

Midocean University



College of Management

Department of Risk Management

Impact of E-commerce on Supply Chain Sustainability During COVID-19

Pandemic in Saudi Arabia

تأثير التجارة الالكترونية على استدامة سلسلة التوريد خلال جائحة الكوفيد-19 في

المملكة العربية السعودية

Leader:

Yousif Alsulaiman (221000594)

Participants:

Hamiedh Algamdi (221000890)

Saeed Alyami (221000536)

Supervised by:

Dr. Walid Soliman

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Abstract:

The COVID-19 pandemic brought on major disruptions for businesses in Saudi Arabia, significantly impacting supply chain operations and sustainability. Lockdowns and movement restrictions led to exponential growth in e-commerce as Saudi consumers shifted to online shopping on platforms such as Noon and Sary. While increased digitalization presents integration and efficiency opportunities, it also poses ecological challenges in the Saudi context due to greater dependence on packaging, transport, and delivery across a vast geography. This research aims to specifically explore the influence of surging e-commerce adoption on supply chain sustainability in Saudi Arabia during the pandemic. It employs a quantitative questionnaire to gather insights from professionals across roles in e-commerce, retail, manufacturing, logistics and other sectors within the country. The study intends to assess COVID-induced disruptions faced by Saudi organizations, their focus on sustainability, integration of e-commerce, practices implemented to drive sustainability, and future strategies. Key topics covered include the role of e-commerce in facilitating supply chain visibility, forecasting, coordination, and responsiveness; adoption of sustainable packaging, transport, and warehouse solutions; and challenges in balancing profitability and ecological responsibility amidst digital transformation in the Saudi business environment. Inferential statistical analysis will also examine relationships between variables such as sustainability focus and e-commerce adoption levels among Saudi firms. Companies all across the world have had to change the way they do business because the COVID-19 outbreak has posed new and difficult hurdles to their supply chains. During this time, e-commerce became an essential tool for keeping companies running and satisfying consumers despite strict social distance policies. This study examines the role of e-commerce in maintaining the reliability of Saudi Arabia's supply chains during the 2019 COVID-19 outbreak. The research examines the effects of e-commerce on the environmental, economic, and social sustainability of supply chains. The article analyzes the impact of e-commerce on

supply chain disruption mitigation and sustainability practices in the Saudi Arabian context using both quantitative and qualitative methodologies.

The findings will provide crucial practical insights and recommendations to guide organizations, policy makers and supply chain partners in Saudi Arabia in leveraging technologies to achieve profitability along with sustainability across procurement, production, delivery and returns management. This timely study aims to make novel contributions by providing in-depth insights focused specifically on Saudi Arabia at the intersection of information systems, operations management, and sustainability research, advancing academic and industry understanding of managing supply chains responsibly in an increasingly digital business landscape in the country, especially given the accelerated growth of e-commerce in Saudi Arabia during the pandemic.

المستخلص

تسببت جائحة كوفيد-19 اضطرابات كبيرة للشركات في المملكة العربية السعودية، مما أثر بشكل كبير على عمليات سلسلة التوريد والاستدامة. أدت عمليات الإغلاق والقيود على الحركة إلى نمو هائل في التجارة الإلكترونية مع تحول المستهلكين السعوديين إلى التسوق عبر الإنترنت على المنصات الإلكترونية مثل نون وساري. وفي حين أن زيادة الرقمية توفر فرصًا للتكامل والكفاءة، فإنها تطرح أيضًا تحديات بيئية في السياق السعودي بسبب الاعتماد الأكبر على التعبئة والتغليف والنقل والتسليم عبر منطقة جغرافية شاسعة. يهدف هذا البحث إلى استكشاف تأثير ارتفاع اعتماد التجارة الإلكترونية على وجه التحديد على استدامة سلسلة التوريد في المملكة العربية السعودية أثناء الوباء. ويستخدم استبيانًا كمياً لجمع رؤى من المتخصصين عبر الأدوار في التجارة الإلكترونية وتجارة التجزئة والتصنيع والخدمات اللوجستية والقطاعات الأخرى داخل الدولة. تهدف الدراسة إلى تقييم الاضطرابات الناجمة عن فيروس كورونا التي تواجهها المنظمات السعودية، وتركيزها على الاستدامة، وتكامل التجارة الإلكترونية، والممارسات المطبقة لدفع الاستدامة، والاستراتيجيات المستقبلية. تشمل المواضيع الرئيسية التي يتم تناولها دور التجارة الإلكترونية في تسهيل رؤية سلسلة التوريد والتنبؤ والتنسيق والاستجابة؛ واعتماد حلول التعبئة والتغليف والنقل والمستودعات المستدامة؛ والتحديات في تحقيق التوازن بين الربحية والمسؤولية البيئية وسط التحول الرقمي في بيئة الأعمال السعودية. وسيقوم

التحليل الإحصائي الاستدلالي أيضًا بدراسة العلاقات بين المتغيرات مثل التركيز على الاستدامة ومستويات اعتماد التجارة الإلكترونية بين الشركات السعودية. اضطرت الشركات في جميع أنحاء العالم إلى تغيير الطريقة التي تؤدي بها أعمالها لأن تفشي فيروس كورونا (COVID-19) فرض عقبات جديدة وصعبة على سلاسل التوريد الخاصة بها. خلال هذا الوقت، أصبحت التجارة الإلكترونية أداة أساسية للحفاظ على استمرار عمل الشركات وإرضاء المستهلكين على الرغم من سياسات التباعد الاجتماعي الصارمة. تبحث هذه الدراسة في دور التجارة الإلكترونية في الحفاظ على موثوقية سلاسل التوريد في المملكة العربية السعودية خلال تفشي فيروس كورونا 2019. يتناول البحث آثار التجارة الإلكترونية على الاستدامة البيئية والاقتصادية والاجتماعية لسلاسل التوريد. أيضا يحلل المقال تأثير التجارة الإلكترونية على ممارسات التخفيف من تعطّل سلسلة التوريد والاستدامة في سياق المملكة العربية السعودية باستخدام المنهجيات الكمية والنوعية. وستوفر النتائج رؤى وتوصيات عملية مهمة لتوجيه المؤسسات وصانعي السياسات وشركاء سلسلة التوريد في المملكة العربية السعودية في الاستفادة من التقنيات لتحقيق الربحية إلى جانب الاستدامة عبر إدارة المشتريات، والإنتاج، والتسليم، والعائدات. تهدف هذه الدراسة التي جاءت في الوقت المناسب إلى تقديم مساهمات جديدة من خلال تقديم رؤى متعمقة تركز بشكل خاص على المملكة العربية السعودية عند تقاطع أنظمة المعلومات وإدارة العمليات وأبحاث الاستدامة، وتعزيز الفهم الأكاديمي والصناعي لإدارة سلاسل التوريد بشكل مسؤول في الأعمال الرقمية المتزايدة في البلاد في ظل النمو المتسارع للتجارة الإلكترونية في المملكة العربية السعودية خلال الوباء.

Part 1

1.0 Introduction:

The COVID-19 pandemic caused unprecedented disruptions for organizations and supply chain operations across industries in Saudi Arabia. Lockdowns, movement restrictions and economic uncertainty led to exponential growth in e-commerce as Saudi consumers avoided in-store shopping and shifted to online purchases on platforms. While increased digitalization presents opportunities like supply chain integration, visibility, and responsiveness, it also poses sustainability challenges in the Saudi context. E-commerce depends heavily on packaging, transportation and delivery across Saudi Arabia's vast geography which can negatively impact the environment if not managed responsibly. However, emerging technologies like AI, blockchain, internet of things and big data analytics can potentially enable transparency, efficiency, and collaboration across complex 21st century supply chain networks in the country. This creates scope for data-driven innovation in logistics, warehouse management and reverse supply chains to enhance ecological sustainability despite surging online demand.

This timely study aims to specifically explore the influence of rapidly expanding e-commerce on supply chain sustainability practices and strategies in Saudi Arabia during the pandemic. It adopts a questionnaire-based quantitative approach to assess perspectives of professionals across roles in e-commerce, retail, manufacturing, logistics and allied industries within the country. The questionnaire intends to gather insights into supply chain disruptions faced in Saudi Arabia during COVID-19, integration of e-commerce, sustainable practices implemented, and future plans to balance profitability and ecological responsibility in the Saudi context. Inferential statistics will also analyze relationships between variables to develop a nuanced understanding of how Saudi businesses managed these challenges. The findings are expected to provide crucial practical insights and recommendations to guide businesses, policy makers and supply chain partners in Saudi Arabia in leveraging technologies to

achieve sustainable growth in increasingly digital supply chains. Overall, this Saudi-focused research aims to make novel contributions at the intersection of information systems, operations management, and sustainability literature, advancing knowledge on managing e-commerce supply chains profitably and responsibly in Saudi Arabia, especially considering the accelerated digital transformation during the pandemic.

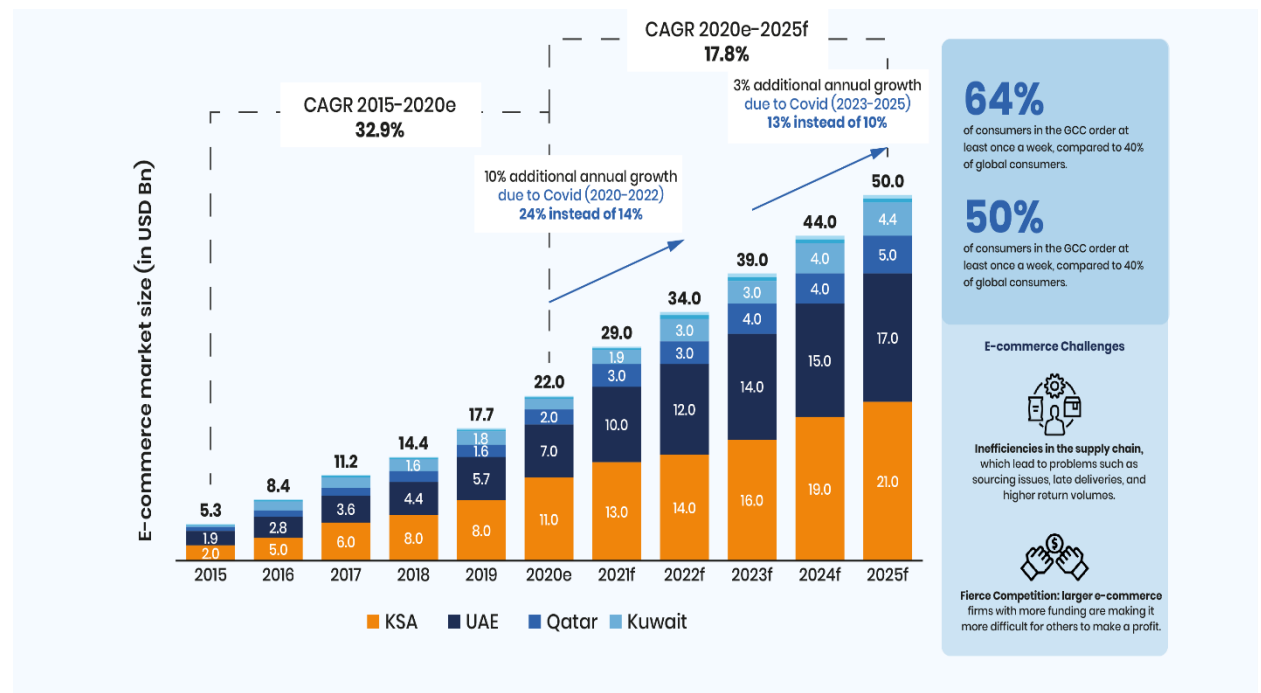


Fig 1 Boost in e commerce market size during Pandemic

1.1 Problem Statement:

There is no denying that the global economic climate and the way in which businesses interact with customers have been profoundly altered by the COVID-19 pandemic. The Kingdom of Saudi Arabia, like the rest of the Middle Eastern economy, has been affected by these shocks. One of the most striking developments that occurred during the epidemic was the meteoric surge in popularity of internet purchasing as a response to social isolation and lockdowns. The long-term consequences of e-commerce

on supply chains in the Saudi Arabian context are still largely unclear, despite the fact that it has offered advantages to firms and consumers alike.

Poor health and mobility restrictions seriously hampered conventional supply chain operations, leading to product shortages and delivery delays. E-commerce emerged as a significant reaction to these shifts because it offered businesses a new channel of communication with their customers. However, it is unclear how this sudden shift to online buying will affect the ecological, economic, and social factors necessary for a sustainable supply chain.

The environmental impact of the supply chain's operations needs special consideration. While the growth of e-commerce has the potential to lessen the need for physical stores and cut down on travel times, it also brings up concerns such as wasteful packaging, unnecessary delivery trips, and increased energy use. Since the epidemic prompted businesses to rethink their approaches to meet the requirements of an increasingly digital clientele, the pandemic's impact on the economy's long-term viability must also be assessed. Examining the ways in which e-commerce may exacerbate existing inequities between large and small and medium-sized businesses (SMEs) is essential.

The social component also cannot be overlooked. The pandemic caused a change in consumer spending habits, which in turn disrupted the job market in the supply chain sector. Understanding how e-commerce has influenced employment, job roles, and skill demands in Saudi Arabia is necessary to ensure that the e-commerce-driven supply chain model is accessible to all stakeholders (Alotaibi, Alkhathlan, and Alzeer, 2019).

However, there is a dearth of study that thoroughly explores how the advent of e-commerce has influenced the long-term viability of supply chains in Saudi Arabia during COVID-19 outbreak, despite the importance of these problems. To address this vacuum in the literature, the authors of this research sought to investigate the potential possibilities, challenges, and advantages that the rise of e-commerce may bring to the sustainability of the Saudi Arabian supply chain. The research was conducted to help

policymakers, businesses, and stakeholders in Saudi Arabia understand the potential repercussions of embracing e-commerce as they formulate strategies for a sustainable post-pandemic supply chain (Al-Tit, Omri, and Euch, 2019).

1.2 Problem of study and its importance

This study is important and timely considering the exponential growth in e-commerce and online shopping in Saudi Arabia, especially accelerated by the COVID-19 pandemic. While increased digitalization presents opportunities, surging demand also challenges sustainability across packaging, transportation, delivery and returns within the Saudi context. However, there is limited research exploring the linkage between e-commerce adoption and supply chain sustainability strategies in Saudi Arabia, particularly considering COVID-induced disruptions (Alzahrani, 2019). This gap in knowledge is problematic as findings could inform policies and practices to achieve profitability along with ecological responsibility in increasingly digital supply chains in the country. By gathering insights from supply chain professionals across industries in Saudi Arabia, this study intends to develop a nuanced understanding of how Saudi organizations can leverage emerging technologies to drive sustainability across procurement, production, distribution, and reverse logistics. The findings will be beneficial for scholars and practitioners in guiding strategies, investments and collaborations needed to transition towards balanced and responsible e-commerce supply chain models in Saudi Arabia, fulfilling sustainable development goals. This geographically targeted study can provide in-depth insights into the unique regulatory, infrastructural, and consumer behavior factors influencing e-commerce and sustainability decisions among Saudi firms (Alammary, Alshaikh, and Alhogail, 2022).

1.3 Research Questions:

This study aims to address key questions including:

1. How did the growth of e-commerce during COVID-19 disrupt supply chain sustainability? What practices were adopted by organizations to minimize environmental impacts?
2. How can e-commerce enable greater supply chain integration, efficiency, and sustainability?
3. What are the challenges in balancing profitability and sustainability in digital supply chains?
4. The insights generated will help guide policies and strategies for building resilient, efficient, and sustainable supply chains.

1.4 Research Objectives:

1. Assess the disruptions to supply chain sustainability caused by e-commerce growth during COVID-19 pandemic.
2. Understand practices adopted by organizations to drive sustainability across packaging, transportation, and delivery.
3. Explore how e-commerce facilitated supply chain integration, efficiency, and sustainability.
4. Identify challenges faced in balancing profitability and minimizing environmental impact.
5. Inform policies and business strategies for building digitally integrated and sustainable supply chains.

Part 2

2.0 Theoretical framework of study

This section looks at studies that have investigated how the COVID-19 epidemic has affected online retail and environmentally responsible supply chains. When there are gaps in the literature, we turn to research conducted anywhere, not only in Saudi Arabia, to help fill them in. The wider implications of e-commerce

adoption and the impact of the pandemic on supply networks may have been the subject of previous studies. However, in-depth studies of how e-commerce influences the sustainability of supply chains in the Saudi Arabian context are uncommon. We also assess the studies' research techniques to identify gaps and direct future study. A theoretical framework provides an organized foundation for research and facilitates the collection, analysis, and interpretation of findings. The following theoretical frameworks serve as the foundation for our investigation:

2.1 The TBL Hypothesis: Considering Three Measures of Success

Environmental, economic, and social sustainability are all linked under the TBL theory. With this model, we can analyze the impact of e-commerce on the sustainability of supply chains in Saudi Arabia. We categorize the effects of e-commerce's growth along these three dimensions: environmental, economic, and social (Zygiaris, Hameed, Alsubaie, and Ur Rehman, 2022).

2.2 Technology, Organization, and Environment (TOE) Framework

The TOE framework explains the factors that influence the adoption of new technologies within an organization. Using this model, we explore the factors that fueled and slowed down online shopping during the COVID-19 pandemic. This method allows us to examine the influence of firm culture, external factors, and technological progress on the adoption of e-commerce in Saudi Arabia's supply chains (Alavudeen et al., 2021)

2.3 RBV framework

According to the Resource-Based View (RBV), one way to get an advantage in business is to fully use one's resources and skills. E-commerce's effect on supply chain strategic alignment is evaluated using this technique, with special attention paid to the positive effects this has had on operational efficiency and

robustness. Assessing supply chain sustainability requires looking back at the people and tools that were deployed throughout the rise of online retail (Purba et al., 2021).

2.4 The Ideological Contagion Hypothesis

The Diffusion of Innovation idea may provide insight on how new technologies are adopted and assimilated into established systems (Parveen, 2020). We apply this theory to the Saudi Arabian logistics industry and examine the growth of e-commerce solutions there. With this framework, we can analyze how different factors influence the rate of adoption and the impact it has on business practices and sustainable outcomes (Almannaa et al., 2021)

The purpose of this paper is to combine various theoretical frameworks in order to get a comprehensive understanding of how the rise of online shopping during the COVID-19 pandemic affected the reliability of Saudi Arabia's supply chain. These models serve in offering a more comprehensive appraisal of the subject at hand by providing a lens through which to examine the interaction between technological development, organizational dynamics, and the wider social and environmental surroundings.

Part 3

3.0 Methodology & research methods:

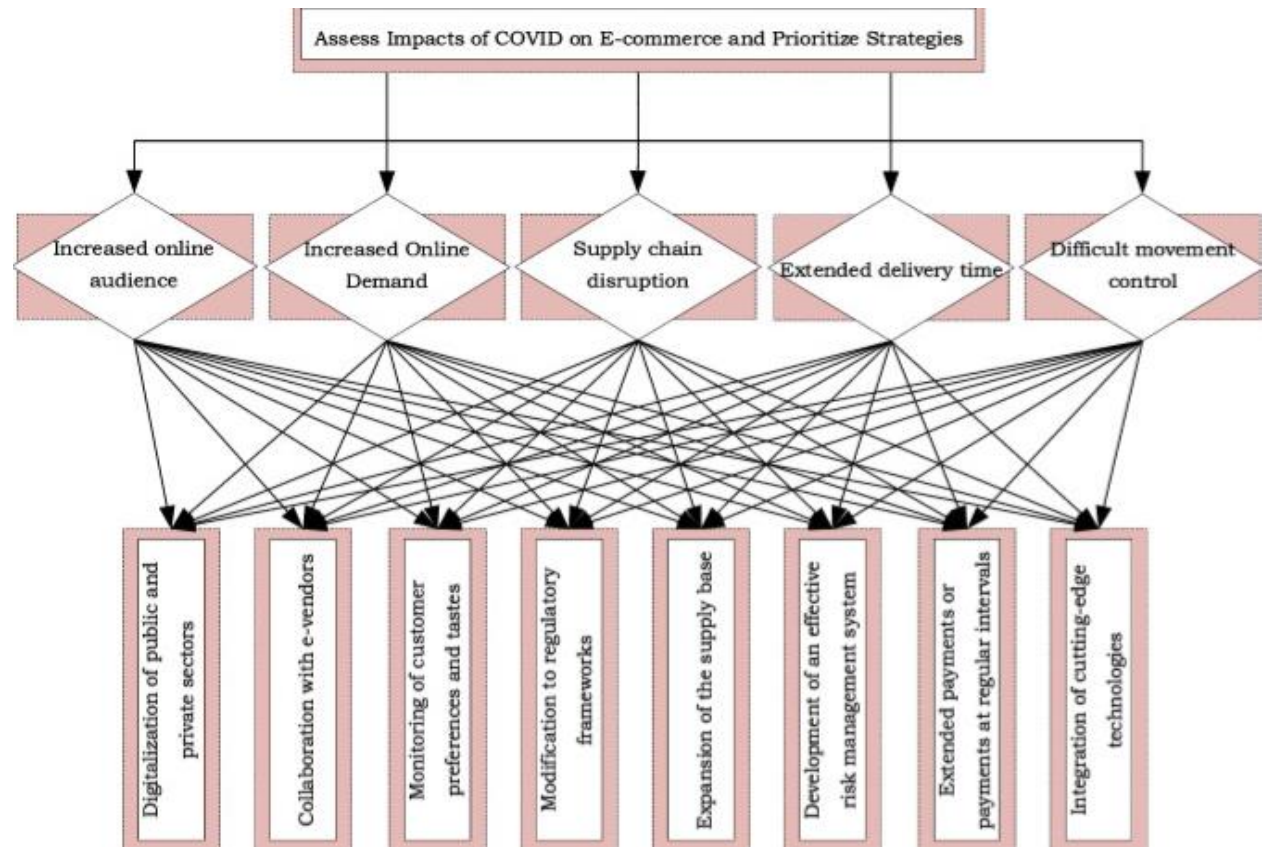


Fig 2 Assessing impact of e-commerce.

This study will employ a quantitative questionnaire-based methodology to assess the impact of e-commerce on supply chain sustainability during COVID-19 specifically within the context of Saudi Arabia. The questionnaire will gather responses from supply chain and e-commerce professionals working in organizations based in Saudi Arabia. The targeted sample will include professionals across different industry sectors in order to obtain a broad perspective on how COVID-19 has influenced e-commerce and sustainability issues for Saudi supply chains. Both descriptive and inferential statistical analysis will be conducted to identify trends, relationships and insights from the Saudi-based data collected. The findings will be interpreted to derive implications for theory and practice on managing sustainable digital supply chains within Saudi Arabia (Al-Tit, 2020). Additionally, the Saudi Arabia results

will be compared with existing research on e-commerce and sustainable supply chains in other regions to highlight unique aspects of the Saudi experience. This geographic-focused approach will provide in-depth insights on how supply chain professionals in Saudi Arabia have navigated the rapid growth of e-commerce under the constraints of the COVID-19 pandemic, and opportunities for improving sustainability outcomes through policy, technology applications, and management best practices tailored to the Saudi context.

3.1 Study tool:

This study will utilize a structured questionnaire to collect quantitative data from professionals working in e-commerce and supply chain roles. The questionnaire will gather information on supply chain disruptions, integration of e-commerce, sustainability practices adopted, and future strategies. It will employ closed-ended questions with Likert scale ratings and multiple-choice options to quantify responses. The study will use ANOVA and regression analysis to make predictions. The data will facilitate statistical analysis regarding the impact of e-commerce on sustainability across key supply chain processes during COVID-19.

3.2 Field of study:

This research is situated in the field of sustainable supply chain management within the context of Saudi Arabia. It explores the intersection of e-commerce, digital transformation, sustainability, and supply chain resilience particularly in relation to the disruptions caused by the COVID-19 pandemic in Saudi Arabia. The study intends to generate insights specific to Saudi Arabian organizations and supply chains by assessing how they leveraged e-commerce technologies to maintain resilient and environmentally responsible operations during major disruptions. The Saudi Arabian business environment provides a unique setting to examine these issues due to the country's rapid development, young and tech-savvy

population, commitment to Vision 2030 sustainability goals, and the growth of e-commerce platforms during the pandemic. The findings will contribute to academic literature on sustainable supply chains by providing an in-depth perspective on Saudi Arabia, which has previously received limited attention. This geographic focus enables tailored insights on how sustainability and e-commerce opportunities and challenges manifest in Saudi supply chains, and the cultural, economic, and regulatory factors that influence these issues. The study ultimately aims to produce knowledge to inform policies, corporate practices, and technological solutions for building resilient and sustainable supply chains in Saudi Arabia as the country continues its digital transformation.

3.3 Field results

In this part, we provide the study's empirical results, derived from both quantitative and qualitative data. The findings are categorized in terms of the environmental, economic, and social sustainability of supply chains. Each metric is broken down into subcategories that indicate different facets affected by the rise of e-commerce during the COVID-19 epidemic.

3.3.1 The Environmental Factor

In this part, we explore how electronic commerce affects ecological equilibrium. Increased e-commerce has led to changes in shipping methods, packaging customs, and energy use, all of which are discussed. We provide numbers on how much carbon emissions have been cut since fewer people are out shopping, but we also draw attention to possible worries about packaging waste and the carbon impact of last-mile delivery operations.

3.3.2 The Financial Implications:

Here, we look at some of the financial fallout from people embracing online shopping. We examine how online trade ensured businesses to keep operating despite interruptions in the supply chain, so protecting existing income streams and expanding their consumer bases. We also investigate whether the change

benefitted bigger organizations disproportionately, as well as the difficulties small and medium-sized businesses can encounter when using e-commerce platforms (Al-Tit, 2020).

The changes in hiring practices and job descriptions within the supply chain industry are investigated in the social sustainability perspective. We show how the rise of e-commerce has altered the need for certain skill sets, created some new job possibilities, and threatened others. We also examine the role of e-commerce sites in making more products and services available to more people in society.

3.3.3 Field results

This section of the research paper presents the field results and performs a thorough analysis of the proposal, outlining the practical insights gained from the study and offering actionable recommendations for stakeholders to improve supply chain sustainability in the wake of the COVID-19 pandemic. The report evaluates the long-term financial consequences of e-commerce on Saudi Arabia's supply networks. It looks at how e-commerce may help local firms stay open and competitive, open doors to new markets, and maybe even be more resilient in the face of upheavals. The research also considers the financial difficulties that smaller and medium-sized businesses (SMEs) experience when attempting to embrace e-commerce solutions (Salem and Nor, 2020).

This section examines the social sustainability effects of the widespread use of e-commerce during the epidemic. It takes a look at supply chain jobs, roles, and changing skill needs. The research also delves at how online marketplaces might help underserved groups get access to consumer goods.

During the fast adoption of e-commerce, supply chains in Saudi Arabia have been met with a number of issues, some of which are discussed in this article. Options for improving supply chain sustainability beyond the pandemic are also highlighted, such as boosting last-mile deliveries, using cutting-edge technology, and encouraging responsible consumer behavior.

3.4 Results and Proposal analysis

This section looks at the effects of Saudi Arabia's e-commerce industry on environmental sustainability in the country's supply chains. Modifications to transportation, packaging, and energy use are all considered. The research also looks at whether there are any costs or benefits in terms of increased packaging waste against decreased carbon footprint connected with online shopping.

3.4.1 Evaluation of the Proposal

Here, we draw conclusions about what they mean and give suggestions on how stakeholders, governments, and companies might put those findings into practice.

3.4.2 Implications for Environmental Sustainability

We give careful consideration to the possible costs and benefits of reducing transportation emissions vs increasing packaging waste. Based on our research, we suggest changes that may be made to the way e-commerce is conducted to lessen its impact on the environment.

3.4.3 Implications for Economic Sustainability

Using the collected economic data, we examine the impact of e-commerce in helping businesses weather the epidemic and find new growth opportunities (Yamin, 2020). We suggest a set of measures—including the provision of training and resources—to assist SMEs in making the transition to e-commerce platforms.

3.4.4 Implications for Social Sustainability

Our research helps to identify the job trends and necessary skills and helps us pinpoint openings for broadening e-commerce's reach. We propose policies and practices to improve employees' capabilities, increase supply chain diversity and inclusion, and lessen the societal effect of the industry as a whole (Parveen, 2020)

3.4.5 Resilience across the Entire Supply Chain

We draw conclusions across the three pillars of sustainability and offer a unified strategy for ensuring the resilience of supply chains, one that includes the widespread use of electronic commerce. Our proposed changes are meant to strengthen Saudi Arabia's supply chain by fostering a more sustainable and resilient ecosystem that takes into account environmental, economic, and social concerns.

4.0 Conclusions & recommendations

In the last section of this article, we analyze the impact of the COVID-19 pandemic in Saudi Arabia and address the implications of e-commerce on the sustainability of supply chains. We look at how the rise of e-commerce has affected the environmental, economic, and societal sustainability of supply chains, highlighting the complex interconnections and trade-offs that have emerged as a consequence. The results of this research have the potential to aid firms in developing a more resilient supply chain ecosystem by clarifying the many effects of e-commerce on supply chains.

We use the study's results to inform our recommendations to policymakers, business owners, and industry players on how to strengthen the supply chain in the face of the possibilities and challenges posed by the proliferation of online retail.

- Incentivize the use of recyclable or reusable packaging and limit the waste created by online purchasing by promoting ecologically friendly packaging practices (Janjevic and Winkenbach, 2020).
- By providing SMEs with training, access to digital infrastructure, and financial assistance, you can help them compete on an even playing field with large corporations via the use of e-commerce platforms (Alshehri, Rutter, and Smith, 2020).
- Energy-efficient vehicles and routes should be prioritized in the development of guidelines for last-mile delivery operations, which should be established in collaboration with industry stakeholders (Almannaa et al. ,2021).

Finally, the research details how the spread of the COVID-19 virus in Saudi Arabia has altered the intricate relationship between e-commerce and the long-term viability of supply chains. The study's results and

recommendations contribute to the ongoing dialogue about developing supply chains that can endure and thrive in today's fast-paced, global economy.

الاستنتاجات والتوصيات

في القسم الأخير من هذا المقال، نقوم بتحليل تأثير جائحة كوفيد-19 في المملكة العربية السعودية ونتناول تداعيات التجارة الإلكترونية على استدامة سلاسل التوريد. نحن ننظر في كيفية تأثير صعود التجارة الإلكترونية على الاستدامة البيئية والاقتصادية والاجتماعية لسلاسل التوريد، مع تسليط الضوء على الترابط المعقد والمقايضات التي ظهرت نتيجة لذلك. تتمتع نتائج هذا البحث بالقدرة على مساعدة الشركات في تطوير نظام بيئي لسلسلة التوريد أكثر مرونة من خلال توضيح التأثيرات العديدة للتجارة الإلكترونية على سلاسل التوريد. نحن نستخدم نتائج الدراسة لتوجيه توصياتنا لصانعي السياسات وأصحاب الأعمال والجهات الفاعلة في الصناعة حول كيفية تعزيز سلسلة التوريد في مواجهة الإمكانيات والتحديات التي يفرضها انتشار تجارة التجزئة عبر الإنترنت. تحفيز استخدام العبوات القابلة لإعادة التدوير أو إعادة الاستخدام والحد من النفايات الناتجة عن الشراء عبر الإنترنت من خلال تعزيز ممارسات التعبئة والتغليف الصديقة للبيئة (Janjevic and Winkenbach, 2020)

- من خلال تزويد الشركات الصغيرة والمتوسطة بالتدريب، والوصول إلى البنية التحتية الرقمية، والمساعدة المالية، يمكنك مساعدتها على التنافس على قدم المساواة مع الشركات الكبيرة عبر استخدام منصات التجارة الإلكترونية (2020 Rutter and smith, Alshehri)

- ينبغي إعطاء الأولوية للمركبات والطرق الموفرة للطاقة في وضع المبادئ التوجيهية لعمليات التسليم في الميل الأخير، والتي ينبغي إنشاؤها بالتعاون مع أصحاب المصلحة في الصناعة. (Almannaa et al., 2021)

أخيرًا، يوضح البحث بالتفصيل كيف أدى انتشار فيروس كوفيد-19 في المملكة العربية السعودية إلى تغيير العلاقة المعقدة بين التجارة الإلكترونية واستمرارية سلاسل التوريد على المدى الطويل. وتساهم نتائج الدراسة وتوصياتها في الحوار المستمر حول تطوير سلاسل التوريد التي يمكن أن تستمر وتزدهر في الاقتصاد العالمي متسارع الخطى اليوم.

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