INFORMATION LEADERSHIP OF THE MODERN STATE (BY THE EXAMPLE OF THE USA)

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Abstract: The article is devoted to studying US information leadership in the context of information, technical and technological support, and influence on world development. The purpose of the study is to analyze the current state of US information influence by identifying strengths and weaknesses and developing prospects and threats to US information leadership. It is hypothesized that the U.S. is the undisputed information leader and has no competitors or threats to the current state. For the purpose of the research, the methodology of the analysis is developed based on the US information leadership competitive analysis taking into account influence channels, technical-technological support of information distribution, dynamics, and structure analysis of the US information market. The study uses general scientific knowledge methods and also applies SWOT analysis. The study shows that the main weak link in the US information leadership is the Internet. The main threat is the instability of technical support, disasters, pandemic, and China's innovative development intensifies. As the main competitor of the US, China has created a blockade of US information influence and has developed its influence methods on its population and the world through low prices and technology availability. The practical significance lies in applying the study results in the formation of state information security strategies.

Keywords: information leadership, information security, information war, information technology, COVID-19.

1 Introduction

The USA is the undisputed leader of post-industrial development and possesses the most influential information and communication potential in the world. As a result, the country objectively occupies a central place in the information imperialism system. Furthermore, modern information and telecommunication means and the increasing role of information in post-industrial society contribute to a further increase in the scale and strength of the information-psychological impact of strong developed countries on less developed ones. These actions were especially relevant in the U.S. in 1997 when the Rapid Media Reaction Force (RMRF) was established. Their task was to use all possible propaganda techniques and means for targeted information and psychological impact on the population of the countries and regions in which the U.S. military forces planned or conducted military operations. Since then, 25 years have passed, and the propaganda information influence has been radically transformed.

Undoubtedly, the U.S. is the country where the information revolution is most widespread. Information is no longer a means or a tool to influence people; it forms the concept of an "information society" influencing all life processes. The strategy of pressure, coercion, destruction has essentially given way to a strategy of indirect information action (Toffler, 1980). Although the theories of media influence on the audience were developed during the Cold War as a hard propaganda mechanism, today's indirect information influence is hardly perceptible to the population, so it is willingly accepted, supported, and gradually deepened. Information policy is soft and democratic; instead of force and clarity, it chooses a delicate scale.

Over the last twenty years, the U.S. has significantly increased its influence on various countries' economies, worldviews, and policies. This influence is democratic, i.e., voluntary: instead of aggressive propaganda in the mass media, the U.S. has embedded its information technology in every state, business, and family. To reduce the level of information dependence, states, companies, and households need to give up their usual way of life: give up the Internet, cell phones, and movies. In fact, this is an impossible task because humanity would have to go back twenty years under such conditions.

Today the whole world buys American-made devices for information processing; about half the world's population uses American search engines. Almost the same number of people use American social networks, communicate in them, conduct business correspondence, interact with clients, organize their own business. Of course, these information channels and technologies are not public, commercial organizations represent them, but if necessary, the U.S. authorities can use them for their purposes. Under such conditions, information leadership of the U.S. becomes an essential component of the country's development, ensuring employment, more efficient resource use, growth of skills, and wages of the employed population. In a global manifestation, information leadership of the U.S. becomes a means of providing the benefits of civilization and for countries in conflict with the U.S. - a national threat.

It was hypothesized that the U.S. is the undisputed information leader and has no competitors or threats to the current state to determine the reality of information leadership.

Thus, the purpose of the study is to analyze the current state of U.S. information impact by identifying strengths and weaknesses and developing prospects and threats to U.S. information leadership. To achieve this goal, the following tasks should be performed:

1) Conduct a critical review of the literature on assessing state information leadership;
2) Investigate the U.S. competitive position on information leadership;
3) Investigate the dynamics and structure of U.S. information assurance;
4) Conduct a SWOT analysis of U.S. information assurance.

2 Literature Review

Before we begin to prove the hypothesis of U.S. information leadership proposed, it is necessary to pay attention to conceptual approaches to the critical concept of the processes described – information provision and impact and information leadership.

The concept of information leadership is well described in the scientific literature. If this topic had been researched 40 years ago, scientists would consider it in terms of information influence and information inter-state wars. The concept of information influence was born thanks to E. Toffler, who called them wars of the Third Wave. The researcher considered information as an essential weapon in the fight against the enemy. E. Toffler (1980) considered information an inexhaustible raw material. The meaning of this concept is that with the development of the information society, the state's welfare is increasingly dependent not on the military power but on its ability to use intellectual and information technology as a new weapon, a tool for influencing the enemy.

The first reference to "information warfare" was supposedly used by the author of The Secret Surrender, a book about secret separatist negotiations between the United States, Britain, and Germany (Dulles, 1966). It defined "information warfare" as personal reconnaissance, sabotage actions to disrupt the enemy's rear. Then, in the early 1990s, "information warfare" began to be

understood as actions taken in the interests of supporting the national military strategy and oriented, on the one hand, to achieve information superiority over the enemy, and on the other hand, to ensure the security of their information systems. Finally, in 1998, specialists from the U.S. Military Department developed a document in which "information warfare" was interpreted as a set of information operations aimed against another state's political and military leadership (Melnikova, 2019).

Of course, depending on the purposes of the study, information leadership can be perceived as an element of hybrid warfare (Popovych, 2016), especially clearly seen in the studies of Russian scholars and authors of popular science books (Manoilo et al., 2012). Russian scholars believe that there is a view that the U.S. doctrine of modern information warfare exists, but it is not publicized. The reason is that the disclosure of such information can severely damage the reputation of the U.S. in the eyes of the world community, as it seriously affects the political, economic, and military security of all countries. The researchers trace the desire of the USA to get the maximum possible information about telecommunication complexes of various countries and, if necessary, knowing their technological features, using their information weapon to control and supervise national and international information resources in the interests of the USA. Some conclusions from a document of the Institute for Strategic Studies in Washington, D.C., lead to this thought: "The most reasonable strategy for U.S. national security would be to assist and engage directly in the development of global infrastructure. Conducting the most attractive pricing policy, creating user-friendly technological innovations, developing U.S. standards, in the future can become international" (Manoilo et al., 2012).

Contemporary studies by Huvila (2014), Habel et al. (2017), Loveday-Chesley (2014), Mohammed & Syed (2021) have reformatted the approach to informational influence, so information leadership began to be seen not as a way of hybrid warfare but as a way of social interaction. If we summarize these studies, they consider information leadership from three perspectives. The first option is to describe information processes in society. The second is to describe the information resources and technologies that are used to influence society. The third option - to assess the effects of information influence. There are also other approaches, in particular, technological leadership (Morin et al., 1999; Peppard et al., 2011), information channels (Kim, 2005), knowledge management (Kollmann, 2006), information archive management (Penniman, 1990). Having conducted a literature survey, it is reasonable to present the methodology of information leadership research in terms of information technology studies, information distribution channels, and information assurance.

3 Materials and Methods

The empirical research is built on the proof of the hypothesis about the information leadership of the United States. The hypothesis is based on a competitive state analysis using several leadership characteristics. This analysis is conducted based on the methodology compiled by the authors, which includes the following sequence.

1. The first step is to analyze the competitive position of the U.S. compared to other states in the field of information technology. To get this information, we considered a report compiled by INSEAD, The Adecco Group, Google, which has a country rating by the level of information and computer technology (ICT) use. The basis of this indicator is an assessment of the population's provision of cellular communication and the Internet.
2. The second stage involves studying the information channels structure, which has the most significant influence in the world. For this purpose, statistical data from Statista, which collected the top 25 companies with the most considerable turnover, are used.

3. The third stage involves a competitive analysis of information technology, particularly the Internet as the primary information dissemination source. For this purpose, we studied a report of the International Telecommunication Union, which shows Internet usage in different world regions. At the same time, it is essential to measure the percentage of Internet users and the percentage of territory coverage to study the availability of information in different regions worldwide.
4. Having determined the importance of social networks in information provision and participation in life processes, it is essential to identify the most influential social networks in the world and determine the place of U.S. companies in this list.
5. Information has an impact not only on the population but also on basic business processes, so it is important to analyze business information provision by analyzing the digitalization level of business processes that use the Internet.
6. Analysis of the dynamics and structure of the information technology market in the world and the U.S. mainly shows trends in the market. It provides an opportunity to assess future development prospects.
7. Based on the information obtained, the main strengths and weaknesses of information influence and provision of the USA are determined. Also, possible prospects and threats of development are provided, taking into account the current crisis state of the world caused by the Covid-19 pandemic.

General scientific, logical, and unique research methods are used at different stages of the study. Sociological methods were used to process statistical materials from open sources. Using content analysis, data on information technology in the USA is studied, processed, and systematized. According to the results, the information technology product's peculiarities influence information users are highlighted. Empirical material in work is organically combined with structuralism, which allows tracing how the change of old, political, economic, and ideological structures affects the population, business processes, and the states' development.

To summarize the data and develop prospects for the development of the issue, we apply SWOT analysis. This method is chosen based on Kotler's (2016) strategic management theory. Other modern authors also carry out this method of assessing the competitive position (Zasornova et al., 2021).

Thus, the methodology of information leadership analysis forms the study's novelty. The practical value is formed by the conclusions, which should be taken into account by the country's authorities in the policy of developing the country's information security.

4 Results

As an object of research, information technology is a broad concept that includes not only the channels of information dissemination but also the information technology that provides such dissemination.

If to research information and computer technologies in the USA compared to other countries of the world, their structure is not the most developed. In particular, according to research by INSEAD, The Adecco Group, Google, Luxembourg, Iceland, and the United Kingdom are leaders in the domestic distribution of information and computer technology among households. However, the U.S. ranks only 16th in this ranking as of 2020, with a score of 82.57 out of 100 (Figure 1).

But the use of telecommunication services by the population is not a key indicator of the state's information influence. Significant financial and industrial corporations occupy a special place among the subjects of the global information society. Their influence on international processes within the global financial system is constantly increasing. Private media holdings,

financing transnational, regional and local media, directly or covertly lobby their interests (Kucheryavy, 2014). They directly impact the formation and broadcasting of different information, including political information. In today's media market, transnational corporations act as actors in a single media space (Ivanov & Nazarov, 2003).
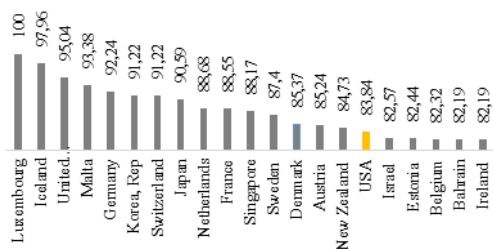

Figure 1. World ranking of information and computer technology penetration in 2020
Source: Lanvin&Monteiro, 2020.

National media in this situation, while retaining essential information functions, become increasingly dependent on the global information market. At the same time, the leading players in the international media market are U.S. companies. Their leadership is determined by several factors (related primarily to the level of information and communication technologies themselves), confirmed by the statistics in Figure 2.
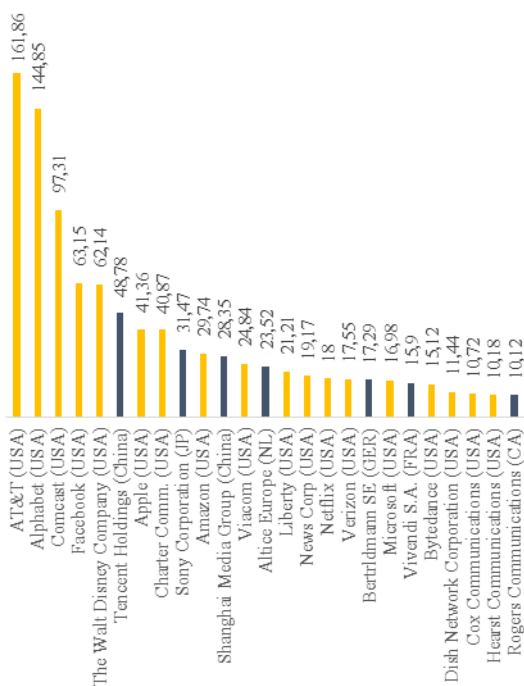

Figure 2. The world's biggest media companies 2020 in the context of turnover in billion euros
Source: Statista, 2020.

According to Figure 2. in the top 25 most significant media companies globally, only seven are not of American origin. The media market leader is AT&T, which, as the largest corporation, provides satellite television and cellular services in the U.S. and worldwide. The second-largest company in terms of revenues is Alphabet, the holding company that is the owner of Google. Comcast's third-largest company provides cable television, telephony, and Internet services.

The information space of the whole world today is controlled by only five global corporations: AT&T, Alphabet, Comcast, Facebook, The Walt Disney Corporation. They form the

"information field" for the overwhelming majority of world inhabitants, determining what people watch, listen and read every day. At the same time, the list of the most influential media companies has changed significantly over the past ten years. Especially the companies that are the leading distributors of information not through television and newspapers, but through the Internet have become more active.

These companies, which provide their services over the Internet, are subjects of international relations with no national limitations and are tuned to a multilingual audience. World media are capable of selecting, "filtering," and peculiarly presenting information, thereby influencing the minds of people and states' policies. With the development of such companies, information channels are significantly transformed in the Internet communications direction. Today about half of the world's population uses the Internet. At the same time, only 9% of the U.S. population does not use the Internet. This is the highest Internet penetration rate globally, which is several times higher than in developed European countries and Asia.

Table 1. Internet penetration in different regions of the world as of 2021

Reion	Percentage of individuals not using Internet	Percentage of uncovered population	
		4G networks	Fixed broadband
Sub-Saharan Africa	71	55,7	5,3
Arab States	45	38,1	23,9
Asia and the Pacific	55	5,8	37,6
CIS	27	19,2	6,2
Europe	17	2,8	5,1
North America	9	2,1	4,1
Latin America	31	14	11
World	49	15,3	30,1

Source: International Telecommunication Union, 2021.

It is worth mentioning that Internet coverage in European countries is relatively high. Still, the number of Internet users in European countries is much lower than in the United States. It indicates the technological capability of providing information services within the country and their accessibility to all population segments, regardless of income.

One of the most important factors of globalization is the rapid progress of technology, especially information technology. The increasing role of social networks as one of the worldwide leading information sources should be singled out separately. Thanks to these information technologies, there is a real opportunity for the global information environment to form as a result. The progress of technologies significantly reduced the cost of accumulation, processing, and transmission of information on a global scale, which could not but affect the indicators of economic growth. Today, globalization cannot be imagined outside of the activity of social networks. This is due to the introduction to the mass market of information services used by people of all ages, regardless of country of residence and social status (Ivanov & Nazarov, 2003). At the same time, it should be noted that the majority of the population worldwide use the Internet mainly for entertainment. According to statistics, American social networks have covered about 70% of all social network users that work in the world (Figure3).

According to statistics for 2021, the social networking market is formed by the first five players shown in Figure 2: Facebook, YouTube, WhatsApp, Facebook Messenger, Instagram.

Internet technology affects the development of not only the population. Thus, a sufficient level of financing of the information technology sector by the U.S. allowed bringing the business to a new level. Especially noticeable digitization of industry became in 2020, during the period of quarantine restrictions associated with the pandemic. At the same time, today, the most digitized business is considered the U.S.; in

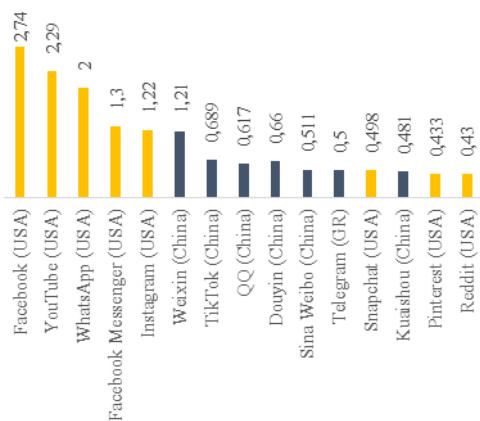particular, 60% of all companies are already fully or partially working through the Internet (Table2-3).

Figure 3. Social media ranking by user numbers, billion active users as of 2020

Source: DreamGrow (2021).

Today, the global information technology market is worth $5.3 trillion. At the same time, one-third of the market as of 2021 is the United States.

Table 2. Level of business digitalization in the world according to 2020 data

Region	2017	2018	2019	2020
Global	29	28	35	55
Asia-Pacific	31	26	33	54
Europe	26	25	34	5
North America	33	34	41	60

Source: McKinsey & Company (2020).

CompTIA has provided information on the regional distribution of the I.T. market. According to the data, quite close to the U.S. is the market of China, which soon may bypass the U.S. market. To date, the U.S. residents spend on information technology about $ 1.6 trillion a year; compared with an indicator for the year 2020, the costs have increased by 5%.

Table 3. Geographic structure of the global market for information services, $ billion

Region	2020	2021	2022*
Canada	96	101	106
Arab States	239	252	265
Asia and the Pacific	1483	1561	1643
CIS	143	151	159
Europe	957	1007	1060
USA	1578	1662	1749
Latin America	287	302	318
World	4783	5035	5300

Source: compiled by the author on the basis of CompTIA (2021).

If we analyze the structure of the U.S. market, its main component is formed by software development, which organizes communication between business participants. According to 2021 data, 63% of all expenses are spent on software development. Telecommunications accounts for 19%. In addition, 18% is spent on purchasing equipment used to perceive information (Table 4).

Table 4. U.S. Information Services Market Structure, %

Industry	2017	2018	2019	2020	2021
Telecom	23	22	20	21	19
IT(Software,Business Services)	60	61	63	61	63
Devices	17	17	17	18	18

Source: Statista (2021).

It should be noted that the telecommunications market segment tends to decline. On the other hand, the information technology markets and the development of devices for receiving information flow are more actively developing.

After summarizing the research, we can make a SWOT analysis of information technology in the USA (Table 5).

Table 5. SWOT-analysis of information technology market in USA

Strenth	Weakness
The globalization of information technology drives the market growth The long-term global leadership of information technology in other countries High level of business digitalization, which increases the need for information technology and the level of product dependency of U.S. companies High level of internet availability in the U.S. High level of technical support that is used worldwide	Rapidly transforming information technology market in favor of Internet-dependent technologies Dependence of social network popularity on trends set by competing countries Inaccessibility of Internet technologies to the population with the lower than average income
Opportunities	**Threats**
Increasing the segment of consumers from other countries who will begin to use the Internet Creation of new information products for Internet technologies Formation of new business models that depend on U.S. companies' info-products Growth of exports of U.S. information services Support of authorities in the development of the sector, provision of favorable conditions for development Growth of related sectors of the economy, such as education and consulting Growth of qualification level of US specialists, average wages	An unexpected crisis related to natural, financial, medical or other disasters would halt the development of the sector in favor of the main competitor - China Automation of processes and reduction of unskilled labor will create preconditions for labor emigration from countries with transit economies, reducing the level of U.S. security The rise of China in the development of information devices may displace the U.S. from its leading position on the market Emergence of new social networks of non-U.S. origin (e.g. TikTok) able to supplant the obsolete technologies of the market leaders. The possibility of reducing information influence by blocking the Internet by other countries.

Source: author's elaboration based on CompTIA (2021).

The authors will shape market strengths and weaknesses based on the research conducted above. With automation and the reorientation of business to work over the Internet, the information leadership of the U.S. will only increase, which forms a large number of prospects for the development of the information technology market. But these prospects are quite seriously dependent on the spread of the pandemic in the world, so if it intensifies, the market for information services may reduce its activity, which in general will be associated with a decrease in business activity of the population.

5 Discussion

Today, the United States has a rather severe experience with information influence on different states, and the tools of force are not traditional mass media. The Internet has taken over their leadership, which is inherently entirely independent of state influence. However, it can contribute to disseminating information ordered by the state authorities. The Internet is the main component of the current U.S. information policy and, at the same time, the weakest link in the chain of information influence. Today in the United States, the policy of "free from

state regulation of the Internet" is being seriously criticized. In particular, cases of unauthorized use of personal data are starting to cause concern in various public and state settings. In this context, many independent observers have praised Europe's strict privacy laws and ability to regulate the dissemination of information (Solovyov, 2015).

It becomes debatable whether the world can do without U.S. information technology, and conversely, whether by rejecting U.S. information technology, the security of the state can be preserved. This question was investigated by William Dutton, author of the book "Society and the Internet". He believes that one of the most serious problems associated with the Internet today is that humanity takes it for granted but does not realize how much it has penetrated almost all areas of our lives. Most people whose livelihoods and activities are not related to the Internet can do without it. But for individuals whose activities depend on the Internet, search engines, and social networks, stopping the technology will entirely and instantaneously remove the source of income.

Today, the authorities of various countries understand the risks that can arise from the uncorrelated impact of information on their citizens, so they have prepared the technical possibility of shutting down the Internet. This "button" already exists in Egypt, India, Turkey, China (Nuwer, 2017). As the main competitor of the world's information provision, China has already implemented its alternative technologies, so Google Search, Yahoo, Facebook, YouTube, Twitter, and Instagram are banned in the Chinese People's Republic (Prokhorenko, 2019). Creating its search networks, social networks, sales platforms, and devices makes China's economy almost independent of U.S. information influence. This fact is the main force that can resist the information expansion of the United States. Today, China is confidently conquering the markets of developing countries; their technology is recognized in Latin America and Africa (D-Russia, 2021).

Russia is also working on information independence and is preparing alternative sources of information. The idea of separating the Russian Internet into a separate segment has long been discussed and was approved by the Digital Economy of the Russian Federation program plan of December 18, 2017. But this project is quite expensive (according to experts' estimates $23 million), so it has not been implemented to date (Prokhorenko, 2019). It should be noted that disabling the Internet throughout the country is not technically possible even in the U.S. The technical support of the procedure is expensive, and the consequences will be disastrous for the economy, so the country's authorities do not set for themselves such goals.

Thus, on the example of certain countries, we can conclude that the information influence of the U.S. can be countered. This process is quite expensive and inaccessible to developing countries because it requires developing alternative information, technical and technological solutions.

6 Conclusion

According to the study results, we can confirm the hypothesis that the U.S. has information leadership among other countries and is the center of information influence, which is confirmed by the following facts obtained during the evaluation.

1. As the fundamental part of the U.S. I.T. market is formed by information and computer technologies and advanced technics, the market of information technologies is the source of the innovations, and accordingly, economic growth. Moreover, the U.S. economy becomes less susceptible to an aggressive external environment. The country in a competitive environment only strengthens its influence on other countries, confirming its information leadership.
2. The average growth rate of the information technology market is 5-6% per year. If we talk about the U.S. having enough financial resources, its I.T. sector can gradually

oust less weak regions of the global sphere of influence. No less important is the Asian market, which can oppose the U.S. market. Innovations in social networks and the production of low-cost technical-technological solutions are quickly finding their audience and displacing the technologies of U.S. companies. Today, the geographical structure of the information market confirms the information leadership of the U.S. Still, China will probably become the main competitor that can form the most significant segment of information services in the future.

3. The digitalization market of the U.S. economy has increased significantly in recent years due to the pandemic crisis. Working remotely, 60% of U.S. businesses have entirely or partially reoriented to the use of digital or remote technologies for production and sales. It reduces the susceptibility of the U.S. to cataclysms and strengthens its primacy. Today the U.S. is the absolute leader in the digitalization of business processes in its country, which indicates an increase in resource efficiency.
4. A special place in the information services market is occupied by social networks, which gradually replace telecommunications and newspapers. At the same time, U.S. social networks have an absolute majority of users globally. It means that the U.S. controls the world's information security and has an instrument of influence on the population of almost all states except China. But social networks are quite a specific segment of information technology, which can quickly transform under various factors that form the market's main threats related to dependence on the Internet and new trends that can reformat the market.
5. Given the global scale of the activities of the U.S. information leaders, today they occupy a stable leading position in the information technology market. At the same time among the media companies, the first place belongs to holdings, cellular and Internet providers, Internet search services, and social networks. Considering that not so long ago, the leadership was formed by the U.S. telecommunication holdings, today, we can speak about the revolutionary transformation of the U.S. information sector and further transformation towards new technologies that do not yet exist on the market.
6. According to its population's level of information provision, the USA is not a leader in the global market because Internet technologies and equipment for receiving and processing information are not available for some part of the population.

The practical significance of the research lies in the possibility of its use for the formation of state strategies of information development and protection.

The subject of future research is an assessment of China's ability to take over the information world leadership.

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