. On the one hand, manufacturers have benefited from direct access to global markets, allowing them to reach a wider customer base. On the other hand, the demand for customization and fast delivery has pushed manufacturers to adopt more flexible and agile production methods.

3. Findings

Figure 1. Visualization Mapping Results

The results of bibliometric analysis using VOSviewer have provided a comprehensive picture of the impact of e-commerce on traditional industries. The collaborative research landscape, influential publications, and key research themes identified in this study contribute to a deeper understanding of the evolving relationship between e-commerce and traditional industries.
Bibliometric analysis identified several distinct clusters representing key themes and topics in the literature on the impact of e-commerce on traditional industries. Cluster 1, the largest cluster, emphasizes the importance of the digital economy and its development, focusing on the transformative effects of technology and the demand for digitalization in various industries. Cluster 2 centers on the role of employees and knowledge in the digital era, highlighting the importance of innovation and the internet in driving digital transformation. Cluster 3 studies the field of digital commerce, exploring its implications for the national economy and its future prospects. Cluster 4, with a focus on education, discusses the challenges and benefits of integrating digital technology in educational practice. Lastly, Cluster 5 highlights the potential of blockchain technology in promoting a circular economy and creating value in traditional industries. These clustering results offer valuable insights into the research landscape and provide a clear roadmap for further investigation into the transformative impact of e-commerce on traditional industries.

Researchers can expand on these identified clusters to dig deeper into specific areas of interest, address research gaps, and advance knowledge in this rapidly developing field. By leveraging the insights gained from this bibliometric analysis, stakeholders can overcome the challenges and exploit the opportunities presented by digital disruption, ultimately contributing to economic transformation and sustainable development.
The presence of a group of leading researchers collaborating on related topics indicates the formation of a research community or academic group with the same research interests. Such collaboration encourages knowledge exchange, interdisciplinary approaches, and cross-fertilization of ideas. This indicates a healthy and dynamic research ecosystem that is actively exploring the challenges and opportunities arising from the impact of e-commerce on traditional industries.

By visualizing co-authorship networks, we can identify prolific authors who have contributed significantly to the literature in this area. These influential authors play a central role in shaping research discourse and are likely to be key drivers of innovation and progress in understanding the impact of e-commerce on traditional industries[20]. Their contributions have likely inspired and influenced subsequent research, further enriching knowledge in this domain.

Additionally, these co-authorship networks highlight potential collaboration gaps and areas where more collaboration could be beneficial. Identifying researchers or research groups that are not yet well connected in networks can provide opportunities for knowledge sharing and cross-disciplinary collaboration. Encouraging greater collaboration between researchers with diverse expertise can produce comprehensive and multi-dimensional research outcomes.

The 10 most cited publications in the literature on the impact of e-commerce on traditional industries. These highly cited works have played an important role in shaping the research landscape and have been influential in guiding discourse on digital transformation and its implications. The highly cited publications listed in the table represent important works that have significantly influenced research on the impact of e-commerce on traditional industries. They have contributed fundamental insights about digital transformation, the digital economy, and their implications for business, industry, and society. Researchers can continue to build on the knowledge gained from these influential works to address emerging challenges and explore new avenues for sustainable digital transformation[21], [22].
For businesses and policymakers, understanding the insights from this highly cited publication is critical to crafting effective strategies that harness the potential of e-commerce while overcoming its challenges. Embracing digital transformation and adopting innovative business models can position organizations to thrive in a dynamic digital landscape and contribute to economic growth and prosperity.

3.1 Most Frequently Appearing Terms:

  a. **Technology (169 occurrences):**
     The high occurrence of the term “Technology” underscores its central role in the impact of e-commerce on traditional industries. The literature extensively examines the influence of various digital technologies, such as artificial intelligence, big data analytics, and the Internet of Things (IoT), in changing business processes and consumer interactions[23], [24].

  b. **Innovation (70 occurrences):**
     Innovation is a recurring theme in the literature, with a focus on the need for businesses to adopt innovative practices and models to remain competitive in the digital era. This research highlights how digital transformation is driving innovation in traditional industries, driving agility and adaptation to evolving market demands.

  c. **Education (40 occurrences):**
     The focus on “Education” in the literature shows the importance of education in preparing the workforce for the digital era. This research discusses the need for upskilling and retraining of employees to thrive in a digitally transformed industry, emphasizing the role of educational institutions and lifelong learning.

  d. **Knowledge (27 occurrences):**
     “Knowledge” is an important aspect in understanding the impact of e-commerce on traditional industries. The literature emphasizes the importance of knowledge management, knowledge sharing, and knowledge-based decision making in the context of digital transformation.

  e. **Investments (25 occurrences):**
     The term “Investment” highlights the allocation of resources a business needs to embrace digital technology and remain competitive. The research explores the implications of investment decisions on business strategy and long-term sustainability.

  f. **Digitalization (21 occurrences):**
     “Digitalization” represents the process of integrating digital technology into various aspects of traditional industry. This literature explores how digitalization impacts business models, operations, and customer experiences.

3.2 Less Frequently Appearing Terms:

  a. **Digital commerce (14 appearances):**
     Despite its importance in understanding the global impact of the digital economy, “Digital commerce” appears with fewer appearances in the literature. Further research on digital trade could provide insight into its implications for international trade, regulation, and economic growth.

  b. **Digital economic development (14 appearances):**
     The term “Digital economic development” requires further attention, because it relates to the growth and progress of the digital economy in various countries and regions. Exploring these terms can reveal the drivers and challenges in harnessing the full potential of the digital economy.
c. Employees (13 occurrences):
The impact of digital transformation on “Employees” is an important area to research, including the changing nature of work, the importance of employee engagement, and the challenges posed by automation and digitalization.

d. Digital platforms (13 appearances):
Digital platforms play an important role in connecting businesses and consumers in the digital ecosystem. Further exploration of “Digital platforms” can shed light on their influence on market dynamics and consumer behavior.

e. Requests (12 occurrences):
The term “Demand” is critical in understanding how e-commerce and digital technologies shape consumer preferences and drive market trends. Investigating these terms can provide insight into changing consumer behavior and expectations.

f. Circular economy (12 occurrences):
The “circular economy” is concerned with the sustainable use of resources and minimizing waste. Research on the intersection of e-commerce and circular economy principles can provide innovative solutions for environmentally conscious business practices.

3.3 Overall Implications:
The comparison between the terms that occur most frequently and those that occur less frequently in Table 4 indicates potential research directions and areas that need further research. Although the most frequently occurring terms highlight established themes in the literature, exploring less frequently occurring terms can reveal emerging topics and potential research gaps.

For policymakers, businesses and researchers, these findings emphasize the importance of discussing both established and underexplored themes in the context of the impact of e-commerce on traditional industries. A comprehensive understanding of these terms can guide strategic decision making, policy formulation, and future research efforts to harness the transformative potential of digital technologies for economic growth and sustainable development.

4. Conclusion
The bibliometric analysis presented in this research offers a comprehensive picture of the impact of e-commerce on traditional industries, illuminating the transformative potential of digital technology. Through analysis of publication patterns, co-authorship networks, co-citation networks, and keyword co-occurrences, this research has identified key themes and influential works that have significantly influenced the discourse on digital disruption and economic transformation.

These findings emphasize the important role of technology, innovation, education, knowledge and investment in driving digital transformation and its implications for traditional industries. Policymakers and business people must realize the importance of embracing digital technology to remain competitive in the digital era. Education and improving the skills of the workforce is essential to prepare for the challenges and opportunities presented by digital transformation.

Additionally, this analysis also reveals emerging topics, such as digital commerce, circular economy, and blockchain, that offer promising avenues for future research. Understanding the implications of digital commerce on international trade, exploring circular economy principles in the context of e-commerce, and assessing the potential of blockchain technology in traditional industries can lead to innovative solutions and sustainable business practices.
This research underscores the importance of ongoing research efforts to keep up with the rapidly evolving digital landscape and its impact on traditional industries. By leveraging the insights gained from this bibliometric analysis, stakeholders can navigate the challenges and exploit the opportunities presented by digital disruption, ultimately contributing to economic transformation and sustainable development.

References


