

An Analytical Study on the Impact of Digitalization on the Economic Sustainability of Street Vendors: The Mediating Role of Digital Literacy

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ABSTRACT

Digitalization has become a significant economic sustainability enabler as a key factor to change the traditional ways of conducting business and new opportunities for informal sector businesses. In this case, this study tries to investigate the impact of digitalization on the economic sustainability of street vendors in Tamil Nadu with digital literacy as a mediating variable. The research design used was quantitative research, as well as analytical research, with primary data obtained from street vendors as respondents numbered 430 with the technique of structured questionnaire. To explore direct and indirect relationships between study variables, the collected data was analyzed with Partial Least Squares Structural Equation Modelling (PLS-SEM). The result showed that Digitalization has a significant positive effect on Street vendors economic sustainability and street vendors digital literacy. The results also show that digital literacy has a significant impact on the economic sustainability and that it acts as a moderator in the relationship between digitalization and economic sustainability. It points out that digital vendors who have greater digital literacy will be better able to use digital technology, access markets, increase business productivity and ensure long-term economic sustainability. The results highlight the need to improve the digital skills of street vendors by providing training, policy measures, and digital inclusion initiatives to improve their livelihoods and resilience. The study adds to the literature by presenting empirical evidence, the interconnection between Digitalization, Digital literacy and Economic sustainability and also provides practical implications for the policy makers, financial institutions and the local authorities towards the promotion of sustainable development of street vendors in Tamilnadu.

Keywords: Digitalization, Economic Sustainability, Digital Literacy, Street Vendors, Tamil Nadu, PLS-SEM, Digital Payments, Informal Economy.

1. INTRODUCTION

Digitalization is one of the most influential actors in the modern economies that have been changing the traditional way of business to technology-driven systems. Digital technologies have brought the informal sector to life in developing countries, creating a more accessible, efficient and competitive informal enterprise. Street vendor is one of the constituent groups of the urban informal economy sector, and is increasingly using digital technology such as mobile payment apps, Quick Response (QR) codes, social media marketing platforms, online delivery apps, and digital banking services to help their business survive in an increasingly dynamic economy. The use of digital technologies in street vending has opened the doors to a better customer reach, faster transactions, greater financial inclusion and better income. But whether or not these digital technologies are used to their full potential largely relies on the digital literacy of the vendors, which is crucial to their effective adoption and use of digital resources for sustainable economic growth (Feroz, Zo, & Chiravuri, 2021; Knudsen, Lien, Timmermans, Belik, & Pandey, 2021).

Street vending is an important source of livelihood to a large section of population in Tamil Nadu including the ones with low educational qualification and low financial status. The street vendors play a crucial role in the urban economic development as they supply goods and services at a lower price and also help in developing local

supplies. However, despite their economic contribution, they often struggle with some difficulties, like unsustainable income sources, poor access to formal financial systems, lack of technological skills, and exposure to economic shocks. Appeals of digitalisation have opened up new opportunities to solve most of these problems as it now allows vendors to grow their market presence and enhance the business functionality. Previous studies revealed that digital platforms and technological innovations help small businesses operating in the informal economy to be resilient and sustainable (Prasetyo, 2024; Khatami, Sanguinetti, & Khatami, 2024).

The COVID-19 Pandemic was another catalyst to digitisation of small businesses and street vendors. Due to the limitations of physical contact, the vendors had to use cashless methods to transact business and buy and sell products and had to rely on digital marketing. Digital payment platform applications are now a crucial part of conducting business everyday, making it easier and faster to make transactions. A study on street vendors has shown that the use of electronic payment methods has a positive impact on quality of business, income generation and satisfaction of the customers. Such technological innovations have allowed vendors to carry on their businesses in times of economic uncertainty and helped to improve their economic sustainability in the long run (Panda & Sahoo, 2022; Singh, Rizwana, & Rashmi, 2025).

Economic sustainability can be defined as the capacity to sustain a business's income and profitability, utilise resources efficiently and remain viable in the face of external economic forces. Economical sustainability is crucial for street vendors, as their livelihoods rely on the ability to sell their products in a sustainable way and keep their businesses afloat. Digitalization helps to ensure economic sustainability through greater effectiveness in operations, lower transaction costs, better market access and customer relationships. However, to reap the full benefits of the digitalization, a proper level of digital knowledge and competencies is required. Digital literacy is the ability to get access to, comprehend, assess and apply digital technologies in business contexts. Digital literacy is a crucial skill for the vendors, as those with better literacy are more likely to embrace technological advancements and leverage digital tools to enhance their business practices (Ben Ghrbeia & Alzubi, 2024; Ibrahim & Aduah, 2025).

Digital literacy has become a key enabler for the sustainable development of MSEs. It helps the business owner to use digital payment systems, social media platforms, e-commerce apps and financial technologies efficiently. Research has shown that digital literacy directly affects the use of technology and business sustainability and it can help improve the ability to make decisions and innovation. Moreover, digital literacy enhances business resilience by enabling entrepreneurs to stay responsive to the changes in the market and customer needs. Digital literacy can be a glaring opportunity for street vendors to support their economic sustainability in the digital economy because it can mediate the use of street vendors to handle their business from the low level to the medium level (Suyanto et al., 2023; Ibrahim & Aduah, 2025).

Adoption of e-payment by the street vendors and factors affecting the acceptance of e-technology has been studied in India by several studies. Mobile payment systems based on QR codes are becoming increasingly popular, because of the convenience, simplicity, and low cost of these systems. But factors like lack of digital literacy, lack of technology awareness, fear of internet fraud and lack of training remain as barriers to widespread adoption. Studies have shown that street vendors are in need of constant assistance, guidance, and digital education to gain the greatest benefits from technological advancements (Nandru, SA, & Chendragiri, 2024; Sahoo, Leena Hota, & Panda, 2026). Equally, research on technology adoption has highlighted the role of behavioural intentions, usefulness and ease of use in determining the acceptance of digital payment apps by street vendors (Prasad, Sharma, & Suri, 2023).

While the significant amount of literature on digital transformation and on digital payments and business sustainability has been investigated, limited research has been conducted on the combined effect of digitalization, digital literacy and economic sustainability among street vendors, especially in Tamil Nadu. The current studies have mainly been directed towards technology implementation or financial performances but without giving consideration to the role of digital literacy in improving sustainable economic outcomes. In a region with a fast

urbanization process and growing Digital Infrastructure development like Tamil Nadu, it is important to see how Digital literacy is affecting the effect of digitalization and economic sustainability of street vendors. This study aims to fill this research gap, by seeing how Digitalization affects the economic sustainability of street vendors in Tamil Nadu, and what role digital literacy can play in strengthening the relationship. The results of the study could be beneficial to policy makers, local governments and development agencies to develop an effective strategy that would make digital inclusion possible and enhance the well-being of street vendors.

Objectives of the Study

1. To analyze the impact of digitalization on the economic sustainability of street vendors in Tamil Nadu.
2. To examine the influence of digitalization on the digital literacy of street vendors in Tamil Nadu.
3. To assess the role of digital literacy in enhancing the economic sustainability of street vendors in Tamil Nadu.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Digitalization has become a game-changer, having a huge impact on the sustainability and development of formal and informal businesses. To enhance the performance of the business and support their economic sustainability, street traders have also been making use of digital technologies like mobile payment systems, Quick Response (QR) codes, social media platforms, and digital banking applications in recent years. Street selling is one of the key livelihoods in Tamil Nadu and plays a significant part in the urban economy. Street vendors, however, face a number of problems, including unpredictable earnings, lack of access to formal financial institutions, low and unpredictable technology levels and susceptibility to economic shocks. Digitalization can provide ways to overcome these barriers by enhancing the market access, customer engagement and efficient business operations. Feroz, Zo and Chiravuri (2021) highlighted that digital transformation has a positive impact on sustainable development by increasing the efficiency of operations and encouraging innovation. Likewise, according to Knudsen, Lien, Timmermans, Belik, and Pandey (2021), digitalization contributes to the sustainability of the organization and boosts the competitive advantage in times of economic uncertainty. From the results, it can be seen that implementing digital technology has a positive effect on street vendors' economic sustainability.

Some studies have investigated the correlation between digitalization and the performance of businesses of street vendors. Digital payment systems for street vendors have been shown to enhance their business performance and efficiency in transactions and comfort to customers (Panda and Sahoo, 2022). Similarly, Singh, Rizwana, and Rashmi (2025) found that in the street vendors' context in Bengaluru, mobile payment systems have a positive impact on improving their income and overall business performance. Digital platforms are also a big contributor to business resilience and sustainability. Khatami, Sanguineti and Khatami (2024) discovered that digital platforms help raise the resilience of food entrepreneurs, enabling them to access broader markets and maintain their operations during challenging times. In the same line, Prasetyo (2024) said that digital technologies play a crucial role in formalizing informal businesses. These studies show that digitalization can help the street vendors realise their potential for achieving economic sustainability in the long-term by improving productivity and market access. From the foregoing it is hypothesized that:

H₁: Digitalization has a significant impact on the economic sustainability of street vendors in Tamil Nadu.

In the digital age, digital literacy is regarded as a key skill required for the successful implementation of digital technologies as this requires an understanding of the abilities of its users. Digital literacy is the knowledge and competence to access, assess and use digital technologies for personal and professional uses. According to Ben Ghrbeia and Alzubi (2024), digital literacy plays a crucial role in digital transformation, as it empowers users to effectively embrace technological advancements. Likewise, Ibrahim and Aduah (2025) asserted that digital literacy positively impacts the sustainability of SMEs by enhancing digital technology usage. Suyanto et al (2023) also pointed out that digital literacy is a mechanism for sustaining micro and small businesses in adapting to technological changes. The results show that digitalization stimulates people in acquiring digital skills which are essential for the ongoing business.

Digital applications are increasingly key for street vendors when it comes to payments, offering promotions, and communicating with customers. Nonetheless, digital skills are a significant barrier on how technologies can be used effectively. With increased exposure to digital technologies, vendors are likely to improve their digital skills as they use them and learn more. Thus, digitalization is predicted to have positive impact on street vendors' digital literacy. With this fact in hand, the following hypothesis is made:

H₁₂: Digitalization has a significant impact on the digital literacy of street vendors in Tamil Nadu.

Digital literacy is relevant to economic sustainability as a means to intelligently harness the technological resources and adapt to market conditions. Hidayat-ur-Rehman (2025) concluded that these competencies for literacy are beneficial in achieving sustainable business performance by making effective adoption of financial technologies. In the same vein, Ibrahim and Aduah (2025) showed that digital literacy has a direct impact on the sustainability of businesses by enhancing the technological capability of entrepreneurs and their decision-making abilities. Pilz et al., (2015), also emphasized the relevance of skill development in enhancing the street vendors life in informal sector. Digital literacy empowers vendors to conduct digital transactions, interact with customers, and run business optimally, leading to business sustainability. As such, it is expected that the digital-literacy will have a positive impact on the economic sustainability of street vendors. The above discussion leads to the following hypothesis:

H₁₃: Digital literacy has a significant impact on the economic sustainability of street vendors in Tamil Nadu.

Digital mediation has been very much discussed in the field of digital transformation studies. Despite the fact that digitalization opens up technological instruments, it will not necessarily be translated into economic sustainability without digital skills. Digital literacy is a crucial tool that allows citizens to harness digital opportunities and achieve sustainable results, as highlighted by Ben Ghrbeia and Alzubi (2024). Similarly, Ibrahim and Aduah (2025) discovered that the use of digital technology is a mediator between digital literacy and business sustainability. For street vendors, several challenges including lack of technological awareness and lack of training exist to the adoption of digital technologies. The study by Nandru, SA and Chendragiri (2024) indicates that street vendors are facing issues with acceptance of the QR code payment system, as they lack digital knowledge which is a major challenge in adopting the system. In the same manner, Sahoo, Leena Hota, and Panda (2026) found the technological complexity and lack of training as key constraints in the adoption of digital payment. The results pointed out that digital literacy is an integral component between digitalization and economic sustainability as it helps vendors leverage digital technologies to better support their businesses. Hence the following hypothesis is proposed:

H₁₄: Digital literacy significantly mediates the relationship between digitalization and the economic sustainability of street vendors in Tamil Nadu.

3. METHODOLOGY

The study was aimed at quantitative and analytical type focusing on the impact of digitalization on the economic sustainability between street vendors in Tamil Nadu, where the variable of mediations was digital literacy. The primary data was obtained from the structured questionnaire which was filled by 430 street vendors in major urban and semi-urban centres of Tamil Nadu. Respondents were taken using a convenience sampling of those who are accessible to the study and who are actively involved in street vending activities. The measurement items in the questionnaire were related to digitalisation, digital literacy and economic sustainability and these were designed using a five-point Likert scale from strongly disagree to strongly agree. The collected data was analyzed by means of Partial Least Squares Structural Equation Modelling (PLS-SEM) to investigate the direct and indirect (mediating) relationships and path analysis among latent variables. The analysis was used to evaluating the measurement model using the reliability and validity test results including Cronbach's alpha, composite reliability, average variance extracted (AVE), and discriminant validity. The structural model was then tested to understand the validity and strength of the relationships between digitalization and economic sustainability through the lens

of digital literacy, and to assess if digital literacy plays a mediating role between them. The results from the study are anticipated to serve as empirical studies to establish the role of digital technologies and digital competencies in creating long-term economic sustainability of street vendors in Tamil Nadu.

4. RESULTS AND FINDINGS

Table 1: Demographic Profile of Respondents (N = 430)

Demographic Variable	Category	Frequency	Percentage (%)
Gender	Male	238	55.3
	Female	192	44.7
Age Group	Below 30 years	82	19.1
	31–40 years	146	34
	41–50 years	128	29.8
	Above 50 years	74	17.1
Educational Qualification	No Formal Education	68	15.8
	Primary School	94	21.9
	Secondary School	156	36.3
	Higher Secondary and Above	112	26
Type of Business	Food Vendors	124	28.8
	Fruit and Vegetable Vendors	102	23.7
	Clothing and Accessories	88	20.5
	Household Items	62	14.4
	Others	54	12.6
Years of Experience	Below 5 years	96	22.3
	5–10 years	158	36.7
	11–15 years	104	24.2
	Above 15 years	72	16.8
Usage of Digital Payment	Yes	342	79.5
	No	88	20.5

Source: Primary Data

Table 1 gives demographic details of the 430 street vendors studied in the state of Tamilnadu. Results show that there was a fairly even gender split with 55.3% of the respondents being male and 44.7% female. As far as the age is concerned, majority of the respondents (34.0%) were in the age group 31-40 years and 29.8% in the age group 41-50 years, hence most of the respondents were in economically active age group. When asked about educational qualifications, 36.3% had secondary school education while 15.8% were uneducated; this indicated that there was a difference in the extent of education between vendors. When business type was considered, food vendors (28.8%) were the largest group followed by fruit and vegetable vendors (23.7%). The majority of the respondents (36.7%) had a period of 5-10 years of working experience in business which represents a significant experience in street vending operations. Moreover, street vendors in Tamil Nadu had shown significant adoption of digital technologies as 79.5% of the respondents reported the use of digital payment. Overall, the demographic characteristics suggest that the respondents have varied socio-economic backgrounds and sufficient exposure to digital practices, allowing for analysis of the relationship between digitalization, digital literacy and economic sustainability.

Table 2: Reliability and Validity Measures

Construct	Number of Items	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
Digitalization	6.000	0.892	0.918	0.652
Digital Literacy	5.000	0.876	0.910	0.669
Economic Sustainability	6.000	0.904	0.926	0.677

Source: Primary Data

The reliability and convergent validity of the constructs used in the current study is shown in Table 2. The findings show that they are reliable and valid at the recommended levels of all constructs. Digitalization had a Cronbach's Alpha value of 0.892, a Composite Reliability (CR) value of 0.918, and an Average Variance Extracted (AVE) value of 0.652, which implied that it had strong internal consistency and satisfactory convergent validity. Digital Literacy had a Cronbach's Alpha value of 0.876, a CR value of 0.910, and an AVE value of 0.669, which were adequate as these values indicated that the construct indicators were reliable and could explain the underlying latent variable. Likewise, Economic Sustainability had Cronbach's Alpha of 0.904, CR of 0.926 and AVE of 0.677, which suggested that it had excellent internal consistency and acceptable convergent validity. All the Cronbach's Alpha and Composite Reliability values are above the recommended value of 0.70 and all AVE values are above 0.50, indicating that the measurement model is reliable and valid. Thus, these constructs can be used in the next step of structural model analysis by PLS-SEM for understanding the relationship between the variables digitalization, digital literacy, and economic sustainability of street vendors in Tamil Nadu.

Table 3. Model Fit Summary (PLS-SEM Path Analysis)

Model Fit Index	Recommended Threshold	Obtained Value	Interpretation
Standardized Root Mean Square Residual (SRMR)	< 0.08	0.056	Good Fit
Normed Fit Index (NFI)	> 0.90	0.927	Good Fit
RMS Theta	< 0.12	0.098	Acceptable Fit
Chi-Square (χ^2)	Lower values preferred	412.384	Acceptable
d ULS	Lower values preferred	1.284	Acceptable
d G	Lower values preferred	0.864	Acceptable

Source: Primary Data

Table 3 shows the model fit summary for the PLS-SEM path analysis in examining the relationship between digitalization, digital literacy and economic sustainability of street vendors in Tamil Nadu. The results show that the overall fit of the proposed structural model is adequate. The results of SRMR = 0.056 which is less than recommended 0.08 shows that it fits good. The Normed Fit Index (NFI) value obtained was 0.927, which is higher than the acceptable value of 0.90 indicating that the model proposed in this study very well fitted with the actual observed data. The RMS Theta value is 0.098, which is less than the acceptable limit value 0.12, thus satisfying the outer model quality. Moreover, Chi-Square (χ^2) value is 412.384, d_ ULS (1.284); d_ G (0.864) are in the acceptable range for evaluating the PLS-SEM models. Overall, these results support the model's statistical validity and it is appropriate to explore direct and mediated links of digitalization, digital literacy, and economic sustainability of the street vendors of Tamil Nadu.

Table 4. Structural Model Summary

Hypothesis	Path	Path Coefficient (β)	t-value	p-value	Result
H ₁ 1	Digitalization → Economic Sustainability	0.421	7.842	0.000	Supported
H ₁ 2	Digitalization → Digital Literacy	0.683	14.576	0.000	Supported
H ₁ 3	Digital Literacy → Economic Sustainability	0.387	6.954	0.000	Supported
H ₁ 4	Digitalization → Digital Literacy → Economic Sustainability	0.264	5.871	0.000	Supported

Source: Primary Data

The results of the PLS-SEM analysis of the structural model are reported in Table 4. The findings show that Digitalization positively and significantly predicts Economic Sustainability ($\beta = 0.421$, $t = 7.842$, $p < 0.001$), thus

supporting H₁. This means that using more digital technologies leads to the sustainability of Tamil Nadu street vendors' economy. The results also confirm that Digitalization has significant impact on Digital Literacy ($\beta = 0.683$, $t = 14.576$, $p < 0.001$) in support of H₂, which indicated that exposure to digital technology has positive influence in vendors' digital competency. In addition, Digital Literacy significantly predicts Economic Sustainability ($\beta = 0.387$, $t = 6.954$, $p < 0.001$), thereby supporting H₃ that suggests that vendors with high digital literacy level are more likely to be economically sustainable. Finally, the mediating analysis shows that Digital Literacy has a significant mediation effect between Digitalization and Economic Sustainability ($\beta = 0.264$, $t = 5.871$, $p < 0.001$), which discussed in detail. Overall, the results substantiate the direct effect of digitalization on economic sustainability as well as its indirect effect on economic sustainability by focusing on the role of digital literacy of the street vendors of Tamil Nadu.

5. DISCUSSION

Based on the research findings, it can be concluded that digitalization directly and indirectly via digital literacy plays a pivotal role regarding economic sustainability of street vendors in Tamil Nadu. Based on the result, it can be concluded that the use of digital technology such as digital payment system, street vending online and mobile application increases the efficiency of street vendors and extends the reach of customers and income stability. The results are in line with previous research which focused on the positive role of digital transformation for sustainable businesses performance. Feroz, Zo, and Chiravuri (2021) discovered that digital transformation plays a vital role in enhancing sustainable development by streamlining the process of organizations and promoting innovation. In a similar vein, Knudsen, Lien, Timmermans, Belik, and Pandey (2021) found that competitive advantages and long-term sustainability is increased by digitalization, particularly in times of economic uncertainty. The results are also in line with Panda and Sahoo (2022) who reported that DPS positively affects the performance of street vendors' businesses, and Singh, Rizwana, and Rashmi (2025) who reported that street vendors can increase their income and financial stability through the use of mobile payments. Hence, digitalisation has been a useful tool for the informal sector entrepreneurs to promote economic sustainability of entrepreneurs in Tamil Nadu.

In addition, the study reveals that digital literacy plays a major role in the correlation between digitalization and economic sustainability. The more digital literate street vendors are, the more they can make use of digital technologies effectively which means they have the ability to make the best use of the digitalisation. This aligns with the findings of Ben Ghrbeia and Alzubi (2024), which underscored the importance of digital literacy for a successful digital transformation, leading to sustainable outcomes. Likewise, Ibrahim and Aduah (2025) observed that heightened usage of digital technology promotes business sustainability, as higher digital literacy levels lead to it. The results also align with the findings from Suyanto et al. (2023) that digital literacy is essential as a survival strategy for micro and small businesses in an economic transition. In addition, Nandru et al., (2024) and Sahoo et al., (2026) also emphasized that lack of digital understanding is one of the major challenges in the adoption of technology among street vendors. Hence, by investing in training, awareness-camps, and government support to enhance their digital literacy, these vendors can leverage digital platforms and ensure their economic sustainability in Tamil Nadu.

6. IMPLICATIONS

The findings of this study have important practical, policy and managerial implication for promoting the economic sustainability of street vendors in Tamilnadu. The study concludes that digitalisation, if digital literacy of the vendors is not ensured, does not lead to sustainable economic effects. To this end, government bodies, local governments, financial institutions and NGOs should create specific digital skills courses on the use of digital payment systems, mobile applications, online marketing platforms and cybersecurity awareness. Policymakers can help drive digital inclusion by encouraging the availability of low-cost internet access and ease of use in digital platforms and offering ongoing training for informal operators in urban and semi-urban settings. In addition, financial institutions can take proactive steps to promote the uptake of digital financial services through providing

user-friendly applications and technical support. Developing digital literacy will empower the street vendors to leverage digital technologies to make their business more efficient, accessible and economically sustainable. Thus, the study offers empirical data that will consequently help in designing a digital policy to better the economic resilience and livelihoods of street vendors in Tamil Nadu.

7. CONCLUSION

The present study aims at examining the influence of 'digitalization' on 'economic sustainability' of street vendors of Tamil Nadu with special reference to 'digital literacy' as a mediator. The results showed that digitalisation has a significant positive impact on the economic sustainability of street vendors, this has led to an improvement in the efficiency of their businesses, enabled cashless transactions, extended the market and developed customer relationship. The study also found that digitalization has a positive effect on the digital literacy of vendors, helping them gain technological skills to adapt to the digital business landscape. Moreover, digital literacy significantly positively influenced economic sustainability, meaning that digital literacy of vendors was the more important for their capacity of adapting to market changes and sustainability of their business ventures over time.

The mediating analysis showed that digital literacy is a significant factor for the reinforcement of the relationship between digitalisation and economic sustainability. This implies that the advantages of Digitalization can only be maximized if street vendors have the required knowledge and skills to use digital. So it is important to invest in enhancing digital literacy as a development strategy for those who want to foster inclusive economic development at policy and development agency level. In conclusion, the findings of this study extend the literature by presenting empirical evidence of the relationship between digitalisation, digital literacy and economic sustainability of street vendors in Tamil Nadu. The results highlight the importance of holistic efforts towards digital inclusion which will help in the long-term economic sustainability and sustainable livelihoods of street vendors in the state.

8. FUTURE RESEARCH DIRECTIONS

Further studies can involve the street vendors in other parts of India to compare the results state-wise and in various socio-economic conditions. Other potential explanatory factors can be used to gain a deeper understanding of the drivers of economic sustainability, including financial literacy, technological readiness, government support, digital trust, and innovation capability. Longitudinal studies may be pursued to explore underlying trends and evolution in digital adoption and sustained business results over time. Moreover, future research can suggest mixed methods approach to understand the experiences and the problem faced by street vendors in the use of digital technologies in a more depthful way, blending quantitative and qualitative research methods. Further comparative analysis of urban and rural vendors and analysis of various groups of informal sector workers would also help to create a more holistic approach for supporting digital inclusion and sustainable economic growth.

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