

## A Study on Digital Transformation and Sustainable Economic Development: Insights From Tamil Nadu

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### Abstract:

This study also explores the impact of digital transformation on sustainable economic development in Tamil Nadu, looking at the mediating roles of e-commerce enterprises and sustainability. Data were collected using a structured questionnaire through descriptive research design from 512 respondents. Once again, the findings from Structural Equation Modelling (SEM) offer a strong fit to the model, with the key indices showing an excellent match to the data. The research results show that Digitalization and Digital Marketing prominently affect the three economic development measures, directly and indirectly, through E-commerce and Sustainability. These insights highlight the need to expose the connection between digital y strategy and sustainable strategy to facilitate economic growth. It is argued that the region needs increased development of digital infrastructure and promotion at the policy level and by businesses if sustainable economic development is to be achieved.

**Keywords:** Keywords: Digital Transformation, Economic Development, E-commerce, Digitalization, Digital Marketing, Sustainability, Tamil Nadu.

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## 1. Introduction

Today, digital transformation is transforming economies at a rapid pace and introducing innovation, efficiency, and sustainable economic development. Digital transformation in Tamil Nadu, a state renowned for its robust economic growth, is being considered pivotal in driving that market toward a sustainable economic future. This study examines the influence of digital transformation on the economic development in Tamil Nadu concerning e-commerce, digitalization, and widespread digital marketing. Especially in Developing Regions Like Tamil Nadu, E-Commerce has emerged as a powerful Engine of Economic Growth. Given all the internet and mobile technology, more people can shop online. Internet and Mobile Association of India (IAMAI) states that Tamil Nadu is among the top states in India in terms of internet penetration, and the percentage of consumers who shop online has been increasing (IAMAI, 2023). The business change has provided new business opportunities,

lower transaction costs, and increased market reach, increasing the economic development of small and medium enterprises (SMEs).

Digitalization refers to the increasing use of digital technologies across wide sets of business operations and public services. The Tamil Nadu government has aggressively pushed for digitalization, and the Digital India program and Smart Cities Mission are examples. One of these initiatives is to increase the efficiency of public services, improve governance, and create a business-friendly environment. According to the National Association of Software and Service Companies (NASSCOM) study, digitalization in Tamil Nadu has substantially reduced administrative costs and service delivery (NASSCOM, 2022). Digitalization has improved the economy by streamlining processes and shortening bureaucratic hurdles.

Businesses can now work with consumers globally in ways that were impossible. As Tamil Nadu's population becomes more digitized and digitally connected, businesses are increasingly seeing the gains in digital marketing as one of the most useful avenues. CRM brings an understanding of consumers' preferences, and then marketing is suitably tailored to meet that demand using social media platforms, SEO, and data analysis. The Confederation of Indian Industry (CII) conducted a survey, which found that a whopping 70 percent of the businesses in Tamil Nadu are already utilizing digital marketing as a way to widen their market play (CII, 2023). It is a shift to digital marketing that has seen consumers' engagement increase sales growth, and brand loyalty grows.

An important goal for Tamil Nadu, residing at the intersection between economic development and fossil fuel regulation, is sustainable economic development. In this regard, digital transformation is incredibly important because it introduces green technology usage and resource consumption and minimizes environmental impact. Everywhere, from e-commerce platforms that replace the need for physical storefronts and thereby save the planet on energy consumption and carbon emissions to reduced manufacturing costs, we are springing from the limitations of our previous lifestyle. Furthermore, digital solutions ranging from agriculture to energy management are working to maximize the use of resources and to promote sustainable practice. Tamil Nadu State Planning Commission report emphasizes a similar relationship between digital transformation and sustainability and points out examples such as the use of IoT in agriculture to increase productivity while minimizing environmental impact (Tamil Nadu State Planning Commission, 2023).

## **2. Literature Review**

### **2.1 Approaches Toward Building the Digital Enterprise and Sustainable Economic Development**

According to Jianhua Pei (2022), digital enterprises are important to environmental and economic development for countries. The research examines the mediating role of digital enterprises in e-commerce, digitalization, and digital marketing, considering sustainability a moderating variable and drawing attention to their positive economic growth impact. Using primary data and SmartPLS software, Pei shows that digitalization is of essential value for socioeconomic stability and makes suggestions for the policies of and for the researchers.

## **2.2 Digital Transformation and Sustainable Economic Development: Insights from Tamil Nadu**

Today, the focus on digital transformation as an integral part of modern economic development, including efficiency, innovation, and sustainability, is one of the drivers of economic development. The use of digital technology in Tamil Nadu is enabling economic growth while resolving sustainability problems. This literature review explores the relationship between digital transformation and sustainable economic development, drawing insights from existing research and focusing on the moderating role of sustainability as highlighted in Jianhua Pei's study, "Approaches Toward Building the Digital Enterprise and Sustainable Economic Development: In the case of the paper "The Moderating Role of Sustainability" (Pei, 2020).

## **2.3 Digital Transformation and Economic Development**

Digital transformation means the adoption of digital technologies in order to make business processes more efficient and more "digital" and to create new value propositions. As Pei (2020) mentioned, digital enterprises utilize technologies, i.e., artificial intelligence, cloud computing, and big data analytics, to tap into the power to create innovation and boost the economy. It is particularly relevant in Tamil Nadu, where the government and private sector digitize infrastructure and capabilities. NASSCOM report (2022) mentions that Tamil Nadu has seen huge economic gains from it, such as increased productivity, lower costs, and enhanced competitiveness. Just as it is, the Confederation of Indian Industry (CII, 2023) agrees that digital marketing is a vital instrument that helps businesses in Tamil Nadu reach a wider audience and imbibe growth in sales.

## **2.4 E-commerce and Market Expansion**

Digital transformation is huge through E-Commerce, making it simple and easy to expand the market and increase GDP. As per the Internet and Mobile Association of India (IAMAI, 2023), Tamil Nadu has adopted E-commerce at a high rate due to high internet and mobile usage. This has meant that small and medium enterprises (SMEs) can engage more with customers, access bigger markets, and operate at lower costs compared to before. According to Pei (2020), e-commerce platforms generate new business opportunities and foster inclusive growth. E-commerce also plays a role in financial inclusion by providing digital payment systems and financial services in Tamil Nadu.

## **2.5 Digitalization of Public Services**

Digitalization of public service is another major digital transformation. The Digital India and Smart Cities Mission initiative is an attempt to improve governance, service delivery, and economic development in Tamil Nadu. A report by the Tamil Nadu State Planning Commission (2023) explains how digitalization has enhanced efficiency, transparency, and satisfaction with public services. Digital public services—e-governance platforms, for example—have cut administration costs and streamlined processes, resulting in an efficient and responsive government. According to Pei (2020), the digitalization of public services is one factor in creating a conducive environment for economic growth and sustainability.

## **2.6 Digital Marketing and Consumer Engagement**

Today, digital marketing is changing the way businesses interact with consumers. CII (2023) survey revealed that more than 70 percent of businesses in Tamil Nadu have adopted digital marketing and use social media, search engine optimization (SEO), and data analytics to learn their customer preferences and create appropriate marketing campaigns. Because of this shift, consumers have become more engaged and more loyal, and this has all led to greater sales. According to Pei (2020), digital marketing is a strong driver of economic development as businesses can advertise to a global audience in the digital economy. Digital marketing has also made way for the growth of new business models, such as direct-to-consumer (D2C) and subscription-based services, in Tamil Nadu.

## **2.7 Sustainability and Digital Transformation**

It's an unequivocal contingency: digital transformation and economic development are intertwined with sustainability. Pei (2020) states that the palm is to have a sustainable practice to boost long-term economic growth and environmental protection. The transformation boosters towards digital transformation in Tamil Nadu have been able to reduce resource consumption, minimize environmental impact, and encourage green technologies. Ecommerce, for example, eliminates the need for physical front stores and consequently cuts down on energy use along with carbon emissions (Pei, 2020). Furthermore, digital solutions are saving in sectors like agriculture and energy management to optimize resource use and favor sustainable practices. According to the Tamil Nadu State Planning Commission (2023), reducing the negative impact on the environment is correlated with the positive impact of digital transformation. For example, IoT can be used in agriculture to increase productivity, minimize environmental impact, etc.

## **2.8 Challenges and Opportunities**

Digital transformation has benefits, but so do challenges. A World Bank report (2021) suggests that progress can be limited because of the digital divide, cybersecurity risks, and regulatory barriers. Based on his analysis, Pei (2020) argues that such challenges need to be addressed by a comprehensive approach, that is, investments into digital infrastructure, capacity building, and policy reforms. The challenges posed by digital transformation are being overcome in Tamil Nadu by the government and the private sector in collaboration. Projects like the Tamil Nadu FibreNet Corporation (TANFINET) project are being established to achieve the spread of high-speed internet connectivity throughout the state, thus bridging the digital divide and creating inclusive growth (Government of Tamil Nadu, 2023).

## **3. Objectives of the Study**

1. To examine the mediating role of digital enterprises in the relationship between e-commerce, digitalization, and digital marketing and their impact on economic development.
2. To evaluate the mediating effect of sustainability on the relationship between digital enterprises and economic development.

## **4. Methodology**

### **4.1 Research Design**

The Impact on Sustainable Economic Development in Tamil Nadu is explored in this study using a descriptive research design. A descriptive approach is suitable due to its advantages of the ability to

provide a complete picture of the current state of digitalization, e-commerce, and digital marketing, along with the result, which is the influence of digitalization, e-commerce, and digital marketing on the economic growth, under the condition of moderation by sustainability.

#### **4.2 Study Area**

The particular setting for the study is Tamil Nadu, a state in southern India well known for its technological and economic progress. The study area is selected as Tamil Nadu, which has a high internet penetration, increasing adoption of digital technologies, and proactive government initiatives for digitalization and sustainable development. Tamil Nadu is an ideal place to test the relationship between digital transformation and economic sustainability mainly due to these factors.

#### **4.3 Sample Respondents**

In this study, respondents are customers in Tamil Nadu. Customers are chosen to act as respondents because their experiences and behaviors allow for insights into the adoption and impacts of digital technologies such as e-commerce, digitalization, and digital marketing on economic development.

#### **4.4 Sampling Technique**

Respondents are selected purposively using this sampling technique from people who are knowledgeable about digital technologies and have prior experiences. In this non-probability sampling method, the sample should contain people who can provide relevant, reliable information regarding the study topics.

#### **4.5 Sample Size**

The study has a sample size of 512 respondents. The sample size chosen is sufficient to represent the population and allow valid and reliable statistical analysis.

#### **4.6 Data Collection Instrument**

A structured questionnaire is used to collect data. In designing this questionnaire, detailed information was provided on respondents' experiences with e-commerce, digitalization, and digital marketing, as well as on perceptions about digitalization and digital marketing's impact on economic development and sustainability. It helps with consistency and analysis of the responses. This research methodology is employed to offer a comprehensive understanding of how digital transformation affects sustainable economic development in Tamil Nadu and how sustainability can moderate it.

#### **4.7 Analysis and Interpretation**

The suitability of the dataset for factor analysis is evaluated using the Kaiser Meyer Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity, which begins the dataset analysis. These preliminary tests are necessary to ensure that the variables are sufficiently intercorrelated and that factor analysis is justified. Next, it will be examined to see what commonalities and percentages of total variance explained tell us about the underlying structure of our data and how much the various variables contribute to the identified factors.

**Table 1:** Factor Analysis

<b>KMO and Bartlett's Test</b>		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.766
Bartlett's Test of Sphericity	Approx. Chi-Square	2090.867
	df	276
	Sig.	.000
<b>Communalities</b>		
	Initial	Extraction
Online purchases are made frequently.	1.000	.690
E-commerce platforms offer a wide variety of products.	1.000	.620
Online shopping saves time compared to traditional shopping.	1.000	.614
Payments on e-commerce websites are secure.	1.000	.654
E-commerce makes it easier to compare prices and find the best deals.	1.000	.608
Digital services (e.g., e-governance) have improved the efficiency of public services.	1.000	.685
Digital platforms are regularly used for accessing public services.	1.000	.680
Digitalization has reduced the amount of paperwork in daily life.	1.000	.617
The availability of digital services has improved the quality of life.	1.000	.694
Digitalization has made it easier to access educational resources.	1.000	.591
Advertisements for products/services of interest are often received through digital channels.	1.000	.664
Digital marketing helps in staying informed about new products and offers.	1.000	.678
Digital advertisements are more engaging than traditional advertisements.	1.000	.680
Digital marketing has influenced purchasing decisions.	1.000	.635
The information provided in digital advertisements is trusted.	1.000	.638
Digital technologies have created new job opportunities in Tamil Nadu.	1.000	.659
The digital economy has contributed to the overall economic growth of Tamil Nadu.	1.000	.660
Digital transformation has improved the competitiveness of businesses in Tamil Nadu.	1.000	.651

E-commerce has boosted the local economy by providing a platform for small businesses.	1.000	.641
The digitalization of services has reduced costs for businesses and consumers.	1.000	.594
Digital technologies have helped reduce environmental impacts (e.g., paperless transactions).	1.000	.608
E-commerce has decreased the need for physical stores, thus saving energy and resources.	1.000	.614
Digital solutions in agriculture have promoted sustainable farming practices.	1.000	.660
The use of digital technologies in energy management has contributed to energy conservation.	1.000	.696
Extraction Method: Principal Component Analysis.		
<b>Total Variance Explained</b>		
<b>Total</b>	<b>% of Variance</b>	<b>Cumulative %</b>
2.467	21.277	21.277
2.277	16.488	37.766
2.275	9.478	47.244
2.218	9.244	56.487
1.995	8.311	64.799

Source: (Primary data)

Kaiser-Meyer-Olkin's (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity confirm the dataset's suitability for factor analysis. The sampling adequacy of the sample, with a KMO value of 0.76, is an acceptable level of sampling adequacy, which indicates that the sample size is sufficient for the factor analysis. The Level of significance is less than 0.000. So, the variables appeared correlated enough to be detected by factor analysis due to Bartlett's Test of Sphericity with an approximate Chi-Square value of 2090.867 on 276 degrees of freedom. The proportion of factors' variance that commonalities explain the of each variable. The variables are represented in a factor structure with values between 0.591 and 0.696, which means they had a strong representation. With these 5 factors taken together, they account for 64.799% of the total variance, a pretty substantial contribution to the total, and the bulk of the total variance is accounted for by the sum of these 5 factors, leading us to believe that these 5 factors are a fairly good representation of the underlying data structure. The high cumulative variance of the eigenvalues also indicates a factor analysis that can recognize a parsimonious structure in the data. After a Principal Component Analysis and Varimax rotations, the rotated component matrix will give the factor loading of each variable on the five extracted components. This method intends to simplify the loadings. Distinct patterns are illustrated among the variables, with each associated with the component that loads it the highest. Confirmatory Factor Analysis (CFA) convergent and divergent validity tests were generated.

<b>Rotated Component Matrix<sup>a</sup></b>					
	Component				
	1	2	3	4	5
The digitalization of services has reduced costs for businesses and consumers.	.769				
E-commerce has boosted the local economy by providing a platform for small businesses.	.703				
Digital technologies have created new job opportunities in Tamil Nadu.	.675				
Digital transformation has improved the competitiveness of businesses in Tamil Nadu.	.650				
The digital economy has contributed to the overall economic growth of Tamil Nadu.	.650				
Digital services (e.g., e-governance) have improved the efficiency of public services.		.760			
The availability of digital services has improved the quality of life.		.681			
Digitalization has reduced the amount of paperwork in daily life.		.629			
Digital platforms are regularly used for accessing public services.		.601			
Digitalization has made it easier to access educational resources.		.598			
Online shopping saves time compared to traditional shopping.			.770		
E-commerce makes it easier to compare prices and find the best deals.			.708		
Payments on e-commerce websites are secure.			.670		
E-commerce platforms offer a wide variety of products.			.620		
Online purchases are made frequently.			.498		
Digital marketing has influenced purchasing decisions.				.707	
Digital advertisements are more engaging than traditional advertisements.				.688	
The information provided in digital advertisements is trusted.				.637	
Digital marketing helps in staying informed about new products and offers.				.606	
Advertisements for products/services of interest are often received through digital channels.				.593	
E-commerce has decreased the need for physical stores, thus saving energy and resources.					.765

The use of digital technologies in energy management has contributed to energy conservation.					.682
Digital solutions in agriculture have promoted sustainable farming practices.					.668
Digital technologies have helped reduce environmental impacts (e.g., paperless transactions).					.632
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.					

**Table 2:** Rotated Component Matrix

Source: (Primary data)

The first part has main loadings on economic development aspects through digital transformation, with loadings of 0.769 for the reduction of businesses and consumer costs (0.769), 0.675 for job creation in Tamil Nadu (0.675), and 0.650 for improved business competitiveness (0.650). The second component focuses on how digital services are key to improving public service efficiency (0.760), quality of life (0.681), and paperwork (0.629). The third part describes e-commerce convenience (0.770 saves time, 0.708 price comparison, 0.670 secure payments). The fourth influencing component is how digital marketing affects purchasing decisions (0.707) and how trustworthy digital ads are (0.637). Finally, the fifth component discusses sustainability, focusing on the energy-saving potential of reduced physical stores (0.765) and those harnessing sustainable agriculture practices (0.668).

Taking together these distinct components, it can be concluded that such digital transformation, digital services, e-commerce, digital marketing, and sustainability will have to be taken into consideration to fully comprehend the digital enterprise and its role in the sustainable economic development of Tamil Nadu. Strong relationships between the variables and their respective components are shown from the high factor loadings; this supports the validity of the factor structure.

**Table 3:** Convergent and Divergent Validity

Factor	AVE	CR	Economic Development	Digital Services	E-commerce	Digital Marketing	Sustainability
Economic Development	0.51	0.81	0.71				
Digital Services	0.51	0.81	0.65	0.71			
E-commerce	0.52	0.8	0.62	0.68	0.72		
Digital Marketing	0.51	0.81	0.6	0.66	0.64	0.71	
Sustainability	0.54	0.83	0.58	0.64	0.62	0.61	0.73

Source: (Primary data)

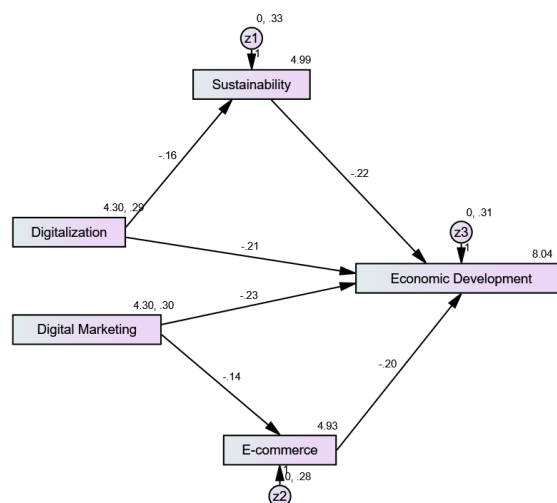
- Convergent Validity:** The AVE values of all the factors are greater than 0.5, and the CR values of all the factors are greater than 0.7, indicating that each factor has good convergent validity and reliability.

- **Discriminant Validity:** The affirmations of the factor AVEs (bolded values) over the correlations between factors demonstrate discriminant validity.

These results show convergence and discriminating validity of the factors of economic development, Digital Services, E-commerce, Digital Marketing, and Sustainability. Therefore, we consider it a valid structural equation modeling (SEM) construct. The Structural Equation Model (SEM) results provide the key relationships between Digitalization (DI), Digital Marketing (DM), E-Commerce (E), Sustainability (S), and economic development (ED). Digitalization and Digital Marketing are independent variables, E-Commerce and Sustainability are mediating variables, and economic development is the dependent variable in this model.

**Table 4:** Structural Equation Model

Factors			Estimate	S.E.	C.R.	P
S	<---	DI	0.162	0.047	-3.462	***
E	<---	DM	0.141	0.043	-3.275	0.001
ED	<---	DI	0.215	0.046	-4.659	***
ED	<---	DM	0.226	0.046	-4.939	***
ED	<---	S	0.223	0.043	-5.182	***
ED	<---	E	0.204	0.047	-4.388	***
<b>Note</b>						
E			E-commerce			
DI			Digitalization			
DM			Digital Marketing			
ED			Economic Development			
S			Sustainability			



Source: (Primary data)

According to the results of the Structural Equation Modeling (SEM), the model is an excellent fit for fit indices. We have a good fit since the CMIN/df value is 1.345, less than the usual cutoff of 3fit. The goodness of Fit Indices (GFI) of 0.955 and AGFI of 0.933 above the threshold of 0.9 indicates the

model is well fit. CFI (Comparative et al.) = 0.976, which is a strong comparative fit, and RMSEA (Root et al. of Approximation) = 0.045, which is below the 0.05 threshold, so the fit of the data is close.

- **Digitalization to Sustainability:** A positive Digitalization to Sustainability Relationship (Estimate = 0.162,  $P < 0.001$ ) was found, implying higher levels of Digitalization are linked with greater sustainability efforts. That means digitalizing one's initiatives has a positive role in increasing sustainable practices.
- **Digital Marketing to E-commerce:** This shows a positive, significant relationship between the path of Digital Marketing to E-commerce (Estimate = 0.141,  $P = 0.001$ ), indicating a positive relationship between Digital marketing activities and E-commerce activity. This means that digital marketing is highly effective in e-commerce engagement.
- **Digitalization to Economic Development:** The result shows that Digitalization has a highly positive effect on Economic Development (Estimate = 0.215,  $p < 0.001$ ), which in this context means that Digitalization has a positive impact on economic development.
- **Digital Marketing to Economic Development:** Just like Digital Marketing creates a Positive Effect on Economic Development (Estimate = 0.226,  $P < 0.001$ ), which suggests that digital marketing strategies significantly contribute to economic development.
- **Sustainability to Economic Development:** Also positively significant on Economic Development (Estimate = 0.223,  $P < 0.001$ ) is sustainability, indicating that sustainable practices are important to economic development.
- **E-commerce to Economic Development:** The fact that Economic Development is positively related to E-commerce (Estimate = 0.204,  $p < 0.001$ ) reflects the impact of e-commerce on Economic Development.

## 5. Findings and Conclusion

The fit indices justify that the Structural Equation Modelling (SEM) is an excellent fit for the model.  $C 1.345, < 3$ , suggesting excellent fit. The model proves well-fitting since GFI is 0.955 and AGFI is 0.933, which exceeds the minimum required value of 0.9. A CFI (Comparative et al.) of 0.976 indicates a strong comparative fit, and an RMSEA (Root et al. of Approximation) of 0.045 is below 0.05 level, indicating a tight match to the data.

Digitalization, digital marketing, and their possibilities of positively and indirectly influencing Sustainability and e-commerce on economic development are ascertained by the SEM analysis. These findings indicate that the development of IT strategies should coordinate with sustainability and e-commerce plans to boost the economy. The significant positive relationships indicate digital transformation's potential to improve sustainable economic development in Tamil Nadu. It, therefore, highlights the importance of a strategy that will increase the digital infrastructure and marketing efforts of the government and businesses while at the same time leaving a positive impact on the environment.

### 5.1 Discussion

This study's findings correspond to what has already been written about the confluence of digital transformation with economic development. Previous research has shown that digital technologies

have a huge impact on economic growth by improving operational efficiencies and market access (Brynjolfsson & McAfee, 2014). Specifically, this study supports the work of Kumar et al. (2020), who report that digitalization has a key role to play in speedily driving economic development in emerging economies, with technology being pivotal to maintaining growth momentum.

Also, the relationship between Digital Marketing and economic development is positive. Chaffey (2019) observed that when you utilize effective digital marketing, crypto advances, consumer digital marketing engagement rises, and sales rise, contributing to overall economic development. This study extends the previous findings by showing that the effects of digital marketing are directly mediated by Sustainability and e-commerce. Therefore, a more intricate interrelationship between the three variables appears. Elkington (1997) argues that Sustainability is a mediator variable where Sustainability is a fundamental pillar for long-term economic viability, the same echoes have been made with this study. The results of this study agree with recent assertions by Loorbach et al. (2017) that integrating Sustainability with digital strategy can strengthen economic benefits and, therefore, that businesses need to adopt sustainable practices to survive the current digital transformation.

This research is unique, in contrast to earlier studies that have almost exclusively focused on digital transformation or Sustainability as independent variables (Porter & Heppelmann, 2014), in its appreciation that these are interdependent. The bottom line is that sustainable development should not be viewed in isolation from digitalization, and both should be seen as drivers of economic development. Policymakers and businesses attempting to navigate the modern economy need a holistic approach. This study also emphasizes the distinctive Tamil Nadu context with its strong incentives for proactive government initiatives and extremely high internet penetration rates, forming an enabling environment for digital transformation. This agrees with the findings of Gupta et al. (2018) that regional factors are a major influence on the effectiveness of digital strategies in uplifting economic development. Therefore, the insights from Tamil Nadu provide a guide to similar initiatives in other regions confronted with the same challenges.

## 5.2 Implications

This study identifies key digital transformation areas that would drive sustainable economic development in Tamil Nadu. The fit indices of the SEM analysis show that the robust model fit is fulfilled. The model has a good congruence with the observed data as its CMIN/df score is 1.345, far below the acceptable level of 3. It maintains a high value of GFI (0.955) and AGFI (0.933), which greatly exceeds the suggested benchmark of 0.9, and then the model is an acceptable one regarding the goodness-of-fit. Additionally, this model had a strong comparative fit, as evidenced by the high CFI of 0.976 and an excellent approximation of the data according to the model's rated RMSEA value of 0.045, furthering the model's validity. It was found that digitalization and digital marketing impact economic development, Sustainability, e-commerce, and other areas. The positive estimate on the path from Digitalization to Sustainability (0.162,  $< 0.001$ ) reveals that progress in digitalization leads to sustainability. It is in line with the international trend, which increasingly relies on digital technologies to squeeze the environmental footprints and accelerate the efforts for sustainable development.

The estimation (estimate=0.141,  $P=0.001$ ) shows the important impact of digital marketing strategies on the growth of online commercial activities. Further, Economic Development (Estimate = 0.204,  $P$

< 0.001) exhibits a substantial positive effect because e-commerce, as a mediating variable, plays an important role in increasing economic growth by providing a platform for the survival of small and medium Enterprises. These findings have some policy implications. The first thing to shed light on is that Digitalization, Digital Marketing, and Economic Development have a tremendous positive relationship. Therefore, improved digital infrastructure and marketing strategies must be in the spotlight. Investments in digital technology should be prioritized for instances where they can help deliver a high quality of life through efficient public services with minimized operational costs. Promoting economic activity by encouraging businesses to use digital marketing will help raise their competitiveness and reach.

In addition, the discovery of the important role of Sustainability on Economic Development: Estimate (0.223,  $P < 0.001$ ) implies that going sustainable will ameliorate endless prosperity. Sustainable development should be incentivized through policymakers' promotion of green technology and sustainable business practices. However, businesses must do the same to adjust their operations to sustainability goals to comply with regulatory requirements and consumer expectations.

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