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PIONEERING GLOBAL PROSPERITY: UNRAVELING THE NEXUS OF SUSTAINABLE PAYMENTS DIGITALISATION AND INCLUSIVE IT ENABLED SERVICES EXPORT

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ABSTRACT

The convergence of sustainable payments digitalization and inclusive IT-enabled services export represents a pivotal nexus shaping the trajectory of global prosperity in the digital age. In the context of India, a burgeoning digital economy partially due to advancements in digitalisation and partially due to the government's focus on the promotion of digitalisation, and a robust IT services sector underscore the significance of understanding the relationship between digital payments infrastructure and IT services exports. This study aims to unravel this intricate linkage by empirically examining the correlation between the Digital Payments Index (DPI) and exports of IT-enabled services from India. Drawing on a comprehensive dataset spanning digital payments indicators and IT services export data from official RBI reports, which hold the upmost authentic data, rigorous statistical analysis is employed to discern patterns of correlation and causation. By leveraging econometric techniques, including correlation analysis and regression modelling, this research endeavours to elucidate the extent to which advancements in digital payments infrastructure influence the export performance of India's IT-enabled services sector.

The findings of this study hold profound implications for policymakers, businesses, and stakeholders alike. By providing empirical insights into the relationship between sustainable payments digitalization and inclusive IT-enabled services export, this research informs strategic interventions aimed at fostering sustainable and inclusive economic development.

Introduction

In today's interconnected and rapidly evolving global economy, the pursuit of sustainable prosperity has emerged as a paramount objective for nations worldwide. Central to this pursuit is the digital transformation sweeping across industries, fundamentally reshaping economic landscapes and fostering unprecedented opportunities for growth and inclusivity. In the context of India, a country renowned for its prowess in the Information Technology (IT) sector and its burgeoning digital economy, the convergence of sustainable payments

digitalization and inclusive IT-enabled services export represents a compelling nexus with profound implications for economic development, social equity, and environmental sustainability [1].

The intersection of sustainable payments digitalization and inclusive IT-enabled services export offers a unique lens through which to examine and comprehend the dynamics driving global prosperity in the digital age. At the heart of this nexus lies the transformative power of digital payments infrastructure, which serves as the backbone of modern economies, facilitating seamless transactions, enhancing financial inclusion, and driving economic growth. Concurrently, India's IT-enabled services sector stands as a beacon of innovation and opportunity, harnessing digital technologies to deliver high-value services to global markets while creating employment opportunities and fostering socio-economic empowerment.

Establishing a robust empirical relationship between the Digital Payments Index (DPI) and the exports of IT-enabled services from India is of paramount importance for several compelling reasons. Firstly, such an analysis offers valuable insights into the efficacy of India's digital payments ecosystem in driving export-led growth in the IT sector, shedding light on the extent to which advancements in digital infrastructure translate into tangible economic outcomes. Secondly, by exploring the relation between digital payments and IT-enabled services exports, policymakers can better understand the interplay between financial digitization and economic competitiveness, informing strategic interventions aimed at fostering sustainable and inclusive growth.

Research Objective

1. To quantify the correlation between the Digital Payments Index (DPI) of India and the increase in exports of IT-enabled services from India over a specified time period.

2. To identify any statistically significant relationship between advancements in India's digital payments infrastructure, as measured by DPI, and the growth trajectory of the IT-enabled services export sector.

3. To analyze the direction and strength of the correlation between DPI and IT-enabled services exports, utilizing appropriate statistical methods such as Pearson correlation coefficient.

Testing the significance of the correlation between DPI and IT-enabled services exports is crucial for informing evidence-based policy decisions, guiding strategic investments, and fostering sustainable economic development in the digital era.

Literature Review

In "Digital India - A roadmap to sustainability," A. Vijayan's 2019 paper for the International Journal of Innovative Technology and Exploring Engineering explores how digitalization embodied by the "Digital India" program may propel sustainable development in India. Even though it's brief and offers a useful summary, the article has some shortcomings. Four of the nine program pillars, according to Vijayan, will help the UN achieve the Sustainable Development Goals (SDGs) by 2030. He draws attention to areas of strength, such as IT-driven job creation and skill development, but he doesn't go into great detail about each of the pillars, difficulties, and constraints. Furthermore, debate with more extensive study is constrained by the short reference list. Not with standing these drawbacks, the paper makes a valuable contribution by encouraging more research into the efficacy of particular Digital India programmes and how they affect the advancement of equitable and sustainable development.

The intricate terrain of digital transformation for Indian manufacturing and exporting firms is examined by Khan and Goel in "A Perspective on Digital Transformation Among Indian Exporting Firms" (2024). Their goal is to break down this process and fortify the management perspective in order to help organizations navigate it. The authors contend that, given the distinctive characteristics of Indian businesses, a customized approach is necessary for a successful digital transformation. They explore a number of topics, including the need for new capabilities, enablers, and internal and external drives in addition to core competences. Through the integration of these components, businesses can create a successful digital transformation strategy.

Khan and Goel draw attention to the difficulties Indian businesses confront, including antiquated systems, reluctance to adapt, and a shortage of qualified workers. They stress how critical it is to overcome these obstacles in order to enjoy the increased productivity, competitiveness, and market access that come with digitalization. Although the paper offers a useful framework and insightful information, it is not without restrictions. It is mostly directed towards manufacturing companies and might not be directly relevant to other areas

of Indian exports. Furthermore, the study lacks case studies or practical data to support its theoretical conclusions with real-world examples.

Despite these drawbacks, Khan and Goel's research makes a substantial contribution to our knowledge of digital transformation as it relates to Indian exports. It provides businesses with a fundamental framework and important factors to take into account for their particular digitization journey. Building on this foundation, future research examining real-world experiences and sector-specific nuances could offer even more useful insights for Indian exporting companies.

Banga and Banga's 2020 paper, "Digitalization and India's Losing Export Competitiveness," investigates the intriguing interplay between digitalization and India's declining export performance. They argue that while India has embraced digitalization, its impact on exports differs across sectors.

The authors employ a two-pronged approach. First, they compare India's value added by digital services (DS) in exports to competitor countries, revealing a significant lag. Additionally, they focus on traditional sectors like leather and clothing, finding them less digitized and facing declining competitiveness.

On the other hand, firm-level analysis using Indian manufacturing data showcases a positive correlation between digital asset share and export intensity. This implies that individual firms adopting digitalization within traditional sectors can thrive.

The paper offers valuable insights but doesn't delve into deeper explanations. The reasons behind the lag in national DS value and the varying impacts on sectors remain unexplored. Additionally, future research could investigate how effectively government policies support digitalization for enhancing export competitiveness across all sectors.

Maiti, Castellacci, and Melchior's edited volume, "Digitalisation and Development: Issues for India and Beyond" (2020), delves into the intricate relationship between digitalization and development, focusing on India as a key case study with broader implications. The book tackles three crucial themes: economic impacts of information and communication technologies (ICTs), digitalization and inequalities, and governance and user well-being.

The editors highlight the immense potential of ICTs in driving economic growth, creating new services and occupations, and enhancing efficiency. However, they acknowledge the critical need to address digital divides and inequalities; ensuring marginalized populations are not left behind. They emphasize the importance of good governance and policies that prioritize inclusivity and user well-being in the digital age [1].

Several chapters delve deeper into specific areas. Some explore the positive economic impacts of digital payments on financial inclusion and poverty reduction. Others analyze the rise of IT-enabled services (ITES) exports in India, highlighting their potential for job creation and inclusive growth. However, concerns regarding the sustainability of ITES operations and the need for addressing environmental impacts are also raised.

While the book sheds light on crucial issues and offers valuable insights, some limitations exist. The focus on India might limit generalizability to other contexts. Additionally, while highlighting challenges, the book could delve deeper into specific policy recommendations and concrete steps to navigate the complex interplay between digitalization and development.

Overall, Maiti, Castellacci, and Melchior's edited volume provides a comprehensive and timely exploration of digitalization's impact on development. It sparks dialogue and critical thinking, pushing us to consider the multifaceted implications of this transformative force on various sectors and populations. Future research can build upon this foundation by exploring specific interventions and policy solutions to ensure inclusive and sustainable development in the digital age [2].

Huria, Sharma, Jain, and Jose's 2022 paper, "Digitalization and Exports: A case of Indian Manufacturing MSMEs," explores the relationship between digitalization and export performance in the context of Indian Micro, Small, and Medium Enterprises (MSMEs). They argue that digital adoption can significantly enhance the export capabilities of these businesses.

The authors employ a mixed-method approach, combining quantitative data analysis with qualitative interviews with MSME owners and experts. Their findings reveal a positive correlation between digital adoption and export performance. MSMEs employing digital tools like e-commerce platforms, digital marketing, and online communication were found to have higher export intensity and growth compared to their less digitized counterparts.

However, the study also highlights challenges faced by MSMEs in adopting digital technologies. These include lack of awareness, affordability constraints, limited digital infrastructure, and cybersecurity concerns. The authors emphasize the need for government and industry interventions to bridge these gaps and create an enabling environment for MSME digitalization [3].

While valuable, the study has limitations. Its focus on manufacturing MSMEs restricts generalizability to other sectors. Additionally, the cross-sectional data doesn't allow for causal inferences about the impact of digitalization on export performance. Further research using longitudinal data and exploring sector-specific nuances could strengthen the understanding of this dynamic.

Despite these limitations, Huria et al.'s work makes a significant contribution by highlighting the potential of digitalization for Indian MSME exports. It emphasizes the need for targeted interventions that address specific challenges and create a supportive ecosystem for these businesses to leverage digital technologies and thrive in the global marketplace. Further research building upon this foundation could provide actionable insights for policymakers and stakeholders to empower Indian MSMEs in the digital age.

Mondejar et al.'s (2021) article in Science of The Total Environment explores how digitalization can propel us towards the UN Sustainable Development Goals (SDGs). They argue that technologies like AI, big data, and IoT can offer solutions for clean energy, sustainable cities, and responsible consumption. While their comprehensive overview of these technologies and their potential is valuable, the vast scope limits delving deeper into specific implementations and challenges. Additionally, quantitative analysis of actual impact and ethical considerations like data privacy are missing. Compared to studies focused on specific technologies, this article takes a broader SDG-centric view. Overall, it provides a valuable starting point, but further research exploring specific applications, quantitative analysis, and ethical considerations will be crucial for harnessing the full potential of digitalization for a Smart Green Planet [4].

Research Gap

Despite the growing body of literature exploring the relationship between digital payment adoption and economic outcomes, there exists a notable research gap concerning the specific

impact of digital payments on the export performance of IT-enabled services in sectors related to finance and accounting, auditing, bookkeeping, and tax consulting from India. While some studies have investigated the broader implications of digital transformation on economic growth and financial inclusion, few have delved into the nuanced relationship between digital payment adoption and export-led growth in these specialized service sectors.

This research gap is particularly significant given the unique characteristics of the finance and accounting services industry, which often require stringent regulatory compliance, specialized expertise, and trustworthiness in cross-border transactions. Understanding how digital payment adoption influences the export competitiveness of these sectors is crucial for policymakers, businesses, and stakeholders seeking to harness the potential of financial digitization for inclusive economic development [5].

Moreover, existing studies predominantly focus on macroeconomic indicators and aggregate export data, providing limited insights into the specific sectors driving export growth and the underlying mechanisms shaping their performance. By narrowing the focus to IT-enabled services in finance and accounting-related sectors, this research aims to fill the gap in the literature by offering a granular analysis of the impact of digital payments on export dynamics within these specialized domains.

Additionally, while some studies have explored the relationship between digital payments and export performance in general terms, few have examined this relationship within the context of India's rapidly evolving digital payments landscape and its burgeoning IT services sector. Given India's strategic position as a global hub for IT-enabled services, understanding how digital payment adoption influences the export competitiveness of these services is of paramount importance for shaping effective policies and strategies to foster sustainable economic growth.

Thus, the research gap identified in this study underscores the need for empirical research that specifically examines the relationship between digital payment adoption, particularly as measured by the Digital Payments Index (DPI), and the export performance of IT-enabled services in sectors related to finance and accounting, auditing, bookkeeping, and tax consulting from India. Addressing this gap will not only contribute to the academic literature on digital transformation and economic development but also provide actionable insights for

policymakers, businesses, and stakeholders seeking to leverage digital payments for inclusive and sustainable growth [6].

Research Methodology

Research Design

This study aims to uncover the impact of digital payment adoption on the export performance of IT-enabled services related to finance and accounting, auditing, bookkeeping, and tax consulting from India. It employs a quantitative approach, relying on numerical data to analyze the connection between these two factors.

Specifically, the study uses a correlation research design, which implies it examines the association between two variables without manipulating either of them. In this case, the two variables are:

1. Digital Payments Index (DPI): This index serves as a measure of how widely and efficiently digital payments are used in India.
2. Growth of IT-enabled service exports: This variable represents the performance of the specified IT service sectors in terms of their export earnings.

By analyzing the correlation between these two variables, the study hopes to shed light on whether and how the adoption of digital payments influences the export performance of these IT service sectors. If a positive correlation is found, it would suggest that wider and more efficient use of digital payments is associated with increased export growth in these sectors.

However, it is important to note that correlation does not imply causation. While the study may find a link between the two variables, it cannot definitively prove that digital payments adoption directly causes export growth. Other factors could also be playing a role. Hence to determine the statistical significance of correlation T test is applied.

Data Collection

For this study, secondary data collection involves sourcing information from reputable sources such as the Reserve Bank of India (RBI) and other relevant government agencies. Specifically, data on the Digital Payments Index (DPI), which measures the adoption and

penetration of digital payment methods in India, is obtained from the RBI's official website. This index serves as a key indicator of digital payment adoption and forms the basis for analyzing the relationship between digital payments and export performance [7].

Additionally, export data pertaining to IT-enabled services related to finance and accounting, auditing, bookkeeping, and tax consulting from India are sourced from official sources such as the Ministry of Commerce and Industry, Government of India. Alternatively, industry associations like NASSCOM may provide comprehensive data on IT-enabled service exports in these sectors. These official sources ensure the reliability and accuracy of the export data, which is crucial for conducting a robust analysis of export performance.

Furthermore, secondary data sources including academic journals, research reports, and government publications are utilized to gather information on relevant theories, frameworks, and empirical studies related to digital payments and export performance. These secondary sources provide valuable insights into the theoretical underpinnings and empirical findings that inform the research framework and contribute to a comprehensive understanding of the topic.

Overall, secondary data collection from reputable sources such as the RBI, Ministry of Commerce and Industry, and industry associations, combined with insights from academic literature and research reports, forms the foundation for conducting a rigorous analysis of the relationship between digital payments adoption and export performance in IT-enabled service sectors related to finance and accounting, auditing [8], bookkeeping, and tax consulting from India.

Hypothesis Formulation

Based on the literature review and research gap estimated , the hypothesis formulated is meant to determine the statistical significance of the two variable taken, first being Digital Payments Index (DPI) and the second variable being Growth of IT-enabled service exports. Thus the Hypothesis set are as follows

The null hypothesis (H0) is that there is no significant correlation between the two variables

The alternative hypothesis (Ha) is that there is a significant correlation between the two variables.

A t-test for correlation coefficients is performed to determine whether the observed correlation coefficient is significantly different from zero. This is estimated to help establish whether the correlation between the variables is statistically meaningful or not.

Data Analysis and Findings

S.No.	Year	DPI (Digital Payment Index)	IT Enabled Service Exports (Finance and Accounting auditing book keeping and tax consulting service in Crore)
1	2018	100	27560
2	2019	153.47	36142
3	2020	207.94	41867
4	2021	304.06	43223
5	2022	349.3	47094
6	2023	395.57	55637

(Source: https://rbi.org.in/Scripts/Statistics.aspx)

The table presents data on the Digital Payments Index (DPI) and IT-enabled service exports, specifically in the sectors of finance and accounting, auditing, bookkeeping, and tax consulting, over a six-year period from 2018 to 2023 [9].

The Digital Payments Index (DPI) exhibits a steady increase over the years, starting from 100 in 2018 and reaching 395.57 in 2023. This trend indicates a significant growth in digital payment adoption in India over the study period. Notably, there is a substantial year-on-year increase in the DPI, reflecting the rapid pace of digitalization in the country's payment ecosystem.

In parallel, the IT-enabled service exports in the specified sectors also show an upward trajectory, albeit with fluctuations across the years. The exports begin at 27560 Crore in 2018 and reach 55637 Crore in 2023. The data suggest a general increasing trend in IT-enabled service exports, highlighting the sector's resilience and growth potential amidst evolving market dynamics.

Analyzing the relationship between DPI and IT-enabled service exports, there appears to be a positive correlation between the two variables. As the DPI increases over the years, there is a concurrent increase in IT-enabled service exports, indicating a potential link between digital

payment adoption and export performance in the specified sectors. This observation underscores the importance of digitalization in facilitating cross-border transactions and enhancing the competitiveness of India's service exports in the global market.

Applying correlation on the two variables the coefficient of correlation is calculated to be 0.953864 , which is highly positive and to further test the significance of this correlation T test is applied.

With a sample size of 6, the degrees of freedom (df) = n-2=6-2= 4. From the t-distribution table for df = 4 and a = 0.05 (two-tailed), the critical value is approximately ±2.776.Coefficient of correlation (r) = 0.953863537. Level of significance (a) = 0.05 and the calculated t=6.380563399.

Results & Discussion

Based on the comparison of the absolute value of the t-statistic (6.380563399) with the critical value (±2.776), the findings of the statistical test lead us to reject the null hypothesis (. This indicates that there is a significant correlation between the two variables, namely the Digital Payments Index (DPI) and IT-enabled service exports in sectors related to finance and accounting, auditing, bookkeeping, and tax consulting from India. Therefore, we conclude that the observed correlation between digital payment adoption and export performance is statistically significant at the 0.05 level of significance [10].

This underscores the importance of digital payment adoption in driving export-led growth in the specified service sectors. The significant correlation implies that as the adoption of digital payments increases, there is a concurrent increase in the export performance of IT-enabled services in finance and accounting-related domains. These findings have significant implications for policymakers, businesses, and stakeholders involved in shaping economic policies and strategies aimed at fostering sustainable economic development and inclusive growth through digital transformation. Moreover, the results highlight the potential of digitalization to enhance the competitiveness of India's service exports in the global market, thereby contributing to overall economic resilience and prosperity.

Conclusion

Understanding the linkage between digital payment adoption and export performance is crucial for policymakers, businesses, and stakeholders involved in shaping economic policies and strategies. It provides valuable insights into the role of digitalization in enhancing the

competitiveness of India's service exports in the global market. Moreover, the findings emphasize the potential of digital payments to drive inclusive growth by facilitating cross-border transactions and expanding market opportunities for businesses in finance and accounting-related sectors.

By acknowledging the significance of digital payment adoption in fostering export-led growth, this study informs strategic decision-making and policy formulation aimed at leveraging digitalization for sustainable economic development. It underscores the need for targeted interventions to promote digital payment infrastructure and facilitate a conducive environment for businesses to capitalize on emerging opportunities in the global marketplace.

Furthermore, the study contributes to the existing body of knowledge by empirically validating the correlation between digital payment adoption and export performance in specific service sectors. This empirical evidence enhances our understanding of the mechanisms driving economic growth in the digital era and provides a basis for further research and exploration in this domain.

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