مجلة تنمية الرافدين

اسم المقال: أثر الاقتصاد الرقمي في تعزيز أداء القطاعات الاقتصادية لدراسة تحليلية في بعض المؤلفات حول تجارب الدول
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Research Paper

The Impact of the Digital Economy in Enhancing the Performance of Economic Sectors, an Analytical Study in Some Literature on The Experiences of Countries

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Abstract

The digital economy has caused significant economic and societal changes, which uses data and information technology as its primary components, is currently flourishing, and has emerged as a significant factor behind the economic development of numerous nations. The digital economy is becoming more popular these days, and it is expanding quickly in many countries. The goal is to review the available research to define the impact of the digital economy across a wide range of sectors. The findings are condensed into a framework that highlights the needs, motivations, and objectives of the digital economy across a range of industries to strengthen the economy and pave the way for its eventual widespread adoption. Together, the results of this research highlight how the digital economy can revolutionize a number of industries. The study is noteworthy for its thorough examination of the various ways that the digital economy affects high-quality economic development, providing stakeholders and policymakers with insightful information. This is complemented by other research that focuses on certain topics including the effects on the environment, innovation, financial inclusion, and the function of digital transformation in SMEs. However, in many areas, the digital economy will become increasingly significant in the future.

Key words:

Digital economy, Economic growth, Financial, Market economy, Digitalization.

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ورقة بحثية

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المستخلص

لقد أحدث الاقتصاد الرقمي تغيرات اقتصادية ومجتمعية كبيرة، حيث يستخدم البيانات وتكنولوجيا المعلومات كمكونات أساسية له، ويزدهر حاليًا وبرز كعامل مهم وراء التنمية الاقتصادية للعديد من الدول. أصبح الاقتصاد الرقمي أكثر شعبية هذه الأيام، وهو يتوسع بسرعة في العديد من البلدان. الهدف هو مراجعة الأبحاث المتاحة من أجل تحديد تأثير الاقتصاد الرقمي عبر مجموعة واسعة من القطاعات. تم تكثيف النتائج في إطار يسلط الضوء على احتياجات ودوافع وأهداف الاقتصاد الرقمي عبر مجموعة من الصناعات من أجل تعزيز الاقتصاد وتمهيد الطريق لاعتماده على نطاق واسع في نهاية المطاف. وتسلط نتائج هذه الأبحاث مجتمعة الضوء على قدرة الاقتصاد الرقمي على إحداث ثورة في عدد من الصناعات. وتستحق الدراسة الاهتمام لأنها قامت بفحص شامل للطرق المختلفة التي يؤثر بها الاقتصاد الرقمي على التنمية الاقتصادية عالية الجودة، مما يوفر لأصحاب المصلحة وصانعي السياسات معلومات ثاقبة. ويكمل ذلك أبحاث أخرى تركز على موضوعات معينة بما في ذلك التأثيرات على البيئة، والابتكار، والشمول المالي، ووظيفة التحول الرقمي في الشركات الصغيرة والمتوسطة. ومع ذلك، في العديد من المجالات، سوف يصبح الاقتصاد الرقمي ذا أهمية متزايدة في المستقبل.

الكلمات الرئيسة

الاقتصاد الرقمي، النمو الاقتصادي، المالية، اقتصاد السوق، الرقمنة.

مجلة

تنمية الرافدين

(TANRA): **مجلة علمية، فصلية، دولية، مفتوحة الوصول، محكمة.**

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Introduction

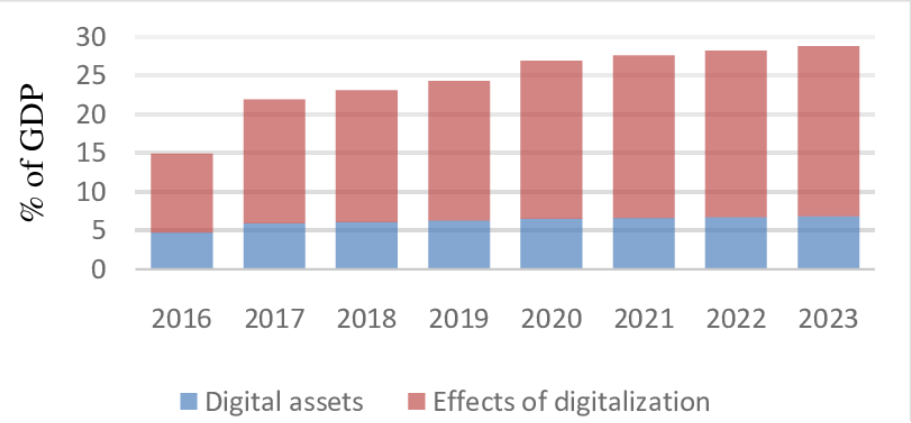
Today the digital economy and the causes influencing its growth have a big influence on many industrialized nations and the digital economy is vital to society [1]. The phrase "digital economy" refers to the activities associated with the advancement of digital computer technologies in the areas of electronic payments, online commerce, crowdfunding, and other industries across numerous sector. However, the term “digitalization” is actually a new technology it refers to the application of information technologies in all systems [2]. Retains a system of establishing social, cultural, and economic ties through the use of digital technologies is known as the “digital economy”, it is also known as the web economy, the new economy, or the internet economy. The world is rapidly entering the era of the digital economy as a result of the deep integration of digital technologies, which are commonly symbolized by the Internet, big data, and artificial intelligence, that use in many public sector [3]. The act of digitalizing an organization core offering, services, and procedures into data packages that are compatible with the internet and can be created, saved, and transferred in bits and bytes along with the information that goes with them for purposes of distribution, marketing, and sales [4]. Today, the most important requirement for the development of new economic models involving the engagement of the government and market players is the digital economy. It is evident that the widespread adoption of information innovations in the production processes of various industries will, under the current economic model, result in both the release of labour resources due to automation and robotics and a sharp increase in labour productivity, potentially leading to the abolition of many professions. The growth of digitalization is therefore an issue of strategic relevance and complex system settings of many nation socioeconomic development [5]. A significant share of the global economy will soon be accounted for by the digital economy. The emergence of digital media, including the Internet, mobile devices, and all other methods of gathering, storing, processing, and distributing information in many sectors makes it feasible to control information "infusions" and duplicate and transmit data in digital form in a timely, accurate and efficient manner [6]. When digital technologies that is tools for information generation, processing, interchange, and transfer are widely introduced and assimilated, a socioeconomic revolution known as "digitalization" is generally regarded to have begun to be use in many sectors to enhancing the economy [7]. The review objective is to offer proof of the current research in the development of digital economy technologies across small and large industries.

Methodology

The review was conducted using multiple authors research materials and statistical data on the evolution of the digital economy. Analytical and comparative approaches were employed as research techniques, together with the examination of several information sources and the ensuing generalization of data. In this review

process the current status of the digital economy is being examined through a dialectical approach. Review is conducted using both general and scientific methods, specifically, the analytical method is used to review normative and legal research, the classification method has allowed for the differentiation of the key elements of the digital economy in many sectors. Nonetheless, every industry relied on a distinct method to use the digital economy for improving the economy. The digital economy should be viewed as an essential component of social and economic activities, establishing the overall framework (basis) to guarantee regular circumstances for enhancing the effectiveness of government operations, corporate operations. By connecting all facets of the market economy, they promote stability and well-rounded growth. The reproduction process is accelerated, which is a clear indication of how well they are working as it minimizes expenses, maximizes profits, and increases the gross domestic product and national wealth of many nations [8]. However, depended on the GDP (Gross Domestic Product) Growth, William Xu, the strategic development director of Huawei, claims that investments in digital economy have the potential to yield returns that are 6.7 times greater than those made in non-digital fields. Digitalization could cause the GDP of industrialized nations to rise by 1.6% by 2025 in the world, while it could also cause a 1.6% fall [9], as shown in the Figure 1.

Figure1: Predicted Growth of the Digital Economy % of the world GDP, [9].



Digital Economy

Digital economics is the study of economic activity resulting from online links between people and technology [10]. The billions of daily online connections that exist between businesses, devices, data, and processes generate an economic activity known as the digital economy. High connectivity, or the increasing interconnectivity of individuals, organizations, and computers as a result of the Internet, is the foundation of the digital economy [11]. Today every industry is impacted by the digital economy. All economic activity will be impacted by the digital transformation, so it is reasonable to assume that eventually everything will be a part of the digital economy [12].

Digital Transactions, Products, and Industries

Digital Transactions

Digital orders and deliveries are the two main categories into which digital transactions fall. Orders placed digitally are one example of what is called electronic commerce. These transactions can also be divided into those that involve digital orders for goods and services that are placed with counterparties directly, through resident digital intermediary platforms, or through non-resident digital intermediary platforms [13]. As a result, digital delivery of the goods and services is an option. They show goods and services that are delivered digitally. The worth of products and services that have been both digitally ordered and delivered can be estimated through the cross-classification of these types of transactions [14].

Digital Products

Digital product that are available digitally are referred to as Intangible things. These consist of virtual products in video games, software, music, digital art, eBooks, and online courses. Generally sent to clients through email or download, they give companies an opportunity to add value without having to hold actual inventory [15]. The remaining non-digital items are those that fall outside of the digital product category or those that have not been greatly impacted by digitalization. These consist of data, enterprise-provided digital services, and community-provided digital services. The economic activities associated with the creation, use, and distribution of digital products as well as non-digital goods that are substantially impacted by digitalization are used to derive digital indicators [16].

Digital industries

The term digitally enabling industries, which refers to several different digital industries, can also be used to organize digital activities, such as regulating digital activities and companies that produce goods and services that facilitate electronic communications. Enterprises that produce goods and services that facilitate electronic communication and information processing. includes internet service providers, phone companies, software developers and providers, computer makers, and website designers. The companies need to adjust to the new environment when new industry-related business opportunities arise [17]. The digital industries have developed into a vital instrument for organizations looking to preserve viable alliances and establish high-value connections with other enterprises. Every day brings new digital technology that will soon impact various sectors procedures and activities [18].

Literature review

The author in [19], examined how the internet economy affected China's provinces high-quality economic growth between 2011 and 2019. They explored the significant significance of technical innovation that uses the digital economy and

discussed the direct, indirect, and spatial spill over impacts of the digital economy on high-quality economic development using the intermediate model and the spatial model. In order to assist firms, stakeholders, and policymakers manage the digital transformation and capitalize on its advantages for inclusive and sustainable growth, they give insightful explanations of the mechanisms, impacts, and regional dynamics of digitalization. Additionally, the author in [20] proposed to comprehend digital economy in China as it exists today and how it affects growth of high-quality economic sectors. From 2015 to 2019, they measured the digital economy's development index based on digital infrastructure, industry, and integration in 30 Chinese cities. The findings indicate that China's digital economy is expanding and that this growth has a considerable positive impact on the total factor productivity of the region. This development is mediated by technological advancement, with the eastern region having a higher degree of development in the digital economy and a larger rate of marginal contribution to the improvement in total factor productivity.

Moreover, another author [21] suggested to show the impact of digital economic development on carbon productivity should be empirically tested, according, employing threshold mechanism, intermediary mechanism, and two-way fixed effect models. The findings demonstrate how technological innovation, lower energy use, and increased urban productivity all contribute to the digital economy's notable increase in carbon productivity. Human capital levels and marketization have an impact on the promotion effect. There is evidence supporting green development policies focused on the development of the digital economy in resource-based cities, urban agglomerations, and regions with varying impacts. Additionally, in [22] author studied the ways in which the digital economy promotes industrial restructuring, economic growth, and environmental improvement, with particular attention on China. They used the Direction Distance Function (DDF) and the Global Malmquist-Luenberger (GML) productivity index methodologies to measure Green Total Factor Productivity (GTFP), leverages data from 286 cities during the period of 2011 to 2019. The result show that, digital economy significantly impacts China GTFP, with higher GTFP levels enhancing city GTFP, and industrial structural upgrading transmitting this growth.

However, [23] the author offered a game model in which two businesses making digital transformation investments compete to see which has a greater impact on innovation output. The study evaluates the enterprise digitalization level index and uses a fixed effect model, utilizing text analysis tools written in Python. According to the result, innovation is positively impacted by business digitalization and regional digital industry innovation, but it may also be moderated by regional innovation. While regional innovation fosters innovation in other industries, firm digitalization is more prominent in service businesses related to digital technology. Moreover, author in [24] suggested investigating into how digital platforms, the Internet of Things (IoT),

and digital orientation directly affect sustainable digital innovation in the context of the frugal environment and the digital economy. Data were gathered from 397 CEOs and managing directors of Small and Medium Enterprises (SMEs) in Pakistan using a quantitative research design. To examine and verify the theories, correlation and structural equation modelling techniques were utilized. The study shows the importance of digital orientation, IoT, and digital platforms in driving sustainable digital innovation in the dynamic digital economy.

A component of the digital economy is the trading of financial resources through technological platforms. Within a specific country like in [25] author show the effect of the financial on digital economy, the author developed a conceptual framework, and 100 MSMEs in Sukabumi participated in a survey to test the author's ideas. To assess the mediating effect and validate the measurement model, second-order structural equation modelling was used. The study reveals that the digital economy and financial inclusion are interconnected, with technology adoption acting as a mediator, emphasizing the importance of technology adaptation. Another researcher focused into the obstacles and the government role in helping small service businesses use Digital transformation (DT) [26]. They identify four primary barriers a lack of financing, digital competence, human resources, and technological challenges through qualitative, in-depth interviews with top management. The results show that DT provides a solution for these companies to improve their growth, performance, and competitive edge. Furthermore, in [27] author suggested taking into consideration the mechanisms of digital innovation of SMEs, based on the digital cultures and capacities of these SMEs in Pakistan ICT industry. Additionally, testing has been done on the organizational readiness mediating function. A total of seven theories were developed and confirmed. The results have demonstrated a positive correlation between the digital innovation of SMEs enterprises and their digital organizational culture, it validated that digital skills positively predicted digital innovation as well; the study's findings also supported the mediating function of organizational preparedness.

However, in other researches like in [28], the author seeks to understand the significance of e-service quality and e-trust, in order to foster e-loyalty among users of digital libraries in the digital economy. Additionally, a cross-sectional approach was used to collect data and produce the study's empirical findings. Data was gathered from 783 users of online digital libraries using the survey approach. The findings show that, in the digital economy, e-service quality positively affects e-trust. Also show that the relationship between e-service quality and e-loyalty linkages is mediated by e-trust. Moreover, the author in [29] highlighted the integration of new business technologies within the frameworks of Industry 4.0 and 5.0, proposing a fundamentally new concept and architecture of the digital economy. They proposed that organizations will greatly profit from the use of digital technology by utilizing a variety of approaches, including grouping, system analysis, historical approaches,

synthesis and analysis, and forecasting, which may result in huge financial gains. In order for economic agents to prosper in Industry 4.0 and 5.0, they highlighted the significance of strategic investments in robotic production, autonomous operations, and customer management.

Furthermore, authors developed techniques for predicting fuel and energy consumption levels using a sophisticated approach in [30]. They have also improved these techniques by using a regulatory-targeted manner that sets them apart from other approaches. The degree of possibility in using a single information field that may have defined the possibilities for the enterprise's activity forecasting is defined by the digitalization of the economy. Result show that it makes recommendations for improving overall energy efficiency and emphasizes the significance of taking structural and technical changes into account when predicting energy use. While in another researches author in [31] suggested conducting empirical studies using panel data from 2011 to 2017 in 30 Chinese provinces to determine the effects of energy structure and the digital economy on carbon emissions. There is a notable moderating impact from the digital economy. The effect of the coal-based energy structure on carbon emissions is progressively diminishing as the digital economy grows. It is discovered that the relationship between carbon emissions and coal-based energy structure is moderated by the growth of the digital economy. The increasing development of the digital economy has a moderating influence on the carbon emissions caused by the coal-based energy structure. However, the author in [32] suggested developing a higher education system in light of the country economic digitization. Higher education has a real impact on the inventive, research, and instructional structural elements of the digital economy. The primary finding was the identification of key trends in the advancement of higher education in the context of the digital economy. The analysis findings lead the author to the conclusion that creating a conceptual framework is essential to improving the higher education system digital flexibility to changing socioeconomic environments.

Finally, the author in [33] suggested a different approaches to building legal models for large data transaction management. To solve the issues raised by the digital economy, legal models for large data transaction management must be developed. These models can help standardize data transactions and encourage the long-term growth of digital markets by upholding the systematization, security, and openness principles. It is crucial for encouraging the conversion of digital resources into useful data components.

Table 1: Summary of the impact of digital economy in public sectors

Ref.	Year	Materials & Technique	Objective	Findings
[19]	2021	Intermediary model, Spatial model	Enhanced knowledge of how China high-quality economic development is influenced by the digital economy	Digital economy can aid in the better and more sustainable growth of China economy
[20]	2021	Panel data econometric modelling, Mediation analysis Spatial analysis	They explored China digital economy development dynamics to inform policymakers and stakeholders on effective strategies for sustainable economic growth through digitalization	China digital economy is expanding, positively impacting regional total factor productivity, with the eastern region showing higher digital economy development and marginal productivity improvement.
[21]	2022	Benchmark Model, Mediation analysis, Spatial analysis, Threshold Model	The goal is to show the impact on high-quality economic development	The intermediary mechanism show that the digital economy can enhance carbon productivity by enhancing technical innovation, reducing energy consumption intensity
[22]	2022	Direction Distance Function (DDF), Global Malmquist-Luenberger (GML), Green Total Factor Productivity (GTFP)	Provides insightful information for promoting environmental sustainability and green economic success.	The digital economy has a big impact on China's GTFP, with greater GTFP levels boosting city GTFP and industrial structural upgrading transmitting this.
[23]	2023	Game Model, Python, Fixed Effect Model, Robustness Tests	Effects of Digital Transformation on Firm Innovation and the Moderating Role of Industry Innovation Level in Digital	The role of the digital economy in fostering environmentally friendly practices, industrial modernization, and sustainable economic growth
[24]	2021	Correlation, Structural equation modelling	Offer guidance on how SMEs can effectively navigate technological advancements and adopt sustainable digital innovation.	It highlights how important it is for Pakistani SMEs to adopt sustainable practices, frugal innovation, and digital transformation in order to prosper in the digital economy.
[25]	2023	Structural Equation Modelling (SEM), Confirmatory Factor Analysis (CFA)	The digital economy impacts financial inclusion in MSMEs and the role of technology adoption in this process.	Financial inclusion is impacted by the digital economy, which also influences technology adoption
[26]	2021	Integrated Methodological Framework for Digital Transformation Strategy	For small firms to succeed in the digital transition, they need to address both technological and human resource issues.	Small service firms use digital transformation to enhance customer satisfaction, increase engagement, and promote customer cooperation.
[27]	2021	Descriptive statistics, Correlation, Multiple hierarchical regressions techniques, Structural equation modelling	Enhance knowledge of digital innovation in SMEs from a theoretical standpoint in Pakistan	The significance of digital capabilities and organizational culture in determining organizational preparedness for digital innovation, and it validates the success of digital innovation in SMEs.

Ref.	Year	Materials & Technique	Objective	Findings
[28]	2021	Correlation, SD, Mean, Confirmatory factor analysis (CFA)	The impact of e-trust on e-loyalty among digital library users, focusing on its mediation effect in the digital economy.	Future digital library users will prioritize e-service quality providers, benefiting management and encompassing e-trust and e-loyalty.
[29]	2022	Grouping method, System analysis, Historical approaches, Synthesis and analysis, Forecasting	In the context of Industry 4.0, 5.0 paradigms, they focused on the disruptive effects of digital technology on business models, and societal structures in the digital economy.	Investments made in the digital economy to satisfy changing client needs, increase efficiency.
[30]	2019	Econometric Modelling, Structural Shift Analysis, Forecasting Techniques (GDP)	The goal is to analyze fuel and energy consumption trends, estimate coal, natural gas, and electricity usage, and identify areas for increased energy efficiency due to technological and economic advancements.	The study underscores the importance of considering technical and structural changes in energy use prediction and suggests ways to enhance overall energy efficiency.
[31]	2021	Benchmark model, Descriptive statistics, direct effect regression results	Investigate the relationship between energy structure and carbon emissions, investigate the moderating effect of the digital economy	The digital economy can help cut carbon emissions, particularly in more developed economies.
[32]	2020	Statistical tests, Correlations, Regression analysis, Cluster analysis	Finding possibilities and problems, then coming up with solutions to improve digital adaptation in the higher education system	They highlighted the need for a conceptual foundation to improve higher education's digital adaptation to changing socioeconomic conditions.
[33]	2022	Thematic analysis, Descriptive statistics, legal models for big data transaction management	The goal is to advance knowledge about big data transaction management legal frameworks as they exist today and how they affect the digital economy.	It can address legal issues and expedite China efforts to standardize and establish a digital economy market system.

Discussion

The main point of contention is the importance of technological innovation brought about by the digital economy in promoting superior economic growth. The review investigated the complex repercussions, including direct, indirect, and geographical spill-over effects. It highlights how important it is to provide clear explanations in order to help different stakeholders manage the digital revolution in a way that promotes equitable and sustainable growth. Furthermore, Development of Industrial Restructuring and Enhancement of the Environment, this study looks into how the digital economy promotes economic expansion, industrial restructuring, and environmental advancement. It highlights the critical role that industrial structural upgrading plays in supporting this growth and demonstrates the substantial influence of the digital economy on GTFP through the use of sophisticated methodology. The results underscore the possibility of utilizing digitization to promote sustainable development. However, it is also, examine how investments in digital transformation affect the output of innovation. The conversation focuses on how enterprise

digitalization and local digital industry innovation contribute to overall innovation. It also emphasizes the significance of comprehending sector-specific dynamics in fostering innovation in the digital age, as well as the moderating function that regional innovation plays in this regard. Additionally, factors that propel sustainable digital innovation in SMEs Within the framework of the digital economy, the drivers of sustainable digital innovation in SMEs are the focus of the discussion. It finds that digital platforms, and digital orientation are the main drivers of innovation through quantitative analysis. Finally, the result of this review highlighted how the digital economy has the power to fundamentally alter economic growth, innovation, and sustainability. They also emphasize how important it is to implement smart policy changes and tactical interventions to optimize the benefits of the digital economy for diverse and sustainable development in many sector.

Conclusion

The digital economy creates a new digital space and gives different participants in the global economy access to a variety of data. This review primary goal is to present the most recent research findings regarding the digital economy and provide an overview of them in many sector. Also, intended to improve comprehension of the benefits of the digital economy idea and its applications. The Digital Economy presents challenges since it calls for a reevaluation of the production, distribution, and sales processes of goods. As a result, this study summarizes some research that highlights the significance of understanding the unique economic characteristics of digital goods and how to enhance the industries in order to fully grasp the potential of the digital economy and foresee the obstacles that lie ahead. To promote inclusive and balanced growth, there are a number of negative consequences and difficulties that come with this transition as well. The detrimental effects of the digital economy and the trend toward industrial digitization will result in thousands of armies of unemployed people, which will speed up growth but compromise development processes and have unintended consequences, such as subpar infrastructure for the digital economy. The world will abandon the accountant, the janitor, the library employee, the postman, and these. All of them are jobs that leaving them will lead to unemployment, digital economy is organized in the interests of big business more than small business. Finally, the digital economy will serve as the cornerstone for the growth of the digital economy of the future and will effectively encourage the expansion of several sectors.

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