

Intercountry differences in apprehension of the digitalization

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Abstract. The background of the paper is the process of digitalization of economic relations and its consequences when people face different threats arising during the use of digital tools in society and the economy. The study is aimed to analyse the intercountry differences in people's perception of digitalization. The investigation of external and internal factors that form the interregional differences in the apprehension of digitalization may help to evaluate the threats and risks of digitalization, and to develop the measures to reduce these threats. As the research methods, the authors used the general scientific methods of knowledge, systems approach, comparative analysis. As a statistical framework for the study, the results of Tufts University's Digital Trust Index, CIGI-Ipsos Global Survey On Internet Security and Trust 2019 and Ipsos Survey For the World Economic Forum Workers' Concerns About Job Loss and Access to New Skills 2020 were used. The results of the theoretical analysis of digitalization allowed us to identify and explore the threats to society and the economy created by the new digital world. The interregional tendencies in the apprehension of different means of digitalization are analysed. Interregional differences in the apprehension of digitalization must be considered both when planning digitalization programs and international cooperation.

1 Introduction

A digital revolution causes ambiguous reactions in society, the scientific community, business and authorities. Along with enthusiastic studies on the amenities of digitalization, there are increasingly emerging publications on preventing the negative consequences of this revolution, noting increasing risks and threats for the economy and the population during the rise of the digital world. Digitalization distrust has generally become a consequence of a long-rooted mistrust of technology in human society. The German philosopher and cultural critic F. G. Junger published the book "Die Perfektion der Technik"[1], where he considered the essence of technology and tries to explain why machines have caused fear in people since ancient times and why the use of machines transforms society. From Junger's point of view, the most significant danger of machines is a threat to human self-determination in this world, as it causes loss of the identity and culture of people. Junger also highlights the threat to human leisure since a person in a machine society must adapt to the work of machines.

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There is no generally accepted definition of a “digital environment of trust”. But the essence of this phenomenon is quite clear: the digital environment of trust is the creation and maintenance of such conditions of interaction in the digital world that digitalization does not cause rejection among people and, there is a high level of trust in digital technologies and interactions via it [2].

The processes of digitalization, if distrusted, are seen as contributing to a decrease in people’s income and quality of life. However, the evolution of economic relations towards increasing digitalization causes the need for digital technologies to win the trust of economic agents. For such a conquest, it is necessary to form a digital environment of trust, and for its development, one needs to study existing or potential threats that contribute to distrust. Cross-country differences in the digital environment of trust are inevitable because of the national and cultural differences. Identifying and studying these differences may significantly increase the effectiveness of creating and maintaining the digital environment of trust.

The hypotheses of the research is the formation of a digital environment of trust in each country will be influenced by its national and cultural characteristics, which determine cross-country differences in the digital environment of trust. In particular, in different countries, depending on cultural features, the level of democracy, etc., the emerging digitalization will be apprehended differently, so the priority goals for the development of a digital environment of trust may differ.

2 Literature review

Every year, the number of publications devoted to the threats posed by digitalization and distrust of digital interaction mechanisms increases. Several researchers independently note the loss of leisure time as a result of digitalization, threatening an increase in actual working time. Because an employee becomes available around the clock and can solve a number of work tasks being at home, a person’s working time increases. Ilsoe [3] provides evidence that digitalization can create jobs without creating workplaces. In addition, employees are afraid of the deterioration of working conditions due to increased control over their activities in the workplace. Another fear is the reduced guarantees of payment of wages, which is possible when using work through digital platforms when the employer and employee are remoted from each other and their identity may be hidden. Degryse [4] notes the increasing risks of nonreceipt of wages in the digital economy.

A number of studies highlight concerns that the digitalization of the education sector will cause negative consequences. Hans and Shawna [5], recognizing a number of positive aspects and amenities created by digitalization, at the same time note such problems as the possibility of assimilating false information from random sources, distractibility to advertising and third-party activities, lack of feedback. When studying the processes of digitalization in Danish universities, Haase & Buus [6] highlight such concerns of universities in relation to digitalization as the impact on mental health with excessive digital activity among children, the emergence of a problem of data security, and even fears of deterioration of the country’s welfare systems and its competitiveness in competitive markets at the international level. Madge et al. [7] show that the digitalization of education in modern conditions can lead to the polarization of education instead of facilitating its attainableness: thus, in Africa, students with good Internet quality and the possibility of hiring private tutors receive a better education than students with poor Internet access. Gossen et al. [8] also believe that digitalization can lead to increased polarization not only of income but also of the quality of education.

Many studies note an increasing fear of the threat of job loss due to automation and the digitalization of workplaces. This fear is manifested not only by workers of developing countries with a predominance of low-skilled labour but ones of developed countries too.

Sievering [9] notes the concerns of job losses in Germany, highlighting as groups that are facing significant reduction because of digitalization (in descending order of danger): office workers, workers of low-skilled professions, machine operators and assembly technologies, service and sales workers, machine operators, employees of higher educational institutions, managers. Arntz, Gregory and Zierahn [10] show that, although unemployment is not expected by forecasts, automatisaton will inevitably cause structural shifts in the labour market, increases the demand for analytical and interactive skills and reduces the demand for skills in routine cognitive work.

The fear of digital technologies because of the low level of digital skills remains common. In developed countries, this fear is more typical for older people. Barth et al. [11] state what according to the results of the study of the labour force in the United States, there is a smaller increase in labour productivity among older employees compared to young employees holding similar positions. Although digital technologies can improve the quality of life of the elderly population, Saplacan and Herstad [12] show among the factors of non-use of digital technologies by older people, their lack of motivation or interest, the discrepancy of existing knowledge to problems arising from digital technologies, the state of people's health.

Many studies are devoted to the threats of loss of privacy and personal data via digitalization. The fear of threats to privacy due to digitalization is more typical for developed countries, where individual rights are declared as a fundamental value. The observation of human life through technology is increasingly being implemented both in production and in public space. The risks of surveillance of people's private lives are also increasing. Mercado-Kierkegaard [13], Cortini and Fantinelli [14] state that men of all ages, including the millennial generation, are particularly sensitive to digital privacy preservation. Abuse of control by the employer leads to emotional burnout of the staff, as noted by Akram et al. [15]

There is an increasing amount of studies devoted to the unreliability of information in digital media and social networks. The fear of fake information transmitted through digital technologies is also more typical for developed countries, where users have more access to news resources on the web. Back at the beginning of the XXI century, Kiouis [16] noted the least trust in online news compared to newspaper publications and television broadcasts. At that time, online media was considered a relative novelty, and predictions were made that the situation could change. However, Flew et al [17], analyzing the trust in the media in Australia, also notes the least confidence in online sources, while their data correlate with the global situation. Park et al. [18] believes that social media users are more sceptical about the information received than users of official and, above all, print media. Park also notes a differentiated approach to the collection and posting the news information by major news aggregators. N. Lupu et al. [19], using the example of developing countries in Latin America, notes that the use of social media, especially in political companies, is accompanied by an extensive amount of implausible information, which undermines confidence in both digital media and democratic institutions in general. Veselov and Skvortsov [20] note that the decrease in confidence in scientific knowledge in favour of influencers with the growth of the Internet. You and Wang [21] note the difference in the use of the Internet among democratic and non-democratic communities: in more authoritarian countries, the influence of the Internet reduces confidence in state institutions and, accordingly, makes it difficult to administer economic policy. At the same time, the influence of the Internet on economic processes is quite diverse: Navio-Marco et al. [22] talk about the insignificant impact of the development of the Internet on tourist activity in EU countries: although there is a convergence in the availability of the Internet, there are still significant differences in the Internet using patterns.

3 Metodology

As the research methods, the authors used the general scientific methods of knowledge, systems approach, comparative analysis. As a statistical framework for the study, the results of Tufts University's Digital Trust Index, CIGI-Ipsos Global Survey On Internet Security and Trust were used.

4 Results

4.1 Cross-country differences in the assessment of threats of digitalization

An analysis of the literature on the subject under study allows us to state that a significant part of researchers does not address the problem of interregional differences in the assessment of threats from digitalization in their works and, therefore, do not study the reasons for such a difference. We concluded that distrust of digital technologies is indicated, albeit to varying degrees, in all countries. But the historically formed cultural and organizational features of the socio-economic development of each of the countries strongly influenced the formation of this distrust. Therefore, in many countries, the threats from the consequences of digitalization are seen differently.

The general crisis of trust in the modern world, losing faith in state, economic and public institutions, the disbelief of the media etc. is disastrous for economies. People stop trusting the fundamental foundations of their societies, stop believing in the fairness of laws and administration. There is a widespread global fear that the government or criminals will use digital technologies to harm people. It will lead to the loss of a person's rights and identities, to the loss of work, property and money. In the modern world, there are plenty of dystopias and pessimistic forecasts to scare society with scenarios of the digital future. Those forecasts were partially justified since digital technologies were sometimes critically vulnerable to the desire of individual participants in economic relations to profit through fraudulent activities. These desires were easy to realize when the economic entities had a weak understanding of digital technologies and poor skills in gadgets, while the legal regulation of the digital economy was just emerging. Although the failures of the first stages of the digital economy development were overcome, the distrust for digitalization they had laid could not disappear quickly.

The basis of the differences in the perception of digitalization, its approval or rejection is the segregation of countries into developed and developing states. The latter often believe, and sometimes rightly, that developed countries establish rules of the game that are favourable only for themselves in the world economy, making the rich gain more money and power while increasing poverty. So digitalization as a policy of developed countries was initially perceived by many third world countries as a tool for further strengthening inequality. And this is despite the fact that digitalization was presented as a tool to provide equal access to goods and services for everyone, a way to eliminate the intercountry gap in income and opportunities. After decades of the digital revolution, optimism about digitalization is gradually disappearing from official UN reports. If earlier they believed that digitalization would help reduce cross-country inequality, now the estimates are more cautious. The Report on the Digital Economy 2019 [23] recognizes that getting positive results of digitalization is not warranted, as well as fair wealth distribution. The negative consequences of digitalization can be felt by people, companies and countries that are avoiding digitalization or just partially participating in it. Various types of activities may disappear as a result of automatization, local companies will find themselves in tough competition with more digitalized foreign companies, and employees with insufficient

knowledge of new technologies will be at a disadvantage with those who have already adapted to the digital world. Digitalization, instead of reducing the gap between developed and developing countries, rather strengthens this divergence and expose developing countries to risks that they cannot control. There is a noticeable difference in concerns about digitalization in developed and developing countries. If in developed countries a person feels threatened by changes primarily for himself and only partially for the society in which he lives, then in developing countries people are afraid of threats to the existence of their entire way of life, the stability of society and even the threat of the existence of their state, becoming vulnerable to the transnational corporations using their advantages in digital technologies and access to databases.

However, the cross-country differences in the perception of digitalization, its positive and negative consequences, and, consequently, the differences in the digital environment of trust are not reduced only to the confrontation between developed and developing countries. Even within the European Union, we see noticeable differences in the pace of digitalization between the Scandinavian countries and the south of Europe. There are vast differences in the digital environment of trust between the two technological leaders: the United States and China. The reasons for this lie in the cultural identity of each of the countries.

The globalization of the XX century has led to a realization that national and cultural differences have a significant impact on the highs and lows in economic development. So, according to Trompenaars and Hampden-Turner [24], such differences should be highlighted and studied. The digital revolution has led to an interest in the manifestation of these differences in the digital world. For example, there is some recent research devoted to the peculiarities of the Chinese Internet [25, 26]. In the XX century, the tendencies to unification and standardization prevailed. Countries have faced the suppression of many national cultures through colonialism and imposing capitalist or socialist development paths when the revealed differences ought to be eliminated rather than accepted as an integral part of cultural identity. In the XXI century, the spotted differences most often preserving and integrating into new conditions.

4.2 Interregional differences digital trust

Fears and threats defined by digitalization can be identified by analyzing the trust in certain institutions of the digital economy. Several methods have already been proposed to measure such trust. One of the most authoritative ones is the Digital Trust Index, developed by Tufts University as part of the Digital Intelligence Index. The Digital Trust index comprises four principal components:

- Attitudes that express confidence in the institutions of the digital society. It comprises two components:
 - Confidence in Guarantees, reflecting the desire for anonymity on the Internet and concern about the safety and use of personal data, fears of losing your job because of automatization, the transition to the gig economy, lack of skills to work with new equipment;
 - Sentiments index is related to the general level of trust in society, including trust in people, science, and technology;
- Behavior, reflecting the use of technologies, social media and digital media, e-commerce services, the portability of contradictions related to the digital economy and the clash of users and guarantors (institutions or companies providing digital services);
- Environment, showing the level of privacy security and the accountability of digital servers;
- Experience, related to the quality of the use of technical means in the digital economy, is divided into infrastructure friction, access friction, and interaction friction. [27]

The first two components, Attitudes and Behavior, reflect the trust and use of the Internet by the users, and Environment and Experience are related to the quality of the digital environment provided by business and government.

We found a negative Spearman correlation (-0.476) between the Attitudes and Behavior indicators as well as between Behavior and Environment. It may point out a certain drop in confidence in the institutions of the digital economy as the use of digital tools increases. It can be explained not only by the imperfection of current security systems but also by the availability of Internet technologies. As shown in Figure 1, the actual exception to this trend is only China, which demonstrates high Attitude indicators with high Behavior. The remaining countries form relatively clear clusters: the countries of Europe and Central Asia, primarily with a high-income level, demonstrate a high Attitude, but at the same time relatively low Behavior. This trend is also true for Russia, Vietnam, Indonesia, Israel, Saudi Arabia. These are countries with a high level of state intervention in economics. Given this, Russia, Indonesia, Vietnam, Israel, Japan, the Netherlands and Thailand demonstrate a high level of Confidence in Guarantees, while most countries show a higher level of sentiment. Brazil, Mexico, Colombia, Japan, Thailand, Taiwan, Hong Kong, India and the United States manifest low levels of Sentiments. In this regard, we can assume that a low level of trust in others may encourage people to use Internet technologies as a mechanism for verifying the reliability of counterparties, while more conservative societies with a higher level of trust prefer to make transactions traditionally with familiar partners, which is illustrated by lower Behavior.

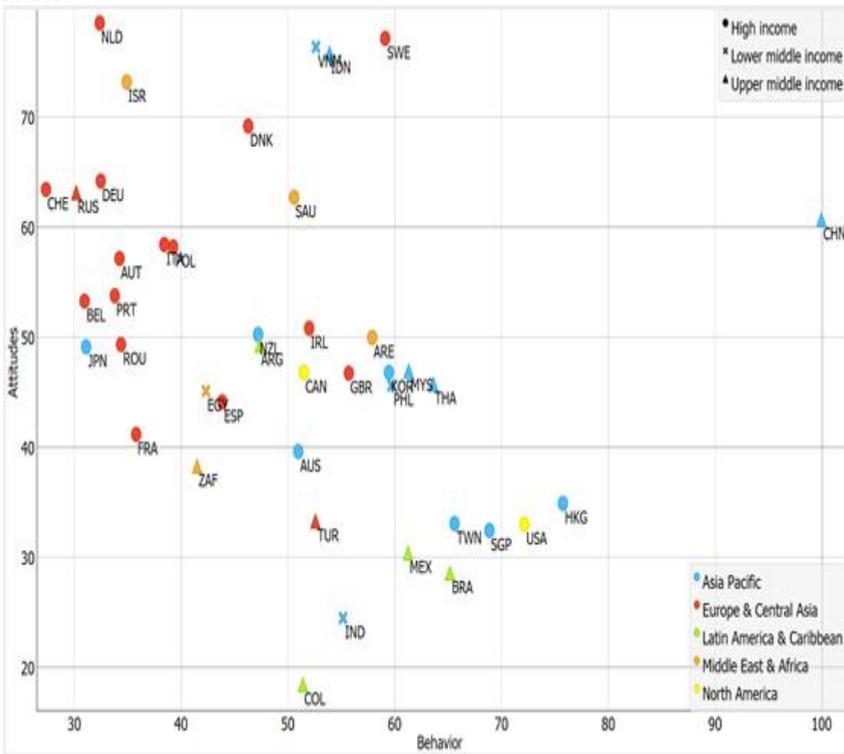


Fig. 1. Attitude and Behavior Codependency.

The difference in the values of trust in the Internet is also shown by the CIGI and Ipsos survey [28], the lowest confidence on the Internet is shown by the countries of Europe (71%) and North America (68%) while the BRICS and Latin America countries show much greater results (81%). The sources of distrust of the Internet vary, as shown in table 1.

Table 1. The main sources of distrust of the Internet in the regional context (%)

	North America	Middle East/ Africa	Europe	BRICS	Latin America	Asian Pacific region
Own Governments interference	81	72	66	71	73	58
Foreign governments interference	84	67	69	68	67	61
Social media companies	88	80	78	75	73	66
Internet Providers	65	73	60	68	72	55
E-commerce platforms	62	67	63	63	68	54
Search engines	74	70	66	65	66	58
Online banking platforms	57	62	53	61	66	54
Cyber criminals	89	84	83	83	81	77

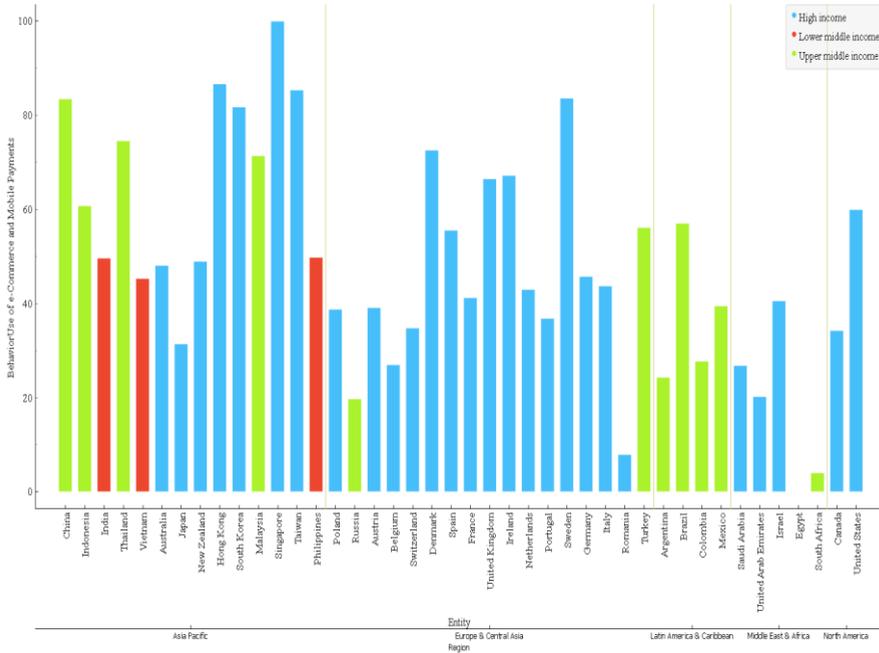


Fig. 2. Use of Ecommerce and Mobile Payments.

5 Discussion

According to the results of Table 1, the degree of distrust in society is still extremely high and generally associated not with the Internet companies but with the regulators and exacerbation of international tensions. It follows from the data that the highest level of distrust is reported on the American continent. The countries of North America are showing a high level of distrust of foreign and their own governments, and, as a result, of search engines as the latter is a subject to state censorship. At the same time, the level of distrust of internet service providers is much lower. In Latin American countries, on the contrary, is a

higher level of distrust of Internet products. It is associated with a lower degree of Internet use and underdevelopment of digital services. The countries of the Asia-Pacific region show a much higher level of trust in governments and internet services. A high level of trust is towards banking services, which coincides with the rapid digitalization of the banking sector around the world, and the level of trust is directly related to the development of the Internet in these regions. As Figure 2 shows, the highest use of electronic and mobile payments is observed in high-income countries with developed digital technologies. In the countries of the Asia-Pacific region, the level of electronic payments use is significantly higher, comparing to Europe and North America. The low development of electronic payments in Latin American countries is obviously connected not only with the lack of digital technologies but also with the distrust of it, as we see in these regions. At the same time, this distrust arises precisely because of the lack of experience and skills in using electronic payments.

An important factor of distrust in countries with a lower level of internet development is insufficient security. So, when buying goods that have access to the Internet, the most significant parameters of choice are the security parameters and privacy policy. In Latin America, 51% and 26% of buyers are guided by these parameters, while in the Middle East and Africa, it is important for 45% and 29%, respectively. At the same time, in Europe and North America, 41% and 40% of buyers are concerned about security issues, 21% and 18% about privacy policy, respectively. The main parameter for these countries is the price: it is vital for 45% of buyers in Europe and 54% in America versus 34% for Africa and the Middle East and 35% for Latin America. Such a discrepancy in the importance of price is also related to the level of Internet distribution: if in developed countries Internet-connected devices are available to a wide range of the population and the issue of cost seems to be quite important, while in developing countries these devices are available predominantly to wealthy segments of the population who pay less attention to the price of the goods when purchasing. As the analysis of individual sources of distrust of e-commerce platforms shows, virtually all groups of countries agree that e-commerce platforms reduce the human element in decision-making. At the same time, the percentage of adherents of this opinion is the same in North and Latin America and the BRICS countries (25%). This distrust is slightly higher in the Middle East and Africa (28%), while in Europe and Asia it is much lower (19% and 16%, respectively). Distrust because of the lack of transparency of e-commerce platforms has a much larger scope: 48% of distrust for this reason is demonstrated by residents of the Middle East and Africa, 38% by the BRICS countries, 36% by Asian countries and 33% by Latin America. Developed countries are somewhat less concerned about transparency issues (28% in Europe and 25% in North America). Paradoxically, the countries of the Middle East (23%), BRICS and Asian-Pacific region (26% each) are also leading in the indicator of trust in e-commerce platforms because of their transparency. In Europe and North America, the indicator of trust in transparency is much lower (13% and 12%). Latin American countries demonstrate about the same level of trust (15%).

6 Conclusion

The issues of trust and distrust of technology in general and digital technologies, in particular, are relevant, and this relevance will rise as the digital revolution will have an increasing impact on societies and economies around the world. In all countries, people are aware of the threats from the introduction of digital technologies for themselves, their societies and economies. Some threats are recognized as extremely important in all countries of the world, while in other cases, countries are divided into groups in which the degree of threats from digitalization can vary greatly.

Creating and maintaining a digital environment of trust should include neutralizing the negative impact of all identified threats. Additional difficulties arise when it is necessary to take into account interregional and crosscountry differences when building a digital environment of trust, which can significantly affect the processes of digitalization and trust/distrust in them. It is impossible to eliminate cross-country differences since they are caused by national and cultural differences between the countries. Taking into account cross-country differences in implementing digitalization policy will simplify creating a digital environment of trust, reduce risks and threats to society and the economy.

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