

THE GLOBAL MARKET AS A PROJECTION OF THE INFORMATION ECONOMY

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Abstract. The information economy is a social phenomenon that is developing at a rapid pace and covering the entire global economy. The informatization and digitalization processes directed economic agents' attention to the innovation and digitalization of classical economic processes. At the same time, modern business organizations conduct most of their commercial relations in a digital environment. The paper aims to explore the relationship between the information economy and the global market as a projection of this economic model. It examines the nature and characteristics of the information economy, highlighting the importance of technology and digital infrastructure in shaping global trade. The paper also delves into the global market model and argues that it is intrinsically linked to advances in technology. Through an analysis of the digitally based market mechanism, the paper seeks to demonstrate the interconnectedness of the information economy and the global market, ultimately proving that the global market is fundamentally dependent on technological infrastructure. Finally, several prospects for the development of the global economy based on knowledge are systematized.

Keywords: digital economy; global economy; digitalization; digital transformation; informatization; e-trade

Introduction

The evolution of the global economy has been marked by transformative changes that have redefined how societies produce, exchange and consume goods and services. The changes also affected economic relations, which are already taking place in the digital dimension of reality. In this new reality, new practices and rules, along with the already established classical trade models, were imposed to shape trade relations in the global digital economy. Among these changes, the emergence of the information economy and the transition to a human-centric society highlight the growing importance of knowledge, data and technology in shaping the economic and industrial landscape. The information economy is a

modern economic system in which information and knowledge are the primary resources and drivers of growth and development. With the rise of technology and the Internet, the Information economy has become a vital component of the global economy, influencing production processes, consumer behaviour and economic policies. In the 21st century, we are no longer talking about separate market centres. We are all passive and active participants in the global market system - the whole system of market centres united in the worldwide digital environment. The technological infrastructure is the main driver behind the digital nature of the global market. The global market offers market participants new challenges, such as new assets, new rules and regulations that form the foundation of modern trade relations in the new century. The critical analysis of these new challenges will allow a better knowledge of the potential opportunities of contemporary markets and the extraction of innovative and sustainable commercial practices in modern commerce.

The article aims to explore the relationship between the information economy and the global market as a projection of this economic model. The following tasks are solved to achieve the goal: The nature and characteristics of the information economy are examined, emphasizing the importance of technology and digital infrastructure in shaping global trade. Second, the substantive characteristics of the global market are analysed, as well as its intrinsic relationship with technological advances. Finally, several challenges and prospects for developing the global economy based on knowledge are systematized.

The information economy – essence and characteristics

The information economy's development can be traced back to the dawn of the industrial revolution in the 18th and 19th centuries. The concept is associated with the ways of producing and disseminating information and knowledge during the various stages of society's development and the emerging socio-economic and technical relationships. Tracing the evolutionary path of the information economy from basic data processing to the formation of multi-complex systems performing simple cognitive-human tasks, it can be emphasized the transformative power of data and technology in an economic structure. In the 21st century, information has evolved from a mere byproduct of doing business to a significant driver of real-time decision-making and wealth accumulation in today's global economy.

Various definitions of essence and characteristics are found in the scientific literature concerning the information economy. The differences arise from the authors' understanding of the subject of this area. In 1962, Machlup first introduced the concept of measuring the production and dissemination of knowledge, coining the term “knowledge economy”. He later developed the theory of knowledge economy among other authors (Machlup 2014; Bermeo Giraldo, Patino Toro, Valencia Arias, Benjumea Arias, & Bran Piedrahita 2022; Kuleshov, Untura, &

Markova 2017; Liyanage & Netswera 2022). They added the commercialization and use of knowledge (both scientific and technological) and information for achieving sustainable economic growth and productivity through investment in human capital, technological resources and innovation. Other authors correlate the concept of the information economy with the so-called new economy (Dźwigoł 2019), electronic economy (Zysman & Weber 2001), network economy (Amosha, Pidorycheva & Zemliankin 2021), digital economy (Su, Dong, Su, & He 2023; Xia, Lv, Wang & Ding 2023), Industry 4.0 (Zizic, Mladineo, Gjeldum & Celent 2022; Nair, Kumar & Sreenath 2021; Oztemel & Gursev 2020, among others). According to them, economic activities arise from the connection of individuals, businesses, devices, data and operations through digital technologies. These connections include the online connections and transactions taking place in economic sectors and technologies such as Internet and mobile technologies, big data, information and communication technologies, cyber-physical systems, bionics, and artificial intelligence.

The modern concept of the information economy is considered in the works of Porat (1977), Castells (1996), Sukhodolov, Popkova & Litvinova (2018); Anie, Budak, & Kajh (2016), Fırat, Karaçor & Özkan (2017), Vassilev (2015), Trushkina (2019) and others, unites the essences of the above concepts into one. The concept uses transformative technologies for production, processing, and data storage and, at the same time, transfers information, knowledge, and innovation. In summary, we can assume that the concept of the information economy includes an economic system in which dominant activities for the formation of the predominant part of the gross domestic product are intellectual and innovative ones, and digital technologies are used for the production, processing, storage and distribution of information and information products. In today's society, the extraction of new knowledge and innovation are becoming critical competitive advantages that create the highest value and digital technologies and data flow become the "connective tissue" of the global economy (McKinsey Global Institute 2019).

We can point out the main elements as well as basic characteristics of the information economy based on the previous literature that was reviewed. The elements are:

- Information – it has become a primary resource collected, processed and analysed to create value. Moreover, information becomes an engine for making informed decisions and optimising business processes.

- Knowledge and innovation – they are not just additional factors, but the very foundation for the development of the information economy. New technologies, methods and processes driven by knowledge and innovation improve the efficiency and productivity of economic entities, as well as help to solve socio-economic problems.

– Digitization and automation – these are not just processes, but transformative forces that are reshaping social industries and enabling all kinds of flows. New digital and logistics technologies, digital platforms, automated processes, data processing progress caused by artificial intelligence improvement, increased informatization and knowledge extraction are transformed into a catalyst for business process innovation. They also provide new opportunities for growth and development and decreased costs, including for cross-border transactions.

The information economy has the following characteristics: it is global, virtual and networked in nature, as it uses the World Wide Web and technologies that allow the exchange of information between different users in real time in different parts of the world without requiring physical presence. Standardized and new information are equal, and innovation and creativity are enhanced by adequate intellectual property protection. The information economy is also distinguished by a high degree of dynamism, which allows rapid adaptation to technological changes and the market and high efficiency.

Global market – global market model

In the 21st century, many processes impact trade relations, but two stand out with particular force. On the one hand, this is the process of globalization that allows for the achievement of universal accessibility. On the other hand, the information economy provokes the creation of new models for the realization of the classic commercial relations between the interested entities. In its essence, globalization is a comprehensive process that dates back to ancient times when there were commercial and cultural relations between people from distant geographical locations, which emerged as international trade relations throughout thousands of years of human history. In the 21st century, digitization covers all spheres of modern life, which provokes the emergence of the so-called information economy, within which information is established as a critical resource in economic life.

The analysis presented focuses on market innovations and transformations. How digitalization accelerates the process of globalization, which is the crucial factor provoking the emergence and establishment of the phenomenon of a global market, as shown in figure 1.

The globalization process has been unfolding over millennia of human history, passing through various stages and reaching ubiquitous connectivity based on the technological boom of the 21st century. The symbiosis between global connectivity and technological innovation forms the so-called information economy, which is the foundation of the global market system. Historically, globalization provides connectivity between individual entities in market relations, and digitalization optimizes connectivity processes by providing opportunities for the movement

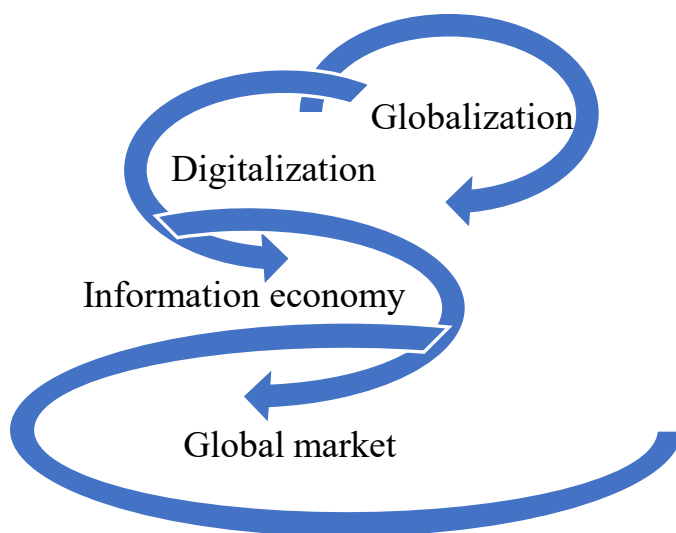


Figure 1. Connection and interaction between globalization, digitalization, information economy and global market

Source: Own representation

of people, goods, capital and innovation across national borders. The symbiosis between global connectivity and technological innovation has allowed modern economic relations to be realized through the prism of the information economy, which creates new market mechanisms to realize global commercial relations in the global market system.

The combination of ubiquitous global connectivity and the information economy catalyses a systemic collection of market centres that are digitally bound into the global market system. The world market (global) is the gathering centre of modern global trade relations that connect counterparties from different geographical locations at optimized transaction costs. The global market can be defined as a system that allows commercial, financial and labour exchange between countries without restrictions. Today, economies are so interconnected that anything that happens in one country can affect another, and no one is economically isolated (FiveAble library¹). In its nature, the global market can be represented as an interconnected set of market environments that interact with each other and their surroundings. Features of the global market system can be summarized into several key directions – movement of assets across national and community (meaning the European Union) borders, movement of capitals, optimization of production and trade processes, rapid access to innovations, unlimited consumer potential, as shown in figure 2:

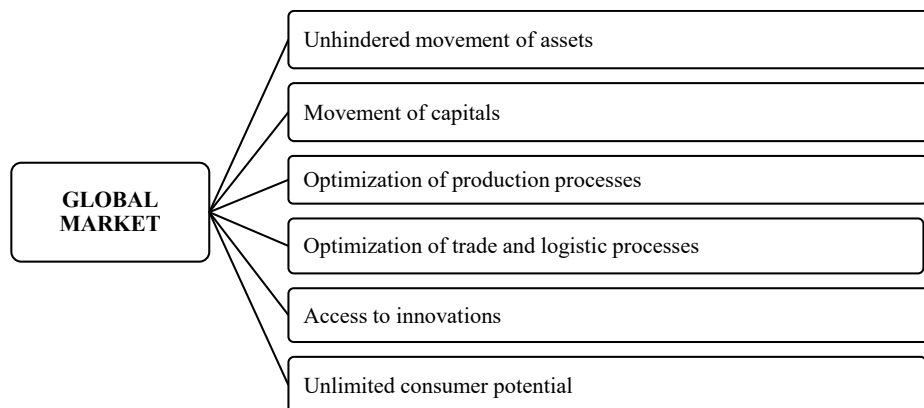


Figure 2. Key characteristics of the global market

Source: Own representation

– Unhindered movement of assets – the global market system facilitates the free movement of assets across national and community borders, largely due to the role of global regulations in depreciating barrier restrictions. These regulations streamline the asset movement process, mediating the global transfer of assets.

– Movement of capital – within the global market system, money flows freely across national and community borders, enabling modern businesses to invest globally in projects and companies around the world.

– Optimizing production processes – the information economy empowers modern companies to distribute production processes across different locations, leading to cost optimization and increased efficiency.

– Optimizing trade and logistics chains – global connectivity and technological innovation enable the optimization of trade and logistics costs for all participants.

– Access to innovation – within the information economy, access to innovation and modern technological solutions is relatively easy and cheaper, thanks to the optimization of transfer costs and unlimited accessibility.

– Unlimited consumer potential – the global market system, which unites most market centres, practically provides unlimited market potential because all markets are accessible to all consumers and suppliers, which guarantees optimal conditions of commercial negotiation.

– Globalized production chains – different stages of production for a single product can occur in different countries, optimizing efficiency and costs.

The global market as an information hub

Trade is a classic human activity that accompanies the evolutionary development of humanity. Like any other field, it also goes through various evolutionary stages

of development. The hypothesis that presents the global market as an information hub allows world trade relations to be considered through the lens of information as a strategic resource catalysing precisely in the international market system. This system features the following key features:

- Access to information resources – modern online platforms generate massive information arrays through which contemporary managers base their decisions and optimize the management process. These arrays form databases to analyse information on trends, consumer expectations and attitudes, corporate practices, market strategies, etc.

- Research on consumer habits - the global market system allows the generation of huge databases that provide reliable information about consumer demands and expectations in different regions.

- Innovation and competition – they are not just byproducts of the global market system but its driving forces. By concentrating worldwide supply and demand, the system accelerates competition between market entities, sparking global innovations that become powerful tools in the fight against international competition.

The systemic nature of the global market allows modern business/market entities to analyse generated market information using artificial intelligence and big data. In this way, they can bring out the leading trends in a specific sector and market, which optimizes the process of making strategic management decisions. The global market not only facilitates trade but also forms a new ecosystem where information and data play a vital role in the success of businesses. These dynamics create new opportunities and challenges that companies must take into account.

Prospects for the development of the global knowledge-based economy

Globalization, digitalization, and informatization allow the highlighting of primary challenges and perspectives (Amosha, Pidorycheva & Zemliankin 2021; NIC 2021) before the development of the modern world economy. Challenges facing the world economy are related to demography and human development, environment, economy and technology:

- Geopolitical instability – the conflicts between the major economic powers, the USA, China, Russia, and the EU, have serious consequences on the world economy, manifested through trade wars, sanctions and interruptions in global supply chains. It leads to an increase in uncertainty, a slowdown in economic growth, and pressure on migration processes.

- Climate change and sustainable development – the growing impact of climate change calls for a transition to more sustainable economic development models to mitigate the uncertainty of planetary resources. It includes reducing dependence on fossil fuels and innovating in the energy sector. However, the transformation is expensive and complex, especially for developing countries that often rely on traditional energy sources.

– Fragmentation of communities, states and the global system by national, cultural or political preferences. Despite the hyper-connected information environment, communities that differ in their values and culture can use digital repression for population control.

– Demographics and human development – relate to the observed trend of an ageing world population, with difficulties in maintaining and building on progress in education and health care.

– Technological changes and automation – the advent of new technologies such as artificial intelligence, automation, and robotics is reshaping the labour market. As Stoycheva and Vitliemov (2024) argue “the use of AI leads to changes in the requirements for occupying certain professions”. While some jobs are becoming obsolete, new opportunities are emerging. However, this necessitates the retraining of the workforce, highlighting the importance of adaptability in the face of technological change and the potential for increased social inequality.

– Global Pandemic and Health Crises – the COVID-19 pandemic has shown how vulnerable the global economy can be to unexpected events. The economic consequences of the shutdown of entire sectors, disruptions in supply chains and the increase in government debt are challenges that will continue to be felt for a long time.

– Rising debt, financial crises, fragmented trading environment – the escalation of global public and private debt, particularly in the context of the mounting costs of dealing with the pandemic and its economic aftermath, is a cause for concern. This trend not only heightens the risk of new financial crises but also constrains the scope for future economic stimulus, underscoring the need for prudent financial management.

We can point out some prospects for the future of the world economy in the following areas:

– Diversifying economic connectivity, global partnerships, and collaborations by introducing some trade restrictions by governments on critical raw materials, use of digital e-commerce platforms, public-private partnerships and data sharing. All these tools will likely transform global value chains and the extent of international trade and stimulate economic growth.

– Digital transformation and technological innovation – cloud computing, digital e-commerce platforms, big data, financial technology (FinTech), and digital services are changing how business is done and expanding commerce. Platformization will allow small and medium-sized enterprises to compete with large corporations.

– Artificial Intelligence (AI) and Automation – AI is becoming a leading industry-transforming system, improving efficiency and creating new jobs. At the same time, they will require retraining of the workforce and adaptation to new realities. As Biolcheva and Sterev (2024) argue “the AI revolution is about to begin”.

– Green economy and sustainable development – the transition to a green economy represents a challenge and an excellent opportunity for economic growth. Investments in green technologies, renewable energy sources and sustainable

practices can create new jobs and economic prosperity. Innovations that reduce the carbon footprint and protect the environment will be prioritized.

- Innovations in education – a convergence between scientific discoveries and the application of technologies, helping to personalize user needs, is expected. Digital platforms provide new opportunities for education and training and the diffusion of innovation.

- Security, privacy and ethics – new technologies require ever-increasing volumes of data to extract important insights and accumulate data. This underscores the importance of the ethical use of data, which is a responsibility shared by all stakeholders. Governments must create new regulations to regulate the use and control of data, and it's our collective responsibility to ensure ethical data practices.

Conclusion

The development of the information economy in the 20th and 21st centuries made economists and politicians begin to recognize the growing role of information and knowledge as critical drivers of economic growth, leading to a redefinition of socioeconomic relations. It changes the paradigm of society, leading to a transition from an industrial economy to an economy in which information is an essential source of value. Companies are beginning to see the value of collecting, analysing and selling data. The global, virtual and networked nature of the information economy enables the exchange of information between different actors. With the development of the World Wide Web, cloud technology, digital payments, social media and artificial intelligence, the global market has become increasingly connected and integrated. The rise of the Internet and new technologies has significantly further accelerated this trend, enabling the global exchange of information, facilitating international trade and communication, creating new business models based on data and offering new opportunities for consumers. The systemic aggregate of markets in the 21st century fully fulfils the role of an intelligent information hub, balancing the information flow and behaviour of the global market and non-market entities. Market innovations, transformations, and digitization accelerate globalization processes.

The digital character of the global market is primarily defined by its technological infrastructure. Understanding the role of this infrastructure is crucial for effective management and participation in the digital global economy. This digitally based global market is a potent tool for economic and social development, offering numerous benefits. However, it also presents new challenges in areas such as human development, education, economic processes, environment, technology, and security. To address these risks and maximize the benefits of the digital global economy, it is essential for all stakeholders to collaborate and make coordinated efforts. Therefore, understanding the nature and characteristics of this market mechanism is key to successfully navigating the global economy of the 21st century.

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NOTES

1. FIVEABLE LIBRARY, available at: <https://library.fiveable.me/key-terms/ap-euro/world-market> (accessed 10 August 2024).

REFERENCES

- AMOSHA, O.I.; PIDORYCHEVA; I.YU. & ZEMLIANKIN, A.I., 2021. Trends in the World Economy Development: New Challenges and Prospects. *Sci. innov.*, vol. 17, no. 1., pp. 3 – 17. DOI:10.15407/sci17.01.003.
- ANIE, I. D.; BUDAK, J. & KAJH, L., 2016. New information economy in post-transition countries: An economic approach to privacy concern. *Transformations in Business and Economics*, vol. 15, no 2, pp. 165 – 178. ISSN: 1648 – 4460.
- BERMEO GIRALDO, M.C.; PATINO TORO, O.N.; VALENCIA ARIAS, A.; BENJUMEA ARIAS, M.L., & BRAN PIEDRAHITA, L., 2022. Research trends of the knowledge-based economy: A bibliometric study. *Intangible Capital*, vol. 18, no. 2, pp. 290 – 313. DOI: 10.3926/ic.2048.
- BIOLCHEVA, P. & STEREV, N., 2024. A model for calculating the indirect added value of AI for business, *Strategies for Policy in Science and Education*, vol. 32, no. 3s, pp. 9 – 17. Available from: <https://doi.org/10.53656/str2024-3s-1-mod>.
- CASTELLS, M., 1996. *The Rise of the Network Society (The Information Age: Economy, Society and Culture*, vol. 1. Malden, MA: Blackwell Publishers, Inc.
- DŹWIGOŁ, H., 2019. Research methods and techniques in new management trends: research results. *Virtual Economics*, vol. 2, no 1, pp. 31 – 48, Available from: [https://doi.org/10.34021/ve.2019.02.01\(2\)](https://doi.org/10.34021/ve.2019.02.01(2)).
- FIRAT, E.; KARAÇOR, Z. & ÖZKAN, İ. M., 2017. An Investigation on the Transformation of Information Economy – Bilgi Ekonomisinin Dönüşümü Üzerine Bir İnceleme. *Proceedings of International Conference of Eurasian Economies, 10 – 12 July 2017*, pp. 313 – 317, Istanbul, TURKEY. DOI:10.36880/C08.01934.
- KULESHOV, V. V.; UNTURA, G. A. & MARKOVA, V. D., 2017. Towards a knowledge economy: The role of innovative projects in the

- reindustrialization of Novosibirsk oblast. *Regional Research of Russia*, vol. 7, no. 3, pp. 215 – 224. ISSN: 2079-9713.
- LIYANAGE, S. I. H. & NETSWERA, F. G., 2022. Greening Universities with Mode 3 and Quintuple Helix model of innovation–production of knowledge and innovation in knowledge-based economy, Botswana. *Journal of the Knowledge Economy*, vol. 13, no. 2, pp. 1126 – 1156.
- MACHLUP, F., 1962. *The Production and Distribution of Knowledge in the United States*. Princeton, New Jersey: Princeton University Press.
- MACHLUP, F., 2014. *Knowledge: Its Creation, Distribution and Economic Significance*. In *Knowledge and Knowledge Production*. New Jersey: Princeton. ISBN 9780691615554.
- MCKINSEY GLOBAL INSTITUTE, 2019. *Globalization in transition: the future of trade and value chains. Executive Summary*, Available from: <https://www.mckinsey.com/featured-insights/innovation-and-growth/globalization-in-transition-the-future-of-trade-and-value-chains>
- NAIR, M. M.; TYAGI, A. K. & SREENATH, N., 2021. Future with Industry 4.0 at the Core of Society 5.0: Open Issues Future Opportunities and Challenges. *International Conference on Computer Communication and Informatics (ICCCI)*, Coimbatore, India, January 2021, pp. 1 – 7. DOI:10.1109/ICCCI50826.2021.9402498.
- NIC, 2021. *Global Trends 2040*, March 2021, NIC (THE NATIONAL INTELLIGENCE COUNCIL) ISBN 9781-929667-33-8. Available from: www.dni.gov/nic/globaltrends.
- OZTEMEL, E. & GURSEV, S., 2020. Literature review of Industry 4.0 and related technologies. *Journal of Intelligent Manufacturing*, vol. 31, pp. 127 – 182, ISSN: 1572-8145. DOI:10.1007/s10845-018 1433-8.
- PORAT, M. U., 1977. *The information economy: definition and measurement*. OT Special publication 77-12(1). Washington: US Dept. of Commerce, Office of Telecommunications.
- STOYCHEVA, B. & VITLIEMOV, P., 2024. Challenges of using artificial intelligence in management decision making, *Strategies for Policy in Science and Education*, vol. 32, no. 3s, pp. 42 – 51. Available from: <https://doi.org/10.53656/str2024-3s-4-cha>.
- SU, J.; DONG, C.; SU, K., & HE, L., 2023. Research on the Construction of Digital Economy Index System Based on K-means-SA Algorithm. *Sage Open*, vol. 13, no 4. DOI:10.1177/21582440231216359.
- SUKHODOLOV, A.P.; POPKOVA, E. G. & LITVINOVA, T. N. (EDS.), 2018. *Models of Modern Information Economy: Conceptual Contradictions and Practical Examples*, Publisher, Emerald Publishing, ISBN-10: 1787562883, ISBN-13: 978-1787562882.

- TAPSCOTT, D., 1996. *The Digital Economy: Promise and Peril in the Age of Networked Intelligence*. New York: McGraw-Hill. ISBN-13 978-0070633421.
- TRUSHKINA, N., 2019. Development of the information economy under the conditions of global economic transformations: features, factors and prospects, *Virtual Economics*, vol. 2, no 4, October, pp. 7 – 25, ISSN 2657-4047(online).
- VASILEV, Y., 2015. The information society and the information economy – theoretical concepts and practical dimensions. *Collection of reports from the Jubilee scientific conference “The development of the Bulgarian economy - 25 years between expectations and realities”*, pp. 13 – 26. Svishtov. Publisher: AI Tsenov. ISBN 978-954-23-1105-8.
- XIA, Y.; GONGMING, L. V.; WANG, H., & DING, L., 2023. Evolution of digital economy research: A bibliometric analysis. *International Review of Economics & Finance*, vol. 88, pp. 1151 – 1172. ISSN: 2146-4138. DOI:10.1016/j.iref.2023.07.051.
- ZIZIC, M. C.; MLADINEO, M.; GJELDUM, N., & CELENT, L., 2022. From Industry 4.0 towards Industry 5.0: A Review and Analysis of Paradigm Shift for the People, Organization and Technology. *Energies*, vol. 15, no. 14 (July-2 2022), 5221. DOI:10.3390/en15145221.
- ZYSMAN, J. & WEBER, S., 2001. Electronic Economy: Governance Issues, *International Encyclopedia of the Social & Behavioral Sciences*, Elsevier. pp. 4399 – 4405. ISBN 978-0-08-097087-5.

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