

-RESEARCH ARTICLE-

IMPACT OF DIGITAL ECONOMY ON GOVERNANCE SYSTEM INFLUENCING DIGITALIZATION AND SOCIAL REFORMS

Mao Ningning

Ph.D. of Economics, Department of Economics,
Sejong University, Seoul, South Korea
E-mail: jjecaixiaozhongzi@gmail.com
<https://orcid.org/0000-0002-0098-2433>

Zhang Mengze (Corresponding Author)

Assistant Professor, Department of Economics,
Sejong University, Seoul, South Korea
E-mail: zhangmengze@naver.com
<https://orcid.org/0000-0003-1370-0391>

—Abstract—

The primary objective of this research project was to evaluate the influence that social reforms, digitization, and the digital economy have on sustainable governance. In addition, the function of the quality of life as a potential mediator of the connection between the digital economy, digitalization, and social reforms was investigated in this study. For data collection, a questionnaire method was administered to 465 members of management staff working in China's corporate sector. A structural equation modeling (SEM) approach and the Smart PLS software were utilized to analyze the collected data. According to the findings, the direct relationship between the digital economy and the sustainable governance mechanism is insignificant. On the other hand, the findings showed a positive and significant relationship between digitalization and social reforms and the sustainable governance mechanism. The findings also showed that quality of life served as a mediator between the digital economy, digitalization, and social changes. This was another important discovery. In terms of the practical consequences, it is without a doubt that this study would help to strengthen the sustainability of governance

Citation (APA): Ningning, M., Mengze, Z. (2022). Impact of Digital Economy on Governance System Influencing Digitalization and Social Reforms. *International Journal of Economics and Finance Studies*, 14 (04), 219-251. doi:10.34111/ijefs. 20220112

mechanisms through the implementation of social reforms, the digital economy, and digitalization. In addition, the challenges associated with the digital economy could be addressed with the assistance of this study.

Keywords: Digital economy, digitalization, social reforms, quality of life, Sustainable governance mechanisms

1. INTRODUCTION

The massively transformational process known as digitization has been accelerated over the years due to the widespread adoption of digital technologies. The processing, production, transmission, and sharing of a wide variety of data sources and information have all been made easier for humanity due to the advent of digitization. The digitization process did not occur all at once or instantly due to the high rate of change. According to (Avotra et al., 2021b), it took place across time and was powered by three stages of technological upheaval and creation. The first stage of digitization is supported by the widespread adoption and deployment of advanced technologies such as management information systems, automatic monitoring and reporting systems for corporate performance (Huo et al., 2022), broadband, and voice telecommunications fixed and mobile. These technologies are helping to facilitate the transition from analog to digital systems (Niu, 2022). Many of these technological advancements have made obtaining information from a greater distance much simpler. In addition, the next wave of digitization started with the advent of the internet and its attendant expansions, such as online marketplaces and search portals. This was the beginning of the digital revolution.

The new wave enabled the huge dot-com web to unite customers and businesses on an entirely new level to obtain, manufacture, and disseminate goods. As a direct consequence, the third succeeded the second wave, which featured more advanced technology such as the internet of things (IoT), artificial intelligence (AI), robotics, and detectors. All of these advanced technological advancements were made to enhance information processing, automate mundane daily tasks in corporations and governments, and enhance the precision of decision-making procedures in commercial enterprises (Mira et al., 2017; An et al., 2021; Sarwar et al., 2021). Berger believes that the digital revolution affects society on multiple levels, notably economics. Firms have gained a huge competitive edge in their ability to maintain their operations due to the increasing automation of numerous company activities. These activities include increasing production, lowering pricing, and enhancing operational structures. The advent of the digital economy has been beneficial not only to businesses but also to the labor market (Berger et al., 2017).

Because the extensive range of services offered by the digital economy has created many new jobs, the digital economy has impacted both the entrepreneurial and employment sectors. The operational structure of the digital economy relies heavily on data and information, which has contributed to the more efficient delivery of services such as

healthcare and education (Berger et al., 2017). Because it enables social integration and two-way communication, the digital economy substantially impacts human behavior and social relationships. This is because it provides alternatives for social integration. On the other hand, Goos has emphasized the flip side of the coin, demonstrating significant disadvantages associated with the digitalization of businesses (Goos et al., 2014). For instance, social exclusion on a personal level, online fraud and cyber attacks, disruptions in the workplace, the dissolution of a corporation, and so on are the drawbacks that put pressure on the government and policy makers to get a deeper understanding of the dynamic practice of digitizing the economy.

A digital economy is always advancing new concepts and expanding on existing ones. Legislators and regulators in information technology, telecommunications, and technology advancement might improve their ability to anticipate the changes resulting from successive waves of digitization and technical progress by evaluating the patterns of transitions (von Rimscha et al., 2018; Baku, 2022). Hence, to set up a digital economy that will be sustainable over the long term, digitization should be considered as a mix of two processes: research and development, as well as the evolution of creativity sense in customers, enterprises, and governments that make use of technology. In addition, it is very important to differentiate between the two processes since the first, known as technological growth, is far more advanced than the second, known as economic development (diffusion). Consequently, there may be a significant gap between the availability of products and their actual effects. For instance, incorporating computing into businesses throughout the middle of the twentieth century had no obvious influence on the amount of work completed. It took around 40 years, which was in 1990, for the considerable influence to become apparent (Schmidt et al., 2020).

After that, in the middle of the 1990s, the internet began to take off, ushering in an expanded digital arena that not only transformed the way businesses operate but also introduced new ways for customers and businesses to communicate with one another. The era in which computers became widely used and widely integrated into the economy of the entire world has now arrived. The internet and other forms of technology are becoming increasingly important in developing the new global economy. It has been suggested that throughout the second decade of the twenty-first century, over 75% of inhabitants of the United States were deemed frequent internet users, which is a significant increase from the 44% who were frequent users in the year 2000. (Mira et al., 2017). There is still some controversy regarding the extent to which digital platforms impact American businesses and how they contribute to the overall economic development of the state, according to state departments of commerce in the United States. Because of this, determining the extent to which a digital economy contributes to overall economic growth is of the utmost importance in light of the growing dependence that both consumers and businesses have on digital systems and technologies (Avotra et al., 2021c; Yingfei et al., 2022).

The impact of a digital economy has been the subject of significant research, and the idea itself is not new. For over twenty years, numerous regional Departments of Trade and other organizations have been conducting research and producing several papers analyzing various topics, including the influence of the digital economy on political and social governance systems. Some of these papers have been published ([Matkovskaya, 2021](#); [Williams, 2021](#); [Li et al., 2022](#)). 1998 marked the year that saw the publication of the first analyses of the digital economy. The data from the United States Census were used to construct research in 2001 that followed a line of reasoning very similar to the one used now to evaluate the impact of the digital economy. In addition, in 2016, the United States Department of Commerce established an advisory council to oversee a Digital Economy Board (DEB). This council was comprised of specialists from both academic and commercial fields. These experts have a wide range of technical experience and knowledge to contribute to the discussion when it comes to the digital economy and how it relates to economic policy. In their first report, DEBA proposed many techniques for assessing or monitoring the influence of digital economy measurements, such as GDP and economy, as well as the level of digitalization of various economic sectors. These methods included quantitative and qualitative approaches ([Mulaydinov, 2021](#); [Liu et al., 2022](#)).

It is important to note that the digital economy's greatest defining characteristic may not be its technologies but rather its creative output. On the other hand, the petroleum and petrochemical sectors have social and environmental concerns that are decades old and no longer relevant when stakeholders challenge them. Conversely, the internet enables innovative minds to develop new answers to old problems ([Alam et al., 2018](#); [Lynch, 2020](#)). E-business models, on the other hand, tackle these problems at their most fundamental level. The digital economy acknowledges the significance of challenges in its own right rather than postponing their resolution until they threaten conventional business methods. Consequently, any sector that is seeing rapid expansion is better positioned to easily apply these digital measures than any traditional business mired in outmoded mentalities ([Linkov et al., 2018](#); [Li et al., 2020](#)). The rise of long-term e-commerce, made possible by the digital economy, has caused an overall shift in the balance of power between consumers and businesses ([Ahmedov, 2020](#)).

Because prices are readily available with a single tap, the most significant advantage for clients is the availability of goods and services offered at discounted prices. On the other hand, consumers are not the only people who stand to gain from implementing e-commerce within the context of the larger picture. The internet, without a doubt, makes more just and long-lasting commercial practices possible, but it also requires formulating unambiguous moral guidelines to function well ([Wasastjerna, 2018](#); [Chen, 2020](#)). In the past, several studies had the primary objective of determining the effects of governance systems on the development of sustainable digital economies. Recently, research of this kind has been conducted from the Chinese perspective to build a sustainable digital economy through effective governance. This research also focuses on social reforms'

function in mediating relationships (Xianbin et al., 2021). This study did not evaluate the reciprocal individual effects of digital economy, digitization, and social changes on sustainable governance mechanisms. Because of this gap, we were able to evaluate the effect that they have on the formation of sustainable governance structures.

The proliferation of digital technology, which contributes to digital economies worldwide, negatively impacts the quality of life. These kinds of studies have solely focused on the digital transformation of economies (Zhang et al., 2021), which leaves another gap in examining the mediating impact of quality of life on the individuals involved. This research led to the development of several questions: How, rather than governance systems influencing sustainable digital economies, could sustainable governance mechanisms influence digital economies? How might the development of digitization contribute to the formation of more sustainable governance structures? In what ways might social reforms contribute to the formation of governance mechanisms? How might the quality of life operate as a mediator between the digital economy, digitization, social changes, and methods of sustainable governance? To find answers to these issues, recent research has been designed to evaluate the impact of the digital economy, digitization, and social reforms to build sustainable governance systems. In addition, this study investigated and evaluated the function of quality of life as a mediator between the digital economy, digitization, social reforms, and sustainable governance mechanisms.

This study has the potential to contribute to a fuller knowledge of how the digital economy may impact the governance system, particularly in terms of digitalization and societal changes. This study could contribute to this understanding. In light of the growing significance of digital technologies, it is essential to understand how these technologies can affect how governments function. This understanding can be gained by studying how digital technologies impact governments. This study can shed light on the importance of digitalization in administrative procedures, another possible benefit of the study. Because a rising number of services are moving online, governments must employ digital technology to improve the levels of efficacy and efficiency that their operations now possess. This study has the potential to highlight the benefits of digitalization in governance and provide insights into how governments may improve their services by leveraging digital technologies. This study has the potential to highlight the benefits of digitalization in governance and provide insights into how these benefits can be achieved. The theory of technology enactment perspective centers on applying digital technologies to advance social and economic life. This is the perspective to approach the study, which investigates how the digital economy can affect government and lead to social reforms. By the year 2023, it is anticipated that global e-commerce sales will have surpassed \$6.5 trillion, which indicates a considerable expansion of the digital economy. (Statista, 2021). In 2020, the COVID-19 outbreak drove an increasing adoption of digital technology in governance, with governments turning to digital solutions to handle the issue. (to be held in 2021 by the World Economic Forum) According to the findings of

one study, adopting digital government services can result in cost reductions of up to 8% of GDP in countries with high incomes and up to 12% of GDP in countries with low incomes. ([Annual Report of the World Bank, 2016](#)) The incorporation of digital technology into governance has the potential to boost public participation due to the availability of online platforms that provide citizens with opportunities to interact with their government and participate in decision-making. ([The United Nations in 2019](#)).

2. THEORETICAL UNDERSTANDING FOR HYPOTHESIS DEVELOPMENT

The study of the digital economy has thus far been approached from various angles. The information society theory provides the most fruitful foundation on which to research the digital economy ([Dyachenko, 2020](#)). The idea of digitalization in the scientific domain is not new in the context of the practice of international economics. We make a distinction between the classics of scientific knowledge, for which the suggestions founded the theoretical foundation of the work, which were shifted from futuristic idealistic theory building into the science thought in the scientific field, and mainstream researchers among the scientists who are directly involved in the study of digitization, the procedures of informational support. In the case of the classics, the suggestions were shifted from futuristic idealistic theory building into science thought in the scientific field. It is a widely held belief that the work done by several researchers in the past, including but not limited to, provided the foundational support and acceptance necessary for the thesis of the information society ([Ogletree, 1983](#); [Porat, 1998](#); [McLuhan, 2002](#); [Lekachman, 2022](#)). After researching the conceptual and analytical underpinnings of the digital economy theory, several significant topics came to the forefront of the discussion.

To begin, a significant number of scholars were focusing their efforts on understanding the impact of today's digital technology on a variety of facets of human existence, most notably the field of economics. Researchers explore the practicability of implementing several critical and cutting-edge new technologies and the impact these technologies have on businesses, the behaviors of customers and market participants, and a wide range of other aspects. In addition, academics' attention was brought to the problem of "traditional" organizations already undergoing radical change as a direct consequence of introducing a new technological framework into commercial endeavors. The third step is investigating the contradictions between the current production forces and the fast aging productive relations. The notion of the information society is not a recent development; rather, it has evolved into the theory of the digital economy. This theory has been in the works since the middle of the twentieth century, and its development has been contributed to by several scientists with varying political and economic perspectives ([Dyachenko, 2020](#)).

It is important to note that by the final decade of the twentieth century, interest in this theory had begun to wane due to increased criticism and the beginnings of even more

socialist policies asserting to be an even more precise response to the current economic picture of the world, as well as getting a decent prediction and adjudicative instrument. This should be noted (Malakhova et al., 2018; Solovykh et al., 2019; Tarakanov et al., 2019). Recent studies used the information society theory as the theoretical foundation for the digital economy, including: (Forman, 2010; Weber et al., 2012; Hanlon, 2015; Schmidt et al., 2015; Boccia et al., 2017; Nyhagen, 2017). Reforms in social institutions and improvements in people's standard of living are essential components of governance systems and mechanisms, and they constitute the basis of the notion of effective governance (Xianbin et al., 2021). According to the good governance theory (Stojanovic et al., 2016), good governance is the theory that describes the distribution and administration of assets to handle collective problems. According to this theory, good governance occurs whenever a state successfully offers the exceptional social infrastructure to its citizens. This entails evaluating the states based on the quantity and quality of public goods they supply to those within their borders.

Three essential components must be present for successful governance: efficiency, openness, and accountability (Smirnova et al., 2017). Another governance mechanism that should be considered is the Fountain conceptual framework of the technology enactment paradigm. This framework is based on studying modernism, networking organizations, governance, and bureaucracy. It has provided great insight into the governance mechanism that could be applied in a digitalized economy. This paradigm emphasizes the dynamic relationships between technology, organizations, and organizations. "Developments in technology were not so much accepted or utilized as adopted by decision-makers" (Fountain, 2001). Technology gives rise to e-governments, which can deliver services to corporations and individuals while guaranteeing that the digital economy is governed legally and protected from harm. According to the findings of experts, the concept of e-government originated as a component of public governance at the same time that the private sector began using digital technology in trade and business (Hoetker et al., 2002; Oostveen, 2007; Schellong, 2007; Fishenden et al., 2013). This implementation of Fountain's theory of technology served as the foundation for subsequent research.

2.1 Digital Economy, Digitization, Social Reforms, and Sustainable Governance Mechanisms

The concept of the digital economy has evolved into such a vast and dynamic spectrum that it is impossible to describe it with a single term that is both precise and synthetic. According to Tapscott (1995), the digital economy is a "real economy" built on the connectedness of human intellect (Ali et al., 2018). The digital economy and its interconnections with multiple elements necessitate a thorough and multidimensional strategy. The fundamental reason for employing a range of interventions is to embody the basic concept of sustainable government processes by incorporating the six features of e-government that are currently in use (Zhao et al., 2015). The digital economy refers to infusing technological resources and contemporary technologies into conventional

businesses, such as mobile applications, social networks, and e-commerce. It involves a company's strategy shift toward adopting new technologies and applying digitalization to increase value output (Sturgeon, 2021).

This strategic shift facilitates innovation by providing wide market knowledge and consideration for newly emerging ideas. According to the previous study, organizational strategies are equally significant as technological adaptation in boosting a company's production value (Fjeldstad et al., 2018). To develop a sustainable digital economy, it is necessary to comprehensively analyze the possibility of reorganizing existing business models to keep up with the digital revolution. It can result in firms that operate more efficiently and have a competitive edge. As past research has demonstrated, this may positively affect the economy as a whole and benefit both consumers and businesses (Bican et al., 2020). (Yeow et al., 2018) has explored the impact of technical advancements on social transformations and the well-being of distinct communities. By adapting to contemporary information technology, businesses can prosper with continually shifting customer and supply expectations (Garcia De Lomana et al., 2019).

If its firms can provide a comprehensive, up-to-date understanding of digitalization gleaned from the economy's R&D resources, a digital economy could result in a sustainable governance system. Thus, every company should consider migrating its operations to digital platforms that enable efficiency, innovation, and consumer contact. This may result in a better work environment and a more effective governance structure (Brenner, 2018; Khin et al., 2020). The digital economy depends on the connectivity between digital services and technology and enterprises' innovation and adaptation rates. Hence, digital adaption in the economy as a whole is the primary enabler of the digital economy. Thus, to develop a digital economy and innovation-defining sustainable governance systems, digital upgrades must correspond to each business model in each economy (Chen et al., 2018).

The reform movement is a social component that tries to enhance or transform particular social systems over time. This movement may not always embrace extreme or fundamental transformations. In contrast, radical movements attempt to revolutionize society (Kolosov et al., 2017). Governance influences the quality of government-citizen connections and citizen-to-citizen interactions. Increasing social trust is one such method. Individuals live significantly better in areas where they trust and believe others, including the police, their neighbors, their coworkers, and their acquaintances (Glass et al., 2019). In turn, the competency of government agencies can enhance views of trustworthiness. Countries can win historic and significant victories with social reforms, rapid development, and constant global reputation enhancement (Howell et al., 2018; Kyriacou et al., 2019; Estache et al., 2021). Governance encompasses all methods by which individuals and groups, whether governmental or private, address their shared concerns (Avotra et al., 2021a). It is a never-ending process of managing competing or divergent goals and acting accordingly (Ott, 2011).

It comprises official institutions and governments that can enforce adherence and informal settings that individuals and organizations have accepted or believe to be in their economic interest. It possesses the following four qualities: Governance is a system as opposed to a set of rules or activities; it is a cooperative process as opposed to a controlling one; it involves both the private and public sectors; and it is not a formal institution but rather ongoing interaction (Xianbin et al., 2021). Governance is essentially the exercise of power to maintain peace and meet the demands of the general population within a set of limits. Governance exists to maximize the public's interests by using varied organizations and relationships to lead, direct, and regulate individual decisions. Good governance is exemplified by a commitment to democratic principles, standards, and practices, trustworthy facilities, equitable and fair commerce, and procedures and structures that drive political and socio-economic connections (Dahwan et al., 2021; Nandal et al., 2021). Governance has been explored by (Xianbin et al., 2021), who concluded that effective governance leads to a thriving digital economy. The literature suggests that the putative correlations listed below may exist.

H₁: There is an association between the digital economy and sustainable governance mechanisms

H₂: Digitization has an impact on sustainable governance mechanisms

H₃: Social reforms could provide an association with sustainable governance mechanisms

2.2 The Mediating Role of Quality of Life

Several fields, including psychiatry, health, business, biological sciences, and sociology, have investigated the quality of life. Numerous academics have attempted to develop a term to capture the widespread notion that quality of life relates to the degree to which human needs are met, and individuals are content (Costanza et al., 2007). A few researchers asserted that quality of life is synonymous with health, albeit they admitted that this concept required additional development (Minayo et al., 2000). Life quality is a challenging concept to define. Yet, it is evident that most research focuses on identifying the factors that lead to human pleasure (Barreto Torres et al., 2019). Poverty is a major factor that diminishes the quality of life. According to 2018 World Bank data, the number of Africans living in poverty rose from 280 million in 1990 to 330 million in 2012. (Arimah, 2004). Over half of the population in Africa lives on less than a dollar per day.

It stems from many socio-economic situations, such as unemployment and a lack of social support networks, which predispose individuals to various financial challenges, such as the inability to pay for health care and other essentials. Several factors influence the quality of life of humans (Sarpong and Bein, 2021). Many factors can affect an individual's quality of life and a government's ability to meet their needs. These factors include governance systems, government assistance, and a long-term community

(Sarpong et al., 2021). It is assumed that quality of life is connected with methods of sustainable governance (Adedokun, 2017). Numerous studies have demonstrated a significant correlation between governance procedures and quality of life in general. According to this research, excellent governance appears to be a feature that helps people in low- and middle-income countries live better lives. (Stojanovi et al., 2016; Bonuedi et al., 2019) They underline that a government with inadequate governance mechanisms risks becoming destitute.

Some academics have evaluated the influence of digitization on the quality of life in the recent past (Damant et al., 2016) and the potential impact of digitization on enhancing the quality of life of the general public (Kryzhanovskiy et al., 2021). Life quality is determined by an individual's ability to develop social capital, achieve job goals, get an education, and form social communication and connections. Existing research on the relationship between digitization and quality of life indicates that expanding access to communication and information technologies increases the quality of life (Osipova et al., 2020). Researchers have determined that social and economic reforms can enhance the quality of life for the public (Gangadharan et al., 2012). Similarly, some researches determined that governance mechanisms might influence the quality of life (Cárcaba et al., 2017). Still, they did not assess the effect of quality of life on forming sustainable governance mechanisms. Very few researchers have studied the mediating effect of resilience on life satisfaction (Kasser et al., 2020). This suggested that quality of life may have been explored as a mediator between the digital economy, digitization, social changes, and systems for sustainable governance (You et al., 2021). Thus, we proposed the following hypothesis:

H₄: There is a mediating impact of quality of life between the digital economy and sustainable governance mechanisms

H₅: There is a mediating role of quality of life between digitization and sustainable governance mechanisms

H₆: Quality of life can mediate the relationship of social reforms with sustainable governance mechanisms

This innovative study focuses on the interplay between the digital economy, governance systems, digitization, social reforms, and their effects on sustainable development. Although there have been studies on the impact of digital technology on governance, social reforms, and sustainable development, this study examines the role of the digital economy as a catalyst for change in these areas. In addition, the study proposes that life quality can be studied as a mediator between the digital economy, digitization, social reforms, and sustainable governance systems, which is a novel approach to understanding the impact of the digital economy on sustainable development. Sarpong and Bein, in 2021, undertook a mixed-methods analysis of the influence of the digital economy on governance and social reform. Utilizing a combination of desk research,

case studies, and expert interviews, the study identified the digital economy's influential elements that affect governance systems. The data were analyzed using qualitative methods such as content and thematic analysis. Damant et al. (2016) undertook a quantitative investigation of the impact of the digital economy on public administration. The survey was utilized to collect data from public officials in OECD nations, and descriptive statistics and regression analysis were applied to analyze the data. The following conceptual model (figure 1) has been developed based on the preceding literature and hypotheses.

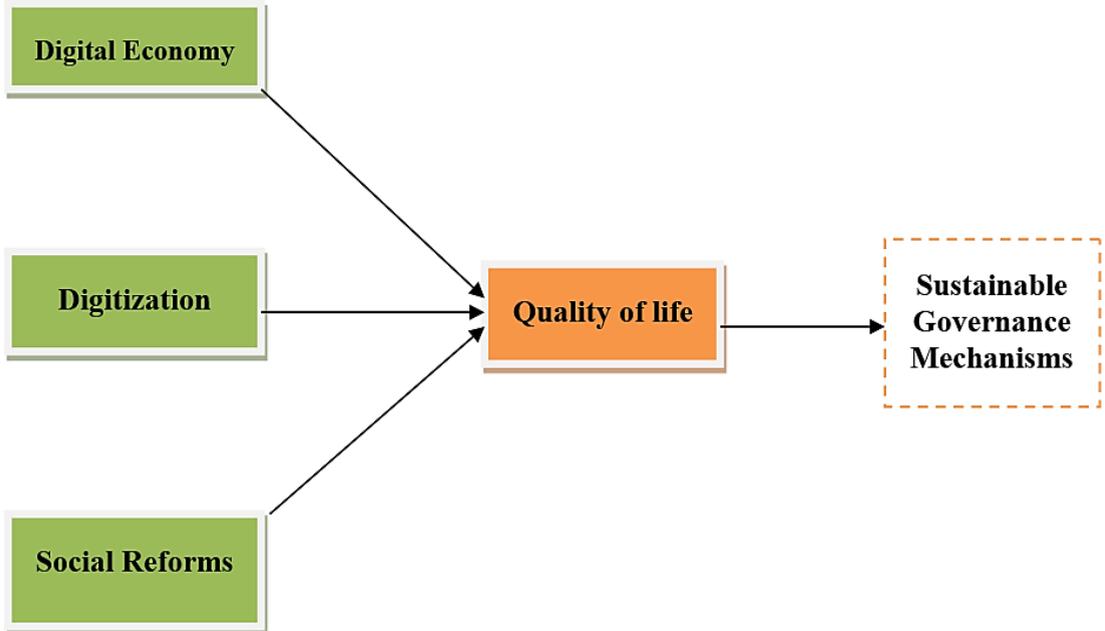


Figure 1. Conceptual framework

3. METHODOLOGY

The current study employed a quantitative methodology with a deductive approach in which hypotheses were formed and analyzed to determine the relationship between variables. Researchers utilize this practice to ensure minimal bias. This quantitative study collected data for analysis via self-administered questionnaires. The group considered for this study consisted of corporate organization managers. This study collected data from respondents by distributing physical questionnaires using a convenience sample technique. Five to six weeks were required to finish the data collecting. The total number of disseminated questionnaires was approximately 600, and we obtained 490 responses for a response rate of 82%; of the 490 responses, 465 were viable and were used for data analysis. Several reminders were given to some responders to expedite the data collection process, which began sluggishly. In our study, the managerial staff of China's business sector was the unit of analysis.

3.1 Statistical Tool

The Smart PLS 3 was used to examine the investigation's data. Our research employed the Structural Equation Modeling technique. Partial Least Square is frequently utilized in management and social sciences since it is a variance-based structural equation modeling technique (Nitzl et al., 2016). In addition, PLS-SEM is a causal modeling technique that aims to enhance the variance of latent dependent constructs that can be explained. Researchers see PLS-SEM as a "silver bullet" for dealing with small sample size empirical data (Nawaz et al., 2022). Smart PLS is user-friendly and packed with powerful capabilities (Garson, 2016). In addition, the Smart PLS method is optimal for research involving complex equations (Wong, 2013). To correctly calculate the values of beta, reliability, and standard error, this research adheres to the guidelines of (Wong, 2013). It ensures that all of these indicators have external loadings of 0.7 in the reflecting outer model evaluation.

3.2 Measurement

This survey recorded respondents' replies using a 5-point Likert scale ranging from strongly agree to disagree strongly. The value of Cronbach's alpha should be more than 0.7 as a criterion for determining the dependability of any variable (Sarstedt et al., 2017). The measurement and Cronbach alpha are supplied below:

3.3 Digital Economy

This study adopted a scale of 5 items (Hanna, 2020). The Cronbach alpha value for Digital Economy is 0.876, well above the benchmark.

3.4 Digitalization

This study measures digitalization using a seven-item supply chain digitalization scale adopted and modified from earlier research (Xue, 2014). The Digitalization Cronbach alpha is 0.876, which is satisfactory according to the standard.

3.5 Social Reforms

This study used the 12-item scale from (Sarason et al., 1983) to measure social reforms. The Cronbach alpha for social reforms is 0.834, significantly higher than the standard.

3.6 Quality of Life

Eight items were selected (Cohen et al., 2019) to measure the quality of life. The quality of life Cronbach alpha value is 0.914, which is acceptable relative to the standard.

3.7 Sustainable Governance Mechanism

Five items were adapted from (Martins et al., 2019) for the sustainable governance mechanism. The Cronbach alpha for the sustainable governance method is 0.876, far above the standard.

3.8 Demographic Analysis

Table 1 displays the demographic information of the participants in the study. We received 465 suitable responses, of which 325 were from men and 140 from women. 14.5% of respondents were between the ages of 25 and 35, 37.8% were between the ages of 35 and 45, 42.0% were between the ages of 45 and 55, and 5.5% were older than 55. 50.28 percent of all participants held a bachelor's degree, 31.35 percent held a master's degree, and 18.37 percent held a doctorate or other advanced degree. In addition, 26.20 percent of employees had less than one year of organizational tenure, 40.63 percent had between one and three years of organizational tenure, 27.98 percent had between four and six years, and 5.19 percent had more than six years of organizational tenure.

Table 1. Demographics Analysis

Demographic	Percentage
Gender	
Male	69.8%
Female	31.2%
Age	
Between 25 to 35	14.5%
Between 35 to 45	37.8%
Between 45 to 55	42%
Above 55	5.7%
Education	
Bachelors	50.28%
Master's degree holders	31.35%
Ph. Ds	18.37%
Experience	
Less than a year	26.20%
1 to 3 years	40.63%
4 to 6 years	27.98%
More than 6 years	5.19%

3.9 Common Method Bias

Common method bias (CMB) is a type of measurement bias that occurs when the method used to assess the variables in a research study is responsible for the reported relationships between the variables, as opposed to the variables themselves. When the same method is used to measure both the predictor and criterion variables in an experiment, this bias can arise, resulting in an inflated correlation between the two variables. CMB may lead to an overestimation or underestimation of the strength of the relationships between variables, which can have severe implications for the validity of the study's conclusions. It can also result in incorrect assumptions about the direction of

causality between factors. [Table 2](#) indicates the overall variance explained by single-factor analysis for each variable tested. It describes the most prevalent method bias, which is questionnaire bias. The variance for a single item must be less than 50 percent. [Yong and Pearce \(2013\)](#). Since the outcome for the total variance explained in this study is less than fifty percent, there is no bias in the data.

Table 2. Common Method Bias

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	26.673	44.456	44.456	26.146	43.576	43.576
2	4.241	7.069	51.525			
3	2.583	4.305	55.829			
4	1.65	2.749	58.579			
5	1.478	2.463	61.041			
6	1.358	2.264	63.305			
7	1.223	2.038	65.343			
8	1.089	1.815	67.158			
9	0.967	1.612	68.77			
10	0.938	1.563	70.333			
11	0.883	1.472	71.806			
12	0.821	1.369	73.174			
13	0.788	1.314	74.488			
14	0.663	1.104	75.592			
15	0.645	1.075	76.667			
16	0.642	1.07	77.737			
17	0.625	1.041	78.778			
18	0.588	0.98	79.759			
19	0.545	0.909	80.668			
20	0.543	0.904	81.572			
21	0.522	0.869	82.442			
22	0.52	0.867	83.309			
23	0.511	0.851	84.16			
24	0.482	0.804	84.964			
25	0.456	0.76	85.724			
26	0.452	0.754	86.477			
27	0.433	0.722	87.199			
28	0.415	0.692	87.891			
29	0.394	0.657	88.548			
30	0.382	0.637	89.185			
31	0.366	0.61	89.795			

Table 2. Continued

32	0.362	0.603	90.398			
33	0.348	0.58	90.978			
34	0.32	0.534	91.512			
35	0.314	0.523	92.034			
36	0.296	0.493	92.527			
37	0.292	0.487	93.014			
38	0.283	0.471	93.485			
39	0.272	0.453	93.938			
40	0.257	0.429	94.367			
41	0.253	0.421	94.788			
42	0.243	0.405	95.193			
43	0.234	0.39	95.583			
44	0.227	0.378	95.961			
45	0.216	0.36	96.321			
46	0.214	0.357	96.678			
47	0.202	0.337	97.015			
48	0.201	0.335	97.35			
49	0.194	0.323	97.673			
50	0.193	0.322	97.995			
51	0.162	0.27	98.264			
52	0.157	0.261	98.525			
53	0.143	0.239	98.764			
54	0.138	0.23	98.994			
55	0.133	0.221	99.215			
56	0.131	0.219	99.434			
57	0.114	0.191	99.625			
58	0.087	0.144	99.769			
59	0.072	0.12	99.889			
60	0.067	0.111	100			

4. DATA ANALYSIS AND RESULTS

4.1 Measurement Model

PLS-SEM analysis begins with an evaluation of the measurement model. Then, we assessed our study model, incorporating reflectively measured components, composite reliability, indicator reliability, convergent validity, and discriminant validity (Hair et al., 2011). The indications linked with relevant structures in the SMARTPLS 3 reflection model are depicted in Figure 2.

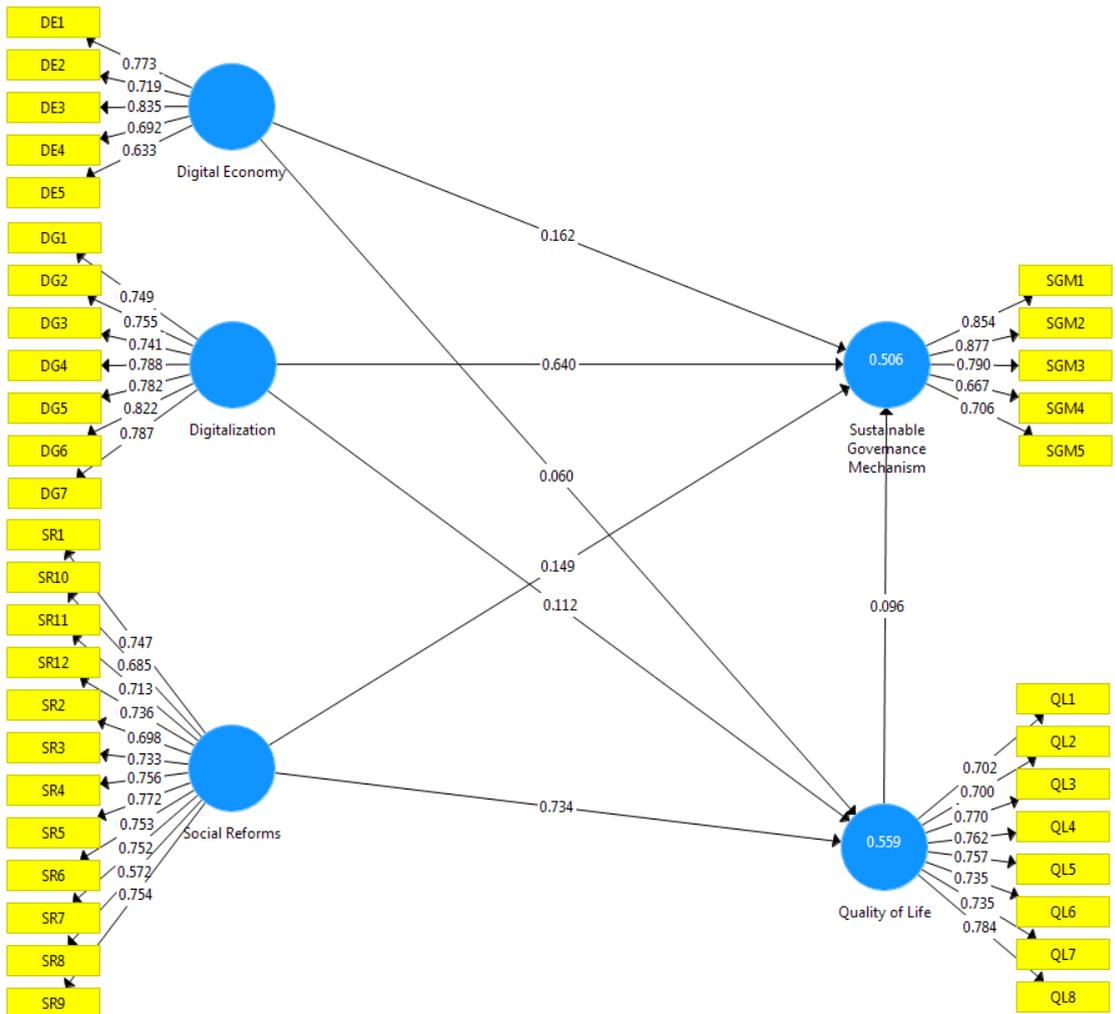


Figure 2. The Output of The Measurement Model Algorithm

Evaluating the indicator's dependability is the first stage in defining the measurement model. Indicator variance is quantified by indicator reliability, which is explained by pertinent constructs (Chin, 1998). In addition, these values are denoted by outside loadings (Wong, 2013), and they must not exceed 0.70. (Chin, 2010). Although factor loadings greater than 0.70 are preferable (Esposito Vinzi et al., 2010), social science researchers typically receive outer loadings that are less than 0.70. (0.70). Instead of deleting indicators automatically, the implications of the item's removal on composite reliability, content, and convergent validity will be explored. Items with outer loadings between 0.40 and 0.70 should normally be removed only if doing so enhances composite reliability or extracted average variance (AVE) above the acceptable value (Sandra Marcelline et al., 2022; Nawaz et al., 2023).

Table 3 displays the factor loadings for each of the study's constructs, including the digital economy, digitalization, social reforms, quality of life, and sustainable governance systems. In addition to the VIF values, the table presents the extracted composite reliability and average variance (AVE). Factor loading describes an item's contribution to the variable; its value must be greater than 0.60. (Jordan and Spiess, 2019). All factor loadings for this study's items are more than 0.60, indicating that the factor loadings are reasonable. The variation inflation factor (VIF) verifies the collinearity issues of the model. According to (Cho et al., 2020), the inner and outer VIF values should be less than 5, showing the absence of collinearity in the model. In addition, the outer VIF result for the present study is less than 5 (between 1.804 to 4.211), showing that the model is free of collinearity. In addition, the present inner VIF result is below 5. (between 1.463 to 3.361). Table 3 demonstrates that the AVE values are more than 0.60, showing convergent validity (Xiaolong et al., 2021). The composite reliability was better than 0.70, placing it inside the range of values deemed to be extremely satisfactory.

Table 3. Reliability and Validity

Construct	Items	Loadings	CR	Alpha	AVE	VIF
Digital Economy			0.853	0.786	0.538	
	DE1	0.773				1.631
	DE2	0.719				1.544
	DE3	0.835				1.784
	DE4	0.692				1.539
	DE5	0.633				1.463
Digitalization			0.913	0.889	0.601	
	DG1	0.749				1.938
	DG2	0.755				1.957
	DG3	0.741				1.834
	DG4	0.788				2.161
	DG5	0.782				1.983
	DG6	0.822				2.842
	DG7	0.787				2.498
Quality of life			0.908	0.884	0.553	
	QL1	0.702				1.810
	QL2	0.700				1.583
	QL3	0.770				2.096
	QL4	0.762				2.092
	QL5	0.757				2.110
	QL6	0.735				2.194
	QL7	0.735				1.940
	QL8	0.784				2.229

Table 3. Continued

Sustainable Governance Mechanism			0.887	0.839	0.613	
	SGM1	0.854				2.832
	SGM2	0.877				3.361
	SGM3	0.790				2.348
	SGM4	0.667				1.856
	SGM5	0.706				1.966
Social Reforms			0.930	0.917	0.525	
	SR1	0.747				2.069
	SR2	0.698				2.026
	SR3	0.733				2.237
	SR4	0.756				2.404
	SR5	0.772				2.407
	SR6	0.753				2.556
	SR7	0.752				2.612
	SR8	0.572				1.538
	SR9	0.754				2.310
	SR10	0.685				2.131
	SR11	0.713				1.962
	SR12	0.736				2.378

Abbreviations: AVE, Average variance extracted; CR, Composite reliability, DE=Digital economy, DG=Digitalization, SR=Social reforms, SGM=Sustainable governance mechanism, QL=Quality of life,

Table 4 demonstrates the evaluation of discriminant validity using the HTMT ratio and the Fornell and Larcker Criterion. These tests examine whether there is a distinction between variables (Afthanorhan et al., 2021). To ensure a variable's discriminant validity, the HTMT ratio should be smaller than 0.90. In the current study, the HTMT ratio was smaller than 0.90, demonstrating discriminant validity.

Table 4. Discriminant Validity (Fornell and Larcker Criteria)

	DE	DG	QL	SR	SGM
DE	0.734				
DG	0.310	0.775			
QL	0.064	0.178	0.744		
SR	0.121	0.115	0.740	0.725	
SGM	0.348	0.690	0.109	0.014	0.783

Abbreviations: DE=Digital economy, DG=Digitalization, SR=Social reforms, SGM=Sustainable governance mechanism, QL=Quality of life.

Diagonal and italicized are the square roots of the AVE. Below the diagonal elements are the correlations between the construct's values,

The Fornell and Larker Criteria are satisfied if the value at the top of the column exceeds the value at the bottom (Henseler et al., 2015). Table 5 indicates that discriminant validity exists since the numbers at the top of the column are greater than the values at the bottom.

Table 5. Discriminant Validity (HTMT Ratio)

	DE	DG	QL	SR	SGM
DE					
DG	0.380				
QL	0.088	0.197			
SR	0.145	0.126	0.815		
SGM	0.408	0.792	0.126	0.058	

Abbreviations: DE=Digital economy, DG=Digitalization, SR=Social reforms, SGM=Sustainable governance mechanism, QL=Quality of life

An R-Square score of 0.50 or more implies that the model is substantial and accurate (Archer et al., 2021). Table 6 demonstrates that the R-square values for the variables in this study are close to or larger than 0.50, indicating that the model is accurate. As assessed by q-square, the cross-validated redundancy should be greater than zero (Henseler et al., 2015). The variables' Q-square values are larger than zero, suggesting that the model is statistically significant.

Table 6. R-Square Values and Q-Square Values for the Variables

	R ²	Q ²
QL	0.559	0.556
SGM	0.506	0.501

4.2 Structural model

The structural model assessed the study's hypothesis using p-value and f-value. Figure 3 depicts a PLS-SEM bootstrapping model that verifies the stated hypothesis. The relationships within the study were analyzed using a 95 percent corrected bootstrap.

The bootstrapping approach, as proposed, was employed to test the significance of path coefficients (An et al., 2021; Nawaz et al., 2022). (An et al., 2021; Nawaz et al., 2022). For mediation analysis, certain recommendations suggested by (Preacher et al., 2008) were also considered. In addition, 5,000 bootstrap samples were considered, as indicated by (Streukens et al., 2016). As demonstrated in Table 7, the confidence interval for this study's bootstrap resampling of 5000 is 95%. An interval of confidence that deviates from zero suggests the existence of a substantial link.

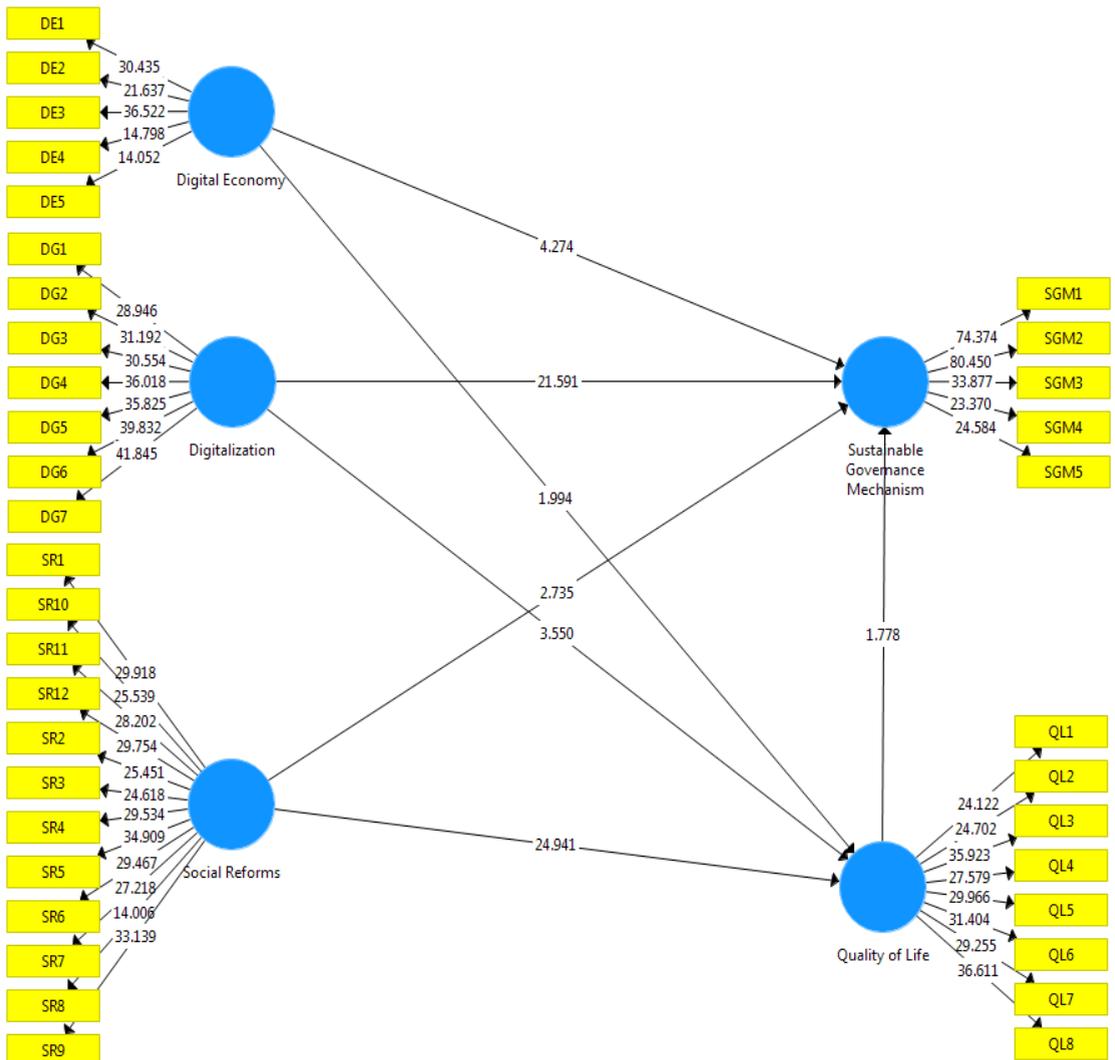


Figure 3. The Output of the Structural Model Algorithm

Table 7. Direct Effects

Hypotheses	Relationship	Beta	SD	T value	P Values	Confidence interval		Decision
						LL	UL	
H1	DE -> SGM	0.162	0.038	4.274	0.000	0.102	0.228	Supported
H2	DG -> SGM	0.640	0.030	21.591	0.000	0.589	0.686	Supported
H3	SR -> SGM	0.149	0.055	2.735	0.003	0.059	0.241	Supported

$P < 0.05$ *, $P < 0.01$ ** and $P < 0.001$ ***

Our initial hypothesis H1 investigated the connection between the digital economy and sustainable governance methods. The results indicated that H1 was approved because

the p-value was less than 0.05. H2 was acceptable because its p-value was less than 0.05. In addition, Hypothesis 3 analyzed the relationship between social reforms and Sustainable governance methods, and because the p-value is less than 0.05, Hypothesis 3 is accepted.

Table 8. Indirect Effects

Hypotheses	Structural paths	Direct Effect	Indirect effect	Total Effect	Interpretation	Results
H4	DE -> QL -> SGM	0.162 (0.000)	0.006 (0.034)	0.156 (0.000)	Partial Mediation	Supported
H5	DG -> QL -> SGM	0.640 (0.000)	0.011 (0.024)	0.629 (0.000)	Partial Mediation	Supported
H6	SR -> QL -> SGM	0.149 (0.003))	0.070 (0.039)	0.079 (0.009)	Partial Mediation	Supported

The relationship between the digital economy, digitalization, social reforms, and sustainable governance methods is illustrated in Table 8. The outcome demonstrated that quality of life somewhat mediates the association between the digital economy and sustainable governance mechanisms ($p=0.000$). The results of H5's examination of the mediating role of quality of life between digitalization and sustainable governance mechanisms indicate that it partially mediates the relationship ($p = 0.000$). In addition, the results demonstrated that quality of life somewhat mediates the relationship between social reforms and sustainable governance systems ($p<0.009$).

5. DISCUSSION

The digital economy is gaining momentum in this rapidly expanding and diverse world order. During the covid-19 epidemic, the global economy shifted, and attempts were made to mitigate national-level losses. The concept of the digital economy is not new and has been extensively examined throughout the first two decades of the 21st century. This study contributes significantly to management by shedding light on the links between digital transformation and its constituents. This paper offers guidelines for the development of sustainable governance processes. Thus, we studied the connections between the digital economy and methods for sustainable governance. In addition to social reforms and sustainable governance mechanisms, we studied the relationship between digitization and sustainable governance mechanisms. This study initially examined the relationship between the digital economy and sustainable governance strategies. Prior research on the impact of social governance on the development of a sustainable digital economy revealed that social governance is the primary driver of a sustainable digital economy (Linkov et al., 2018; Xianbin et al., 2021).

Our findings regarding the relationship between the digital economy and sustainable governance methods were consistent with earlier research. The digital economy

considerably impacts governing social mechanisms (Zhao et al., 2015). Adapting their operations to the most up-to-date digital information tools allows businesses to flourish in an era characterized by variable customer and supplier needs. When enterprises in a digital economy can have an in-depth and current grasp of digital innovation coming from internal research and development sources, the digital economy has the potential to be sustainable (Niu, 2021).

This study supports the direct effects of digitization on forming sustainable governance systems, as digitization is becoming an indispensable tool for any organization seeking sustainable growth in this period. Such conclusions are based on deploying digital technologies actively participating in governance systems. Historically, several studies examined the impact of digitalization on organizations' economic growth (Brenner, 2018). The movement of social reforms is a social component that seeks to alter or improve particular social structures over time. This movement may not always embrace extreme or fundamental transformations. In contrast, radical movements attempt to revolutionize society (Kolosov et al., 2017). As expected, social reforms proved to be a significant contribution to mechanisms of sustainable government. Although governance mechanisms have been explored in the past for providing social reforms (Xianbin et al., 2021; Niu, 2022), the impact of social reforms on sustainable governance mechanisms have not been identified.

This research also examined the indirect consequences of quality of life between the digital economy, digitization, social reforms, and sustainable governance mechanisms. Through the mediation of quality of life, the direct effects of the digital economy on sustainable governance mechanisms were demonstrated to be enhanced. It implies that if people's well-being is adequately considered, it could aid in forming such partnerships for sustainable governance processes. With the support of better quality of life for the populace, the digital economy might be a potent instrument for developing sustainable national governing processes. Similar mediating effects were discovered between digitalization, social reforms, and procedures for sustainable governance. This is because providing citizens with a high quality of life is the government's top priority. Existing research on the relationship between digitization and quality of life indicates that expanding access to communication and information technologies increases the quality of life (Osipova et al., 2020). Several researchers found that governance mechanisms could also regulate the quality of life (Cárcaba et al., 2017). However, they did not assess the effect of quality of life on forming sustainable governance mechanisms. Very few researchers have studied the mediating effect of resilience on life quality (Kasser et al., 2020).

6. PRACTICAL/MANAGERIAL CONTRIBUTION

This research provides practitioners and policymakers with useful information. The prerequisite for a nation's economic and social progress is sustainable governance. Governments in poor and under-developing nations face several barriers to adopting

sustainable governance, including corruption, a lack of resources, an obsolete manual system, and the public's reluctance to embrace change. This study demonstrates that digitalization and the digital economy are crucial for lasting change and improving state affairs. Digital economy and digitalization reduce and eliminate corrupt practices, bringing openness and justice to the condition of affairs, eventually benefiting the public and enhancing the standard of living for the masses. This report provides governments with sound recommendations for enhancing the governance system. Hence, the government must recognize the changes and develop clear measures for accelerating the digitalization of the state of affairs. Appropriate public awareness efforts can encourage public acceptance of digitalization, eventually improving quality of life.

7. THEORETICAL IMPLICATIONS

In the contemporary world, there is a growing interest among researchers and academics in investigating the various dynamics and perspectives of sustainable governance. The method for sustainable governance is one of the most pressing challenges in developing and under-developing nations. Literature indicates that, despite the significance of this area of study, no substantial studies have been conducted on this topic; therefore, this study contributes to the body of literature in several key ways. Similarly, digitization and the digital economy are crucial aspects for the governments of developing and under-developing nations to reduce and decrease the difficulties and impediments in implementing sustainable governance. Exploring the significance of the digital economy and digitalization in enhancing sustainable governance is a unique contribution made by this study. This study's findings provide academics and scholars with vital insights for expanding this field. The findings indicate that digitalization, the digital economy, and social changes are key to achieving sustainable government. In addition, this study demonstrated that digitization and the digital economy improve the public's quality of life, enhancing the mechanism for sustainable governance.

8. LIMITATIONS AND FUTURE DIRECTION

This work has several important theoretical and practical implications, but it also has several shortcomings that must be addressed in future research to get more definitive results. This study obtained data from a small sample size, which may increase the risk of generalizability; therefore, future research should collect data from a larger sample size. This study collected data from only one country. Hence, collecting data from numerous nations and doing comparison research is necessary. Thirdly, this study's data was acquired from a single source, which may generate the problem of common technique biases; therefore, future studies would collect data from numerous sources to minimize this problem. Fourth, there is a need to investigate additional effects of digitalization and the digital economy, which eventually contribute to society's social and economic growth.

9. CONCLUSION

According to the literature, digitization and the digital economy play a crucial role in society's social and economic evolution. Yet, this topic has been studied infrequently from the standpoint of developing and under-developing nations. Thus, this study investigates how digitalization, the digital economy, and social reforms contribute to a sustainable governance system. This study also studied how enhancing the quality of life for the public mediates the connection between digitalization, the digital economy, social reforms, and a sustainable governance mechanism. This study's data was collected in Pakistan. Using smart PLS, this study employs the PLS-SEM technique for data analysis. The results indicate that digitization and social reforms enhance sustainable governance. However, the digital economy's impact on sustainable governance mechanisms is deemed negligible. Similarly, data indicate that quality of life mediates the connection between digitization, the digital economy, social transformation, and sustainable governance mechanism. This study's conclusions provide governments with strong recommendations for enhancing sustainable governance by embracing digitalization and the digital economy.

REFERENCES

- Adedokun, A. J. (2017). Foreign Aid, Governance and Economic Growth in Sub-Saharan Africa: Does One Cap Fit All? *African Dev. Rev.* 29, 184–196. doi: <https://doi.org/10.1111/1467-8268.12249>
- Afthanorhan, A., Ghazali, P. L., and Rashid, N. (2021). Discriminant Validity: A Comparison of CBSEM and Consistent PLS using Fornell & Larcker and HTMT Approaches. *J. Phys. Conf. Ser.* 1874, 012085. doi: <https://doi.org/10.1088/1742-6596/1874/1/012085>
- Ahmedov, I. (2020). The Impact of Digital Economy on International Trade. *Eur. J. Bus. Manag. Res.* 5(4), 1-7. doi: <https://doi.org/10.24018/ejbm.2020.5.4.389>
- Alam, K., Erdiaw-Kwasie, M. O., Shahiduzzaman, M., and Ryan, B. (2018). Assessing regional digital competence: digital futures and strategic planning implications. *J. Rural Stud.* 60, 60–69. doi: <https://doi.org/10.1016/j.jrurstud.2018.02.009>
- Ali, M. A., Hoque, M. R., and Alam, K. (2018). An empirical investigation of the relationship between e-government development and the digital economy: the case of Asian countries. *J. Knowl. Manag.* 22, 1176–1200. doi: <https://doi.org/10.1108/JKM-10-2017-0477>
- An, H., Razzaq, A., Nawaz, A., Noman, S. M., and Khan, S. A. R. (2021). Nexus between green logistic operations and triple bottom line: evidence from infrastructure-led Chinese outward foreign direct investment in Belt and Road host countries. *Environ. Sci. Pollut. Res.* 28, 51022–51045 doi: <https://doi.org/10.1007/s11356-021-12470-3>
- Archer, L., Snell, K. I. E., Ensor, J., Hudda, M. T., Collins, G. S., and Riley, R. D. (2021). Minimum sample size for external validation of a clinical prediction

- model with a continuous outcome. *Stat. Med.* 40, 133–146. doi: <https://doi.org/10.1002/sim.8766>
- Arimah, B. (2004). Poverty Reduction and Human Development in Africa. *J. Hum. Dev.* 5(3), 399–415. doi: <https://doi.org/10.1080/1464988042000277260>
- Avotra, A. A. R. N., Chengang, Y., Sandra Marcelline, T. R., Asad, A., and Yingfei, Y. (2021a). Examining the Impact of E-Government on Corporate Social Responsibility Performance: The Mediating Effect of Mandatory Corporate Social Responsibility Policy, Corruption, and Information and Communication Technologies Development During the COVID era. *Front. Psychol.* 12, 4221. doi: <https://doi.org/10.3389/fpsyg.2021.737100>
- Avotra, A. A. R. N., Chengang, Y., Wei, X., Ming, J., and Marcelline, T. R. S. (2021b). Struggling With Business Corporate Cynical Impression? Powerful Methods of CSR to Enhance Corporate Image and Consumer Purchase Intention. *Front. Public Heal.* 9, 1250. doi: <https://doi.org/10.3389/fpubh.2021.726727>
- Avotra, A. A. R. N., Chenyun, Y., Yongmin, W., Lijuan, Z., and Nawaz, A. (2021c). Conceptualizing the State of the Art of Corporate Social Responsibility (CSR) in Green Construction and Its Nexus to Sustainable Development. *Front. Environ. Sci.* 9, 541. doi: <https://doi.org/10.3389/fenvs.2021.774822>
- Baku, A. A. (2022). “Digitalisation and New Public Management in Africa BT - New Public Management in Africa: Contemporary Issues,” in, eds. R. E. Hinson, N. Madichie, O. Adeola, J. Nyigmah Bawole, I. Adisa, and K. Asamoah (Cham: Springer International Publishing), 299–316. doi: https://doi.org/10.1007/978-3-030-77181-2_12
- Barreto Torres, L., Asmus, G., and Seixas, S. (2019). “Quality of Life and Sustainable Development,” in, 1333–1340. doi: https://doi.org/10.1007/978-3-319-63951-2_26-1
- Berger, T., and Frey, C. B. (2017). Industrial renewal in the 21st century: evidence from US cities. *Reg. Stud.* 51, 404–413. doi: <https://doi.org/10.1080/00343404.2015.1100288>
- Bican, P. M., and Brem, A. (2020). Digital Business Model, Digital Transformation, Digital Entrepreneurship: Is there a sustainable "digital"? *Sustain.* 12(13), 5239. doi: <https://doi.org/10.3390/su12135239>
- Boccia, F., and Leonardi, R. (2017). *The Challenge of the Digital Economy, Markets, Taxation and Appropriate Economic Models*, 1, 148. doi: <https://doi.org/10.1007/978-3-319-43690-6>
- Bonuedi, I., Kamasa, K., and Boateng, E. (2019). The Growth Effects of the Bulging Economically Active Population in Sub-Saharan Africa: Do Institutions Matter? *African Dev. Rev.* 31, 71–86. doi: <https://doi.org/10.1111/1467-8268.12364>
- Brenner, B. (2018). Transformative Sustainable Business Models in the Light of the Digital Imperative—A Global Business Economics Perspective. *Sustain.* 10(12), 4428. doi: <https://doi.org/10.3390/su10124428>

- Cárcaba, A., Fidalgo, E., Ventura, J., and García, R. (2017). How Does Good Governance Relate to Quality of Life? *Sustainability* 9(4), 631. doi: <https://doi.org/10.3390/su9040631>
- Chen, J., Zhang, R., and Di Wu (2018). Equipment maintenance business model innovation for sustainable competitive advantage in the digitalization context: Connotation, types, and measuring. *Sustain.* 10(11), 3970. doi: <https://doi.org/10.3390/su10113970>
- Chen, Y. (2020). Improving market performance in the digital economy. *China Econ. Rev.* 62, 101482. doi: <https://doi.org/10.1016/j.chieco.2020.101482>
- Chin, W. (2010). "Handbook of Partial Least Squares," in, 655–690. doi: https://doi.org/10.1007/978-3-540-32827-8_29
- Chin, W. W. (1998). The partial least squares approach for structural equation modeling. *Mod. methods Bus. Res.*, 295–336. Retrieved from <https://books.google.co.in/books?hl>
- Cho, G., Hwang, H., Sarstedt, M., and Ringle, C. M. (2020). Cutoff criteria for overall model fit indexes in generalized structured component analysis. *J. Mark. Anal.* 8, 189–202. doi: <https://doi.org/10.1057/s41270-020-00089-1>
- Cohen, S. R., Russell, L. B., Leis, A., Shahidi, J., Porterfield, P., Kuhl, D. R., et al. (2019). More comprehensively measuring quality of life in life-threatening illness: the McGill Quality of Life Questionnaire – Expanded. *BMC Palliat. Care* 18, 92. doi: <https://doi.org/10.1186/s12904-019-0473-y>
- Costanza, R., Fisher, B., Ali, S., Beer, C., Bond, L., Boumans, R., et al. (2007). Quality of life: An approach integrating opportunities, human needs, and subjective well-being. *Ecol. Econ.* 61, 267–276. doi: <https://doi.org/10.1016/j.ecolecon.2006.02.023>
- Dahwan, A. A. A., and Raju, V. (2021). The Role of E-Readiness Rank on the Implementation of E-government in Military Institutions in Yemen. *Ann. Rom. Soc. Cell Biol*, 25(4), 1029–1043. Retrieved from <https://www.annalsofrscb.ro/index.php/journal/article/view/2548>
- Damant, J., Knapp, M., Freddolino, P., and Lombard, D. (2016). Effects of digital engagement on the quality of life of older people. *Health Soc. Care Community* 25(6), 1679-1703. doi: <https://doi.org/10.1111/hsc.12335>
- Dyachenko, O. (2020). The theoretical basis of the digital economy in the strategic planning documents. *E3S Web Conf.* 210, 10004. doi: <https://doi.org/10.1051/e3sconf/202021010004>
- Esposito Vinzi, V., Chin, W., Henseler, J., and Wang, H. (2010). *Handbook of Partial Least Squares: Concepts, Methods and Applications*, 1, 798. doi: <https://doi.org/10.1007/978-3-540-32827-8>
- Estache, A., and Foucart, R. (2021). On the political economy of industrial, labor and social reforms as complements. *Eur. Econ. Rev.*, 103789. Retrieved from <https://scholar.google.com/scholar?hl>

- Fishenden, J., and Thompson, M. (2013). Digital Government, Open Architecture, and Innovation: Why Public Sector IT Will Never Be the Same Again. *J. Public Adm. Res. Theory* 23, 977–1004. doi: <https://doi.org/10.1093/jopart/mus022>
- Fjeldstad, Ø. D., and Snow, C. C. (2018). Business models and organization design. *Long Range Plann.* 51, 32–39. doi: <https://doi.org/10.1016/j.lrp.2017.07.008>
- Forman, C. (2010). The Digital Economy: Business Organization, Production Processes and Regional Developments by Edward J. Malecki and Bruno Moriset. *J. Reg. Sci.* 50, 781–782. doi: <https://doi.org/10.1111/j.1467-9787.2010.006883.x>
- Fountain, J. E. (2001). Building the Virtual State: Information Technology and Institutional Change. Brookings Institution Press. Retrieved from <https://books.google.co.in/books?hl>
- Gangadharan, S. R., and Yoonus, C. A. (2012). Impact of the Economic Reform Programme on the Quality of Human Life in India: A Study on the Health Indicators. *J. Health Manag.* 14, 183–199. doi: <https://doi.org/10.1177/097206341201400208>
- Garcia De Lomana, G., Strese, S., and Brinckmann, J. (2019). Adjusting to the Digital Age: The Effects of TMT Characteristics on the Digital Orientation of Firms. in *Academy of Management Proceedings*, 13589. doi: <https://doi.org/10.5465/ambpp.2019.13589abstract>
- Garson, J. (2016). A Critical Overview of Biological Functions. doi: <https://doi.org/10.1007/978-3-319-32020-5>
- Glass, L.-M., and Newig, J. (2019). Governance for achieving the Sustainable Development Goals: How important are participation, policy coherence, reflexivity, adaptation and democratic institutions? *Earth Syst. Gov.* 2, 100031. doi: <https://doi.org/10.1016/j.esg.2019.100031>
- Goos, M., Manning, A., and Salomons, A. (2014). Explaining job polarization: Routine-biased technological change and offshoring. *Am. Econ. Rev.* 104, 2509–2526. doi: <https://doi.org/10.1257/aer.104.8.2509>
- Hair, J. F., Ringle, C. M., and Sarstedt, M. (2011). PLS-SEM: Indeed, a silver bullet. *J. Mark. Theory Pract.* 19, 139–152. doi: <https://doi.org/10.2753/MTP1069-6679190202>
- Hanlon, M. (2015). Labor in the Global Digital Economy: The Cybertariat Comes of Age. *Can. J. Sociol.* 40, 567–569. Retrieved from <https://books.google.co.in/books?hl>
- Hanna, N. K. (2020). Assessing the digital economy: aims, frameworks, pilots, results, and lessons. *J. Innov. Entrep.* 9, 16. doi: <https://doi.org/10.1186/s13731-020-00129-1>
- Henseler, J., Ringle, C. M., and Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *J. Acad. Mark. Sci.* 43, 115–135. doi: <https://doi.org/10.1007/s11747-014-0403-8>

- Hoetker, G., and Mahony, J. (2002). Building the Virtual State: Information Technology and Institutional Change. *Acad. Manag. Rev.* 27, 619–622. doi: <https://doi.org/10.5465/AMR.2002.7566114>
- Howell, R., van Beers, C., and Doorn, N. (2018). Value capture and value creation: The role of information technology in business models for frugal innovations in Africa. *Technol. Forecast. Soc. Change* 131, 227–239. doi: <https://doi.org/10.1016/j.techfore.2017.09.030>
- Huo, C., Hameed, J., Zhang, M., Ali, A. F. B. M., and Hashim, N. A. A. N. (2022). Modeling the impact of corporate social responsibility on sustainable purchase intentions: insights into brand trust and brand loyalty. *Econ. Res.*, 1–30. doi:10.1080/1331677X.2021.2016465.
- Jordan, P., and Spiess, M. (2019). Rethinking the Interpretation of Item Discrimination and Factor Loadings: *Educ. Psychol. Meas.* 79, 1103–1132. doi:10.1177/0013164419843164.
- Kasser, S. L., and Zia, A. (2020). Mediating Role of Resilience on Quality of Life in Individuals with Multiple Sclerosis: A Structural Equation Modeling Approach. *Arch. Phys. Med. Rehabil.* 101, 1152–1161. doi: <https://doi.org/10.1016/j.apmr.2020.02.010>
- Khin, S., and Ho, T. C. F. (2020). Digital technology, digital capability and organizational performance. *Int. J. Innov. Sci.* 11, 177–195. doi: <https://doi.org/10.1108/IJIS-08-2018-0083>
- Kolosov, V., Vendina, O., Gritsenko, A., Glezer, O., Zotova, M., Sebentsov, A., et al. (2017). Economic and social reforms in the North Caucasus: Goals, limitations, problems, and results. *Reg. Res. Russ.* 7, 259–270. doi: <https://doi.org/10.1134/S2079970517030029>
- Kryzhanovskiy, O., Baburina, N., and Ljovkina, A. (2021). How to Make Digitalization Better Serve an Increasing Quality of Life? *Sustainability* 13, 611. doi: <https://doi.org/10.3390/su13020611>
- Kyriacou, A. P., Muinelo-Gallo, L., and Roca-Sagalés, O. (2019). The efficiency of transport infrastructure investment and the role of government quality: An empirical analysis. *Transp. Policy* 74, 93–102. doi: <https://doi.org/10.1016/j.tranpol.2018.11.017>
- Lekachman, R. (2022). No Title. *Polit. Sci. Q.* 78, 467–469. doi: <https://doi.org/10.2307/2146009>
- Li, B., and Zhang, S. (2022). Research on the development path of China's digital trade under the background of the digital economy. *J. Internet Digit. Econ. ahead-of-p*, 2(1), 1-14. doi: <https://doi.org/10.1108/JIDE-10-2021-0010>
- Li, K., Kim, D. J., Lang, K. R., Kauffman, R. J., and Naldi, M. (2020). How should we understand the digital economy in Asia? Critical assessment and research agenda. *Electron. Commer. Res. Appl.* 44, 101004. doi: <https://doi.org/10.1016/j.elerap.2020.101004>

- Linkov, I., Trump, B. D., Poinssatte-Jones, K., and Florin, M.-V. (2018). Governance strategies for a sustainable digital world. *Sustainability* 10(2), 440. doi: <https://doi.org/10.3390/su10020440>
- Liu, Y., Shi, Y., Wang, Y., Ergu, D., Berg, D., Tien, J., et al. (2022). Developing Global Digital Economy after COVID-19: Preface for ITQM 2020 & 2021. *Procedia Comput. Sci.* 199, 1–9. doi: <https://doi.org/10.1016/j.procs.2022.01.001>
- Lynch, C. R. (2020). Contesting Digital Futures: Urban Politics, Alternative Economies, and the Movement for Technological Sovereignty in Barcelona. *Antipode* 52, 660–680. doi: <https://doi.org/10.1111/anti.12522>
- Malakhova, E. V., Garnov, A. P., and Kornilova, I. M. (2018). Digital Economy, Information Society and Social Challenges in the Near Future. *Eur. Res. Stud.* 21, 576. Retrieved from <https://www.proquest.com/openview/fe7b0427d6864d5c38cb29334711e1ec/1?pq-origsite=gscholar&cbl=60370>
- Martins, V. W. B., Rampasso, I. S., Anholon, R., Quelhas, O. L. G., and Leal Filho, W. (2019). Knowledge management in the context of sustainability: Literature review and opportunities for future research. *J. Clean. Prod.* 229, 489–500. doi: <https://doi.org/10.1016/j.jclepro.2019.04.354>
- Matkovskaya, Y. S. (2021). "On the Issue of the Size, Prospects and Purpose of the Digital Economy BT - Socio-economic Systems: Paradigms for the Future," in, eds. E. G. Popkova, V. N. Ostrovskaya, and A. V. Bogoviz (Cham: Springer International Publishing), 1757–1764. doi: https://doi.org/10.1007/978-3-030-56433-9_182
- McLuhan, M. (2002). The Gutenberg Galaxy: The Making of Typographic Man. doi: <https://doi.org/10.2307/3719923>
- Minayo, M. C. deSouza, Hartz, Z. M. deAraújo, and Buss, P. M. (2000). Quality of life and health: a necessary debate. *Cien. Saude Colet.* 5, 7–18. doi: <http://dx.doi.org/10.1590/S1413-81232000000100002>
- Mira, R., and Hammadache, A. (2017). Good governance and economic growth: A contribution to the institutional debate about state failure in Middle East and North Africa. *Asian J. Middle East. Islam. Stud.* 11(3), 107–120. doi: <https://doi.org/10.1080/25765949.2017.12023313>
- Mulaydinov, F. (2021). Digital Economy is a Guarantee of Government and Society Development. 1474–1479. doi: <https://doi.org/10.17051/ilkonline.2021.03.164>
- Nandal, N., Nandal, M. N., Mankotia, K., and Jora, M. N. (2021). Investigating Digital Transactions in the Interest of a Sustainable Economy. *Int. J. Mod. Agric.* 10, 1150–1162.
- Nawaz, A., Chen, J., and Su, X. (2023). Factors in critical management practices for construction projects waste predictors to C&DW minimization and maximization. *J. King Saud Univ. - Sci.* 35(2), 102512. doi: <https://doi.org/10.1016/j.jksus.2022.102512>

- Nawaz, A., Chen, J., Su, X., and Zahid Hassan, H. M. (2022). Material Based Penalty-Cost Quantification Model for Construction Projects Influencing Waste Management. *Front. Environ. Sci.* 10. doi: <https://doi.org/10.3389/fenvs.2022.807359>
- Nawaz, A., and Guribie, F. L. (2022). Impacts of institutional isomorphism on the adoption of social procurement in the Chinese construction industry. *Constr. Innov. ahead-of-p.* doi: <https://doi.org/10.1108/CI-02-2022-0035>
- Nitzl, C., Roldan, J. L., and Cepeda, G. (2016). Mediation analysis in partial least squares path modeling. *Ind. Manag. Data Syst.* 116(9), 1849–1864. doi: <https://doi.org/10.1108/IMDS-07-2015-0302>
- Niu, F. (2022). The Role of the Digital Economy in Rebuilding and Maintaining Social Governance Mechanisms. *Front. public Heal.* 9, 819727. doi: <https://doi.org/10.3389/fpubh.2021.819727>
- Nyhagen, L. (2017). Book review: Profit and Gift in the Digital Economy. *Sociol. Rev.* 65, 426–429. doi: <https://doi.org/10.1177/0038026117701340>
- Ogletree, E. J. (1983). Megatrends: Ten New Directions Transforming Our Lives John Naisbitt New York: Warner Books, 1982, 290 pp, \$15.50. *J. Teach. Educ.* 34, 61–62. doi: <https://doi.org/10.1177/002248718303400516>
- Oostveen, A.-M. (2007). Gault, R., & Goldfinch, S. (2006). Dangerous Enthusiasms: E-Government, Computer Failure and Information System Development. Dunedin, New Zealand: Otago University Press 160 pp. \$39.95 (softbound). *Soc. Sci. Comput. Rev. - SOC SCI Comput REV* 26, 257–259. doi: <https://doi.org/10.1177/0894439307307360>
- Osipova, I. M., and Naumova, T. A. (2020). Analysis of the relationship between the level of digitalization and the level of quality of life: a regional aspect. *IOP Conf. Ser. Earth Environ. Sci.* 421, 32048. doi: <https://doi.org/10.1088/1755-1315/421/3/032048>
- Ott, J. C. (2011). Government and Happiness in 130 Nations: Good Governance Fosters Higher Level and More Equality of Happiness. *Soc. Indic. Res.* 102, 3–22. doi: <https://doi.org/10.1007/s11205-010-9719-z>
- Porat, M. (1998). The Information Economy: Definition and Measurement. *Rise Knowl. Work.*, 101–131. doi: <https://doi.org/10.1016/b978-0-7506-7058-6.50012-0>
- Preacher, K. J., and Hayes, A. F. (2008). Contemporary approaches to assessing mediation in communication research. *Sage Sourceb. Adv. data Anal. methods Commun. Res.*, 13–54. doi: <https://doi.org/10.4135/9781452272054.n2>
- Sandra Marcelline, T. R., Chengang, Y., Ralison Ny Avotra, A. A., Hussain, Z., Zonia, J. E., and Nawaz, A. (2022). Impact of Green Construction Procurement on Achieving Sustainable Economic Growth Influencing Green Logistic Services Management and Innovation Practices. *Front. Environ. Sci.* 9. doi: <https://doi.org/10.3389/fenvs.2021.815928>

- Sarason, I. G., Levine, H. M., Basham, R. B., and Sarason, B. R. (1983). Assessing social support: The Social Support Questionnaire. *J. Pers. Soc. Psychol.* 44, 127–139. doi: <https://doi.org/10.1037/0022-3514.44.1.127>
- Sarpong, S. Y., and Bein, M. A. (2021). Effects of good governance, sustainable development and aid on quality of life: Evidence from sub-saharan Africa. *African Dev. Rev.* 33, 25–37. doi: <https://doi.org/10.1111/1467-8268.12488>
- Sarstedt, M., Ringle, C. M., and Hair, J. F. (2017). Partial Least Squares Structural Equation Modeling, 587–632. doi: <https://doi.org/10.1007/978-3-319-05542-8>
- Sarwar, S., Streimikiene, D., Waheed, R., and Mighri, Z. (2021). Revisiting the empirical relationship among the main targets of sustainable development: Growth, education, health and carbon emissions. *Sustain. Dev.* 29, 419–440. doi: <https://doi.org/10.1002/sd.2156>
- Schellong, A. (2007). Extending the Technology Enactment Framework. PNG Work. Pap. No PNG07-003, Progr. *Networked Gov.* Retrieved from <https://www.researchgate.net/profile/Alexander>
- Schmidt, E., and Cohen, J. (2015). The New Digital Age: Reshaping the future of people, nations and business. *Asia. Pac. J. Rural Dev.* 25(2), 119–122. doi: <https://doi.org/10.1177/1018529120150208>
- Schmidt, J. T., and Tang, M. (2020). “Digitalization in Education: Challenges, Trends and Transformative Potential BT - Führen und Managen in der digitalen Transformation: Trends, Best Practices und Herausforderungen,” in, eds. M. Harwardt, P. F.-J. Niermann, A. M. Schmutte, and A. Steuernagel (Wiesbaden: Springer Fachmedien Wiesbaden), 287–312. doi: https://doi.org/10.1007/978-3-658-28670-5_16
- Smirnova, N. V., and Rudenko, G. V (2017). Tendencies, problems and prospects of innovative technologies implementation by Russian oil companies. *J. Ind. Pollut. Control* 33, 937–943. Retrieved from <https://www.icontrolpollution.com/articles/tendencies>
- Solovykh, N. N., Koroleva, I. V, Stompeleva, E. S., Terskaya, G. A., and Aliev, V. M. (2019). "Digital Economy and Socio-Economic Contradictions of Information Society BT - Ubiquitous Computing and the Internet of Things: Prerequisites for the Development of ICT," in, ed. E. G. Popkova (Cham: Springer International Publishing), 655–662. doi: https://doi.org/10.1007/978-3-030-13397-9_70
- Stojanović, I., Ateljević, J., and Stević, R. S. (2016). Good governance as a tool of sustainable development. *Eur. J. Sustain. Dev.* 5(4), 558. doi: <https://doi.org/10.14207/ejsd.2016.v5n4p558>
- Streukens, S., and Leroi-Werelds, S. (2016). Bootstrapping and PLS-SEM: A step-by-step guide to get more out of your bootstrap results. *Eur. Manag. J.* 34(6), 618–632. doi: <https://doi.org/10.1016/j.emj.2016.06.003>
- Sturgeon, T. J. (2021). Upgrading strategies for the digital economy. *Glob. Strateg. J.* 11, 34–57. doi: <https://doi.org/10.1002/gsj.1364>

- Tapscott, D. (1995). The Digital Economy: Promise and Peril in the Age of Networked Intelligence. In *Academy of Management Perspectives*, 10(2). doi: <https://doi.org/10.5465/ame.1996.19198671>
- Tarakanov, V. V, Inshakova, A. O., and Dolinskaya, V. V (2019). "Information Society, Digital Economy and Law BT - Ubiquitous Computing and the Internet of Things: Prerequisites for the Development of ICT," in, ed. E. G. Popkova (Cham: Springer International Publishing), 3–15. doi: https://doi.org/10.1007/978-3-030-13397-9_1
- von Rimscha, M. B., Möller, J., Voci, D., Nölleke-Przybylski, P., Altmeyden, K.-D., and Karmasin, M. (2018). Can digitisation help overcome linguistic and strategic disadvantages in international media markets? Exploring cross-border business opportunities for German-language media companies. *Media, Cult. Soc.* 41, 520–538. doi: <https://doi.org/10.1177/0163443718787614>
- Wasastjerna, M. C. (2018). The role of big data and digital privacy in merger review. *Eur. Compet. J.* 14(2-3), 417–444. doi: <https://doi.org/10.1080/17441056.2018.1533364>
- Weber, R. H., and Burri, M. (2012). Classification of Services in the Digital Economy. *Econ. Networks eJournal*.
- Williams, L. D. (2021). Concepts of Digital Economy and Industry 4.0 in Intelligent and information systems. *Int. J. Intell. Networks* 2, 122–129. doi: <https://doi.org/10.1016/j.ijin.2021.09.002>
- Wong, K. (2013). Partial least square structural equation modeling (PLS-SEM) techniques using SmartPLS. *Mark. Bull.* 24, 1–32. Retrieved from <http://marketing-bulletin.massey.ac.nz>
- Xianbin, T., and Qiong, W. (2021). Sustainable Digital Economy Through Good Governance: Mediating Roles of Social Reforms and Economic Policies. *Front. Psychol.* 12, 773022. doi: <https://doi.org/10.3389/fpsyg.2021.773022>
- Xiaolong, T., Gull, N., Iqbal, S., Asghar, M., Nawaz, A., Albasher, G., et al. (2021). Exploring and Validating the Effects of Mega Projects on Infrastructure Development Influencing Sustainable Environment and Project Management. *Front. Psychol.* 12, 1251. doi: <https://doi.org/10.3389/fpsyg.2021.663199>
- Xue, L. (2014). Governance–knowledge fit and strategic risk taking in supply chain digitization. *Decis. Support Syst.* 62, 54–65. doi: <https://doi.org/10.1016/j.dss.2014.03.003>
- Yeow, A., Soh, C., and Hansen, R. (2018). Aligning with new digital strategy: A dynamic capabilities approach. *J. Strateg. Inf. Syst.* 27(1), 43–58. doi: <https://doi.org/10.1016/j.jsis.2017.09.001>
- Yingfei, Y., Mengze, Z., Zeyu, L., Ki-Hyung, B., Andriandafiarisoa Ralison Ny Avotra, A., and Nawaz, A. (2022). Green logistics performance and infrastructure on service trade and environment-Measuring firm's performance and service quality. *J. King Saud Univ. - Sci.* 34, 101683. doi: <https://doi.org/10.1016/j.jksus.2021.101683>

- Yong, A. G., and Pearce, S. (2013). A Beginner's Guide to Factor Analysis: Focusing on Exploratory Factor Analysis. *Tutor. Quant. Methods Psychol.* 9, 79–94. doi: <https://doi.org/10.20982/TQMP.09.2.P079>
- Zhang, W., Zhao, S., Wan, X., and Yao, Y. (2021). Study on the effect of digital economy on high-quality economic development in China. *PLoS One* 16(9), e0257365. doi: <https://doi.org/10.1371/journal.pone.0257365>
- Zhao, F., Wallis, J., and Singh, M. (2015). E-government development and the digital economy: a reciprocal relationship. *Internet Res.* 25(5), 734–766. doi: <https://doi.org/10.1108/IntR-02-2014-0055>