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# Views on Working with Information in a Semi-Digital Society: Its Possibility to Develop as Open Innovation Culture

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**Abstract:** The transition from a semi-digital to digital society depends on the nature of work with information, and the speed and quality of digitalization largely depend on Generation Z. The purpose of the article is to identify and evaluate Gen Z's views in Russia and Slovakia on the search and assessment of information in a semi-digital society. The empirical research methods are a questionnaire survey, in-depth interviews, and a focus group. In the context of the COVID-19 pandemic, they were conducted remotely. The study reveals that the views of the Slovak and Russian Generation Z are similar in terms of searching and speeding up the acquisition of information and especially in the high assessment of their capabilities in information search and low confidence in advertising campaigns. The Slovak Gen Z is informationally mature and, at the same time, Internet-dependent. A difference in the perception of AI in Russian and Slovak Gen Z is identified. The results can be used to improve youth policies and provide information to society in the transition to fully digital life.

**Keywords:** artificial intelligence; Generation Z (Gen Z); information; pandemic; semi-digital society



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## 1. Introduction

Changes in society are becoming more radical. This was especially evident in the context of the COVID-19 pandemic. The widespread introduction of digital technologies in social and economic processes requires new approaches and solutions for working with information from state structures, businesses, and the personnel training system.

Professional work with information is becoming important in almost all spheres of the economy, primarily in the field of IT and control systems. Information support for the management of society and social systems in the context of the rapid digitalization of all spheres of human life today is based on the use of innovative technologies. They allow one to more correctly, technologically, and more quickly receive the necessary information and process it for decision-making. In the context of the digital transformation of society, various organizational problems arise. In particular, different levels of financial, economic, intellectual, and technical capabilities of organizations affect the possibilities of using new digital products. There is a need to build a parallel digital reality [1]. The social sphere also fully depends on the use of innovative technologies in the information space. Modern technologies allow reengineering objects of social and cultural significance in the digital space [2]. Therefore, today, the most important condition for competitiveness both at the

national level and within a sector of the economy in a particular company is the availability of well-trained personnel with modern IT.

The collection, processing, and use of data for decision-making and training of professionals in different sectors are becoming increasingly complex and dynamic. Not everyone in the modern world can work effectively with Internet resources and large databases, as well as propose and implement social innovation. However, this is necessary for the dynamic and harmonious development of civilization. This task is now faced by universities in all countries of the world.

Generation Y and especially Generation Z are in a more comfortable position. They are the future of society, and the nature of the development of civilization depends on them.

In the theory of generations proposed by American researchers Neil Howe and William Strauss [3], the basic criterion for their separation is the repetitive generational cycles and patterns of behavior in the history of the United States. This theory has been adapted differently in different countries. In Slovakia, Generation Z is people born in the period 1995–2020, Generation Y—1982–1994, and Generation X—1961–1981 [4]. There are other approaches, within which Generation Z includes people born since 2000 [5]. This approach is often used in Russia [6].

Among the leaders who ensure the development of the digital society are representatives of engineering specialties and specialists in the field of IT [7]. However, their preparation requires the continuous development of knowledge and training technologies, as well as new teaching methods. Students receive educational information more often through social networks or text messages than email [8]. They are attracted by cloud technologies [9], computer technologies for information visualization, interactive and collective educational models [10], and information modeling [11]. This also applies to management specialties [12,13].

In the context of digitalization, the conditions for teaching young people are changing significantly. The volume of the student's independent work is increasing, which transforms the specifics of working with information. The insufficient level of media competence of modern youth shifts the focus of training towards developing effective assessment skills using the best sources of information [14].

## 2. Literature Review

The use of innovative technologies and the robotization of the information environment of various spheres of life are controversial and sometimes can cause negative emotions [15] and consequences [16,17]. Nevertheless, the introduction of IT and innovation is becoming more and more dynamic, which cannot be stopped. This requires a conscious, harmonious, and humane approach on the part of business and government agencies. Totschnig considers the use of superintelligence in the information field to be not a technological problem, but a social one [18].

Automation of modeling and information processing increases the efficiency of business processes [19]. Digital ecosystems of data are being formed, in which unique databases are concentrated, including various formats for storing information and documentation (text, raster, vector, multimedia, video, sound, and 3D) [2].

The digitalization of society is an objective process that must be timely taken under special control. Innovations and digital technologies in the information field need good specialists. It is important to create an educational environment in which students receive the necessary information comfortably [20–23]. It should be based on advanced digital education technologies, developing digital literacy and culture and enhancing digital reputation [1].

All this contributes to the development of their creativity, which remains highly competitive both among humans and in relation to AI [24,25]. The specifics of working with information are significantly modified considering the dynamic development of competencies in working with digital media and the practice of exchanging experience in

the network online space. In the new conditions, youths' requests are formed related to the search and processing of relevant address information [26].

Obtaining information from social networks is a natural process for Gen Z. One of the most important ways in which young people use social media is acquiring goods. They become knowledgeable—maven. These people are well versed in retail chains and online stores, as well as mechanisms and technologies for searching, evaluating, purchasing (paying), and receiving (delivering) the desired goods. Gen Z, preaching mavenism, differs significantly from Gen X in the ways and speed of obtaining digital information about goods and how it is used to elevate its status [27,28]. Young people actively monitor commodity prices, sharing information with their social environment [29]. Although some of the information is not always reliable [30], many practitioners target online connoisseurs [28]. Millennials have different attitudes towards luxury, the benefits of luxury brands, and the information about it [31].

In the context of the COVID-19 pandemic, the work of the medical and pharmaceutical professions becomes the most urgent. The rapid spread of diseases requires an increase in the number of medical personnel by attracting as many people as possible, particularly Gen Z. Working with them is complicated by the very nature of the medical work and the possibilities that IT and AI [32,33] offer to medicine. Educators of all generations strive to make effective use of modern information methods, passing on their experience to Gen Z students [34–36]. The Internet and the boom in social media have generated strong demand from Gen Z for immediate access to information and quick and honest feedback. These qualities create the preconditions for the rapid and sustainable development and prosperity of young people [37]. It is proposed to actively use YouTube to gain knowledge [38]. However, medical students, especially in the context of the COVID-19 pandemic, need practical information that is important to receive under the guidance of a mentor [39]. It is also important to consider the features of Gen Z in the speed of information perception and evaluation of the obtained data [40], involvement in teamwork [41], and scientific discussion [42].

In general, much attention is paid to the issues of obtaining and processing information. However, the position of Gen Z on the place and role of information in their lives, the procedure and nature of youth work with information sources, and methods of collecting and evaluating information have not been fully studied. The desire of civilization to move from a semi-digital to digital society in a short time increases the relevance of this issue. In the study, a semi-digital society is understood as a state of socioeconomic relations of modern civilization, in which digital technologies are only partially introduced both into the state economy and the social sphere.

Based on the literature review, it was suggested that Gen Z surpasses other generations in the speed of receiving and processing information [40] and uses it to improve their social status [27]. The main assumption is that Gen Z representatives have similar values and views that differ from other generations [43].

### 3. Methodology

#### 3.1. Hypothesis and Data

The purpose of the research is to identify and evaluate Gen Z's views in Russia and Slovakia on the search and evaluation of information in a semi-digital society. To achieve the study goal, scientific objectives were formulated:

1. To study the state of scientific knowledge and scientific and methodological base on the problem of searching and evaluating information in a semi-digital society.
2. To identify Gen Z's views on how to find and accelerate the acquisition of information.
3. To define Gen Z's approaches to assessing information.

In this article, we put forward a hypothesis:

**Hypothesis 1 (H1).** *The search and assessment of information in a semi-digital society by Gen Z representatives in Russia and Slovakia have general similarities and particular differences.*

The study was conducted from 10 May to 20 November 2020 in Russia and Slovakia. The choice of countries is justified by the scientific interest in this issue of university professors who participated in the development of the article, as well as the importance of the issues at the national levels. The sample population ( $n = 1878$ ) in Russia consisted of first-year students aged 22 and younger, with a general population of  $n = 620,000$  people (first-year university students in the country). The sampling error was 4.75%, with a confidence level of 95%. The sociological survey was attended by students from 35 Russian universities, such as the Moscow State University named after M.V. Lomonosov, National Research University “Higher School of Economics”, Siberian Federal University, Russian State Social University, St. Petersburg State University, University of the Prosecutor’s Office of the Russian Federation, Buryat State University, Surgut State University, Togliatti State University, Pyatigorsk State University, Moscow State Technical University named after N.E. Bauman, Rostov State Transport University, Voronezh State Medical University named after N.N. Burdenko, etc. The choice of universities was carried out using the “snowball” method automatically, as students of the university took part in the survey. Additionally, 316 respondents from Slovakia from the University of Janos Selie (Komarno) and Pan-European University (Bratislava) took part in the study with the general population  $n = 10,500$  people.

The selection was carried out according to quota characteristics: gender, age, and work experience (Table 1).

**Table 1.** Socio-demographic characteristics of respondents (in %).

Country		Russia	Slovakia
Gender	Male	35.9	36.7
	Female	64.1	63.3
Age	18–19 years	22.7	27.2
	20–22 years	77.3	72.8
Work experience	No work experience	46.8	24.5
	Temporary jobs	23.8	32.1
	Less than a year	10	16.9
	1 year	6.5	7.6
	1–3 years	12.9	18.9

The gender distribution of respondents was almost identical in Russia and Slovakia. Almost twice as many women participated in the survey as men. This reflects some demographic imbalance in favor of women, especially in Russia. On a national scale, the difference between the number of men and women is not significant: in Russia, there were 68.1 million men and 78.6 million women, while in Slovakia there were 2.67 million men and 2.79 million women.

Women tend to participate more actively and more readily in social surveys. In terms of age, Russian and Slovak Gen Z participated more in the survey at an older age (20–22 years). A difference in the work experience of the Russian and Slovak Gen Z was revealed. As the study showed, among the students of the first courses without work experience, Russian Gen Z turned out to be 46.8%, which is almost twice as many as Slovak (24.5%). Indeed, Russian youth strive to enter a university first, get a higher education, and only then participate in the labor market. A model of risk avoidance in obtaining higher education through college graduation is chosen [44]. The priority of higher education over work experience is explained by the fact that it is a priori valued in the Russian labor market and allows one to take highly qualified jobs, sometimes even outside the specialty of graduation [45]. The Soviet experience of Generations X and Y also affects this decision, since in the USSR there was a massive desire for higher education, which allowed the raising social status. This ensured the creation of a highly intelligent society capable of achieving high welfare with minimal resources. However, more than half of Russian

students in Gen Z have work experience. Slovak youth often choose the same development option by going to university, as a rule, with a certain work experience (75.5%).

### 3.2. Methods

The study used a system of general and special scientific methods aimed at identifying and assessing Gen Z's views in Russia and Slovakia on the search and assessment of information in a semi-digital society. The main empirical methods were the resources of the Google Form online service, the online survey method, observation, in-depth interview, and focus group. The survey was organized within the limitations of the pandemic (Appendix A). The survey and in-depth interviews were conducted remotely using the Internet and special programs providing remote communication.

The interview consisted of two parts. The formalized part of the interview, reflected in the questionnaire, was sent to the respondents by e-mail. The respondent filled out and submitted their answers, which were processed before the interview in an online format. The second part of the interview was conducted using Skype and Zoom online. The respondents were asked questions, the answers to which were recorded and then processed. An in-depth interview took from 45 to 80 min, depending on the respondent's commitment, openness, and readiness for a detailed disclosure of their opinion on the issue under study. Scaling of answer options was carried out using the Likert scale from the maximum value of the indicator to the minimum (from 5 to 1 point).

Before the final survey and in-depth interviews, a pilot study was conducted. The questionnaire and the interview were tested on a sample of Gen Z students from three Russian universities. To determine the most important (main) questions (variables), the experts ranked them using a matrix of pairwise comparisons. As a result, methods of obtaining and approaches to assessing information were identified as the main issues in working with information in a semi-digital society. Information assessment tools were classified as secondary issues. The plan for the focus group and its problematic issues were formed and refined at all stages of the study. The completed version of the plan for conducting the focus group was formed after processing the data obtained during the questionnaire and interviews. The plan included the following main stages. Stage 1: Acquaintance of the moderator with the group; organizational, sociopsychological, and emotional preparation of experts for the discussion; actualization of the topics proposed for discussion. Stage 2: Presentation of the survey results and in-depth interviews to the focus group; determination of the order and methodology of the discussion. The following methods were used for the focus group: balancing of participation, citation, redirection, and probing. Stage 3: Conducting a discussion on the selected topics with maximum preservation of the order and topics of the focus group. Stage 4: Summing up the discussion. The focus group was held on 15 October 2020 for 2 h.

The selection of respondents in Russia and Slovakia was carried out using the "snowball" method. The snowball sampling method consisted of recruiting members of a sample group through a chain of redirecting questionnaires and recruiting additional subjects to the study. The questionnaire was sent to 387 students of Russian universities and 64 students of Slovak universities. Final responses were received from 1878 Gen Z students from Russian universities and 316 Gen Z students from Slovakia.

Twenty respondents were selected for the in-depth interview. The sampling was carried out using the method of simple random selection. In-depth interviews were conducted to identify feelings from the dynamics of changes in working with information, considering the digitalization of society, introduction of AI, and their beliefs. The structure and procedure for obtaining information were formed considering the results obtained during the questionnaire.

To achieve the goal of the study, the focus group took part in the discussion. It focused on the issues identified during the sociological survey and in-depth interviews.

The selection of experts for the focus group was carried out by inviting them to participate in the discussion of the issues. Twenty invitations were sent and nine scholars



and practitioners participated, which amounted to 45%. The following requirements were imposed on the experts: stability and reliability of the assessment in the course of the study, competence in the issue under study.

The developed questionnaire contained closed questions and consisted of three parts. The first part reflected the demographic aspects of the respondents (gender, age, work experience). The second concerned ways of searching and speeding up information retrieval (How is the necessary information located in the information flow? Who will find the necessary information faster?). The third part was devoted to approaches used to assess information (How is information evaluated? Who will evaluate the information better?).

The validity of the study was ensured by an appropriate research methodology that allowed us to consistently and correctly work towards achieving the research goal. The on-line service Google Form was used with the necessary restrictions to prevent the repeated participation of respondents or the introduction of incorrect information. During the in-depth interviews, a friendly, trusting atmosphere was created, conducive to obtaining reliable information. The team of authors was formed as a cross-functional team, considering the specific knowledge and experience of conducting such studies of each member. This reduced the risks of subjectivity in the formation of methods and determination of approaches and contributed to obtaining reliable results and scientific conclusions and adherence to the ethics of scientific research.

The results of empirical studies were analyzed, and a comparative analysis with the results of similar studies was carried out. The comparison was carried out using correlation analysis to identify causal relationships. In the final part of the study, the degree of goal achievement was checked, and the hypothesis was tested.

## 4. Results

### 4.1. Methods of Searching and Expediting Information

The study found that the most important means of searching information in the information flow for the Russian and Slovak Gen Z are: “based on information which I believe to be reliable” (84% Slovak, 50% Russian respondents), “based on the offered services on the Internet” (81% Slovak, 36% Russian respondents), and “I use all sources of information for further analysis and selection of the most reliable information” (67% Slovak, 52% Russian respondents) (Figure 1). In general, Gen Z of both countries agreed on most issues.

A low percentage of the use of information coming from advertising was revealed—6% Slovak and 4% Russian respondents. At the same time, Russian respondents surpassed the Slovak in their priorities only in the complex use of all sources of information by 15%. On other issues, their positions were close.

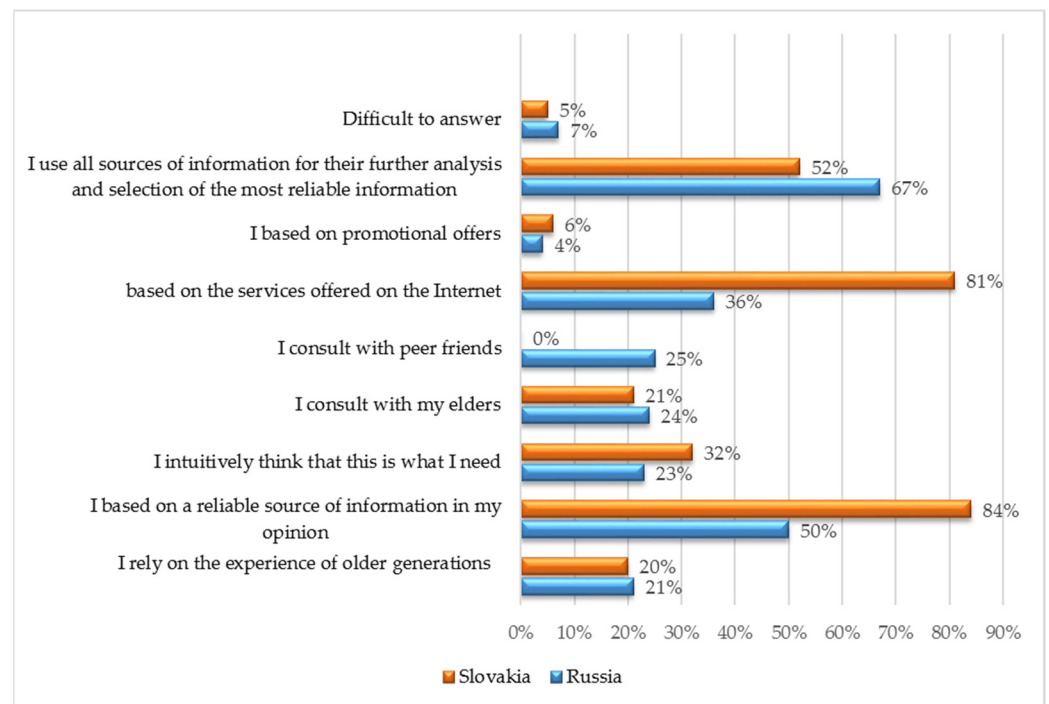
In the question “Who, in your opinion, will find the necessary information faster?” the concept “faster” was refined. In the study, the question is specific and assumes that, under all equal conditions, the information necessary for the given indicators will be found by the most prepared and technically (technologically) equipped subject. It was revealed that there were similar approaches of Russian and Slovak Gen Z representatives to determining who (what) will find the necessary information faster (Figure 2). They gave priority to their generation—Gen Z (52% Slovak, 46% Russian respondents). In the course of the study, Gen Z respondents were divided into two subgroups: 18–19 years old—the younger subgroup and 20–22 years old—the older subgroup.

In Figure 2, Slovak and Russian students aged 18–19 are designated as Slovakia 1 and Russia 1 and at the age of 20–22 as Slovakia 2 and Russia 2.

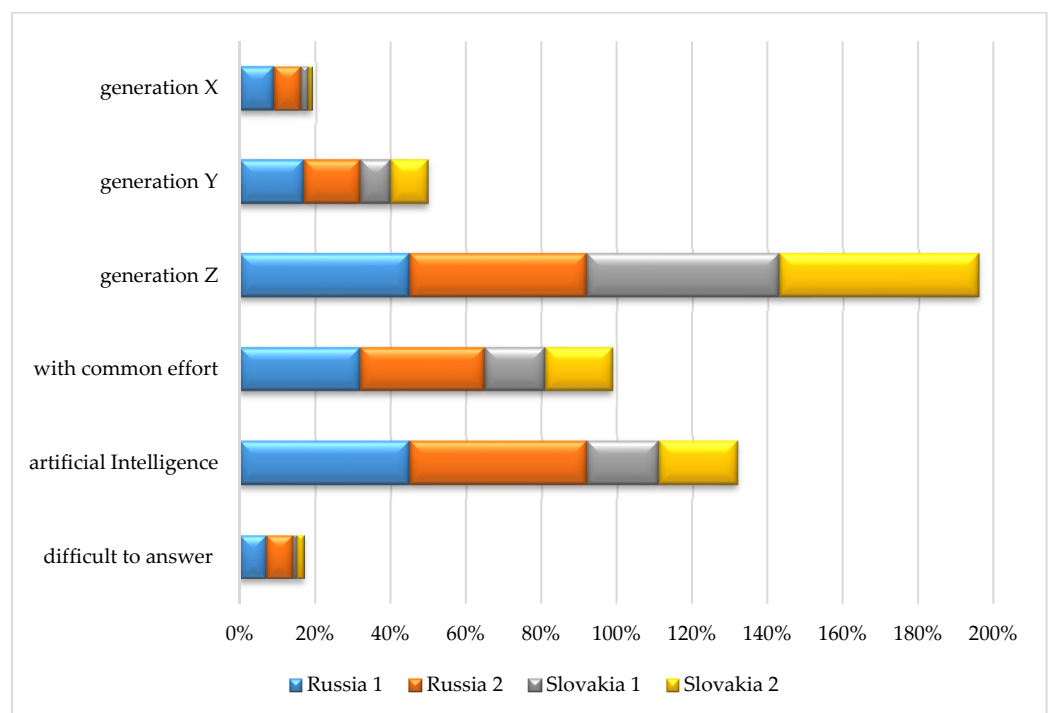
In each of these subgroups, a comparison was made between Slovak and Russian Gen Z students in terms of the speed of information retrieval. The results revealed a direct causal relationship with a positive correlation: the older the representatives of Gen Z, the faster they find the information they need. Average correlation coefficient ( $r = 0.65$ ).

Opinions were divided on other positions. This was especially true in the assessment of AI. Almost half of the Russian respondents (46%) considered AI to be a good assistant in

finding information, while only a fifth of the Slovak respondents relied on AI. There was also a significant difference in terms of achieving the goal with joint efforts.



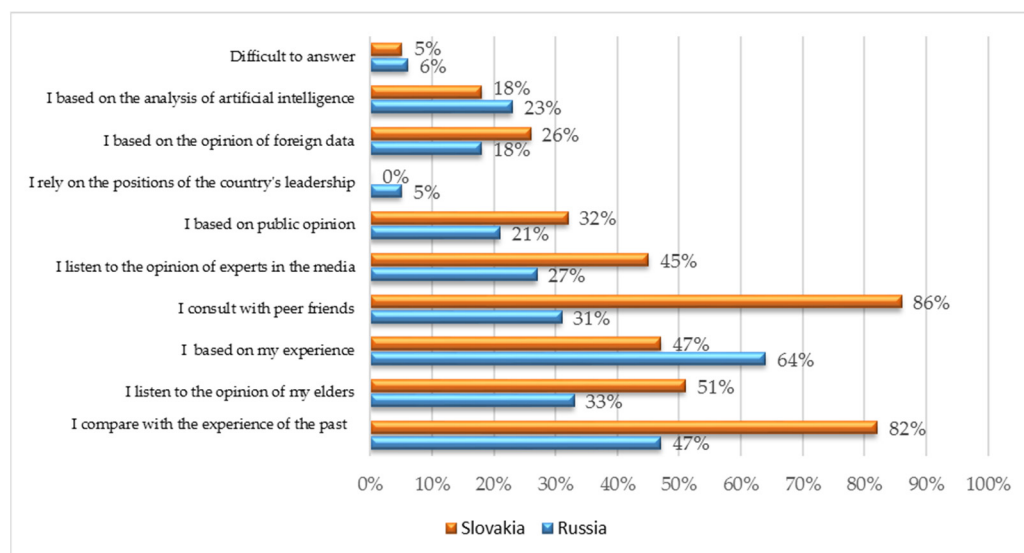
**Figure 1.** Variants of answers to the question “How do you find the information you need in the information flow? You can choose several answers”.



**Figure 2.** Variants of answers to the question “Who, in your opinion, will find the necessary information faster?”.

#### 4.2. Approaches to Assessing Information

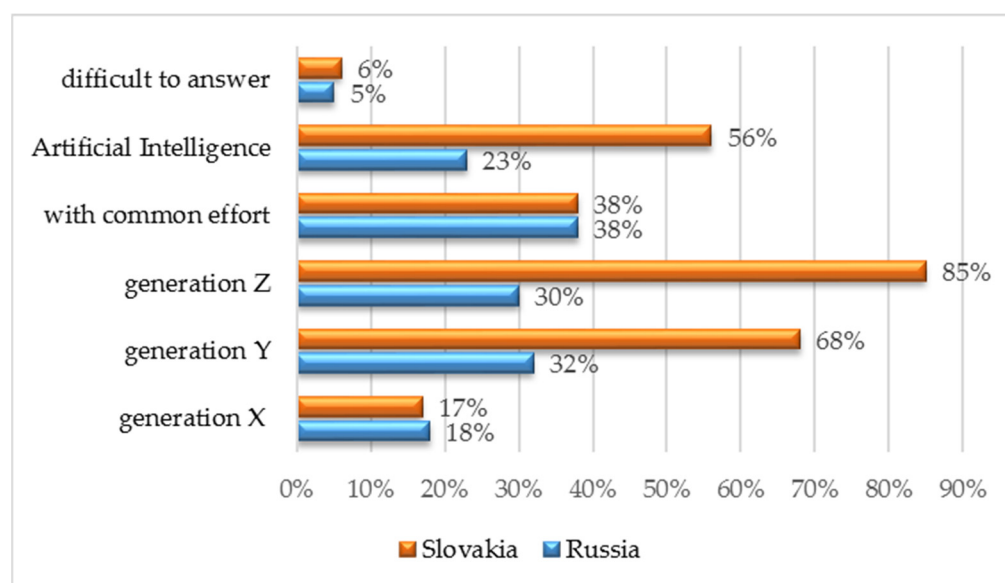
In assessing the received information, the Russian and Slovak Gen Z attached great importance to their experience, the advice of their peers, the opinion of their elders, and the experience of the past (Figure 3).



**Figure 3.** Options for answering the question “How do you assess the received information? You can select several answer options”.

A significant difference was revealed in the opinions of Russian and Slovak respondents on the same issues from a quantitative point of view. In assessing information, Slovak Gen Z representatives in most cases (86%) relied on the advice of their peers, while only 31% of Russian respondents consulted with their Gen Z friends. A difference was also revealed in other answers to this question.

The analysis of the data in Figure 4 showed that the opinions of the Russian and Slovak Gen Z converged in terms of the importance of information for Gen X (17% Slovak, 18% Russian respondents), joint efforts (38%), and those who had difficulty answering (6% Slovak, 5% Russian).



**Figure 4.** Options for answering the question “Who, in your opinion, will evaluate the information better?”.



In quantitative terms, the assessments of the Slovak Gen Z significantly surpassed that of Russians in terms of the capabilities of AI and Gen Y and Z in processing, analyzing, and evaluating the received information. During the survey, they simultaneously noted the importance of several indicators, while the Russian respondents more often chose one option.

In determining the quality of information assessment, a direct causal relationship was revealed among the Slovak respondents of generations X, Y, and Z with a positive significant correlation: the younger the generation that evaluates information, the better it does it. Correlation coefficient is  $r = 0.65$ .

## 5. Analysis

To achieve the study goal, we solved several scientific issues. Based on the study of the state of scientific knowledge and the scientific and methodological base on the issue of searching and evaluating information in a semi-digital society, the first scientific issue was solved and the research methodology was formed.

When solving the second scientific issue, Gen Z's views on ways to search and accelerate the acquisition of information were revealed. To facilitate students' assessment of the process of working with information, two equivalent scales were proposed: point and essential. The highest level of confidence in the essential scale corresponded to 5 points on the point scale. In Gen Z's assessment of the process of working with information in a semi-digital society, both answers were equally considered during interviews. The collected data were processed manually. The results were summarized and systematized. Their ranking was carried out: rank 1—the highest level, rank 5—the lowest rank. In the final version, they acquired the form of a table. The criteria were the same for Slovak and Russian Gen Z students. In the course of the interview, the system (group) of sources was understood as the maximum available number of sources with their subsequent combining into a system (group). The complex use of search engines presupposed the simultaneous (sequential) use of both digital search engines (web services) based on the Internet and search engines created on physical media of a manual, mechanized and semi-automatic type. Internet services included web services: storage and transmission of data and messages, communication and dialogue management, video service, as well as email and voice mail. These included search engines for goods in online stores, as well as Usenet news. Social media and web services were different. Social networks are online platforms with a clear social focus, while web services provide users with information and communication of people in the socio-economic space. This was explained to the respondents before the interview and clarified during the interview.

The study found that the Russian and Slovak Gen Z in the search for information rely mainly on what they consider to be a reliable source of information, web services, and a range of sources of information for further analysis and selection of the most reliable information.

The search and processing of large amounts of information require improving the methods of teaching work with information [46,47]. In the course of the in-depth interview, it was possible to clarify that in terms of the volume of work with sources, more time is spent on Internet services (Table 2). The respondents noted that they had to deal with a large amount of information, constant distraction by advertising, and other secondary issues when working on the Internet, which significantly increases the time required to complete the planned tasks. Social networks have also become a significant "time-waster". The focus group noted that the concept of necessary and reliable information sometimes differs in the understanding by Gen Z. In this case, there is a danger of using insufficiently reliable, false information.

The desire of Slovak respondents to single out more sources of information in one response was revealed. The most prominent among Slovak respondents was their own opinion based on life experience and Internet services. This is an indication of the positioning of one's identity as an independent person with Internet-based resources, established

by the age of 18–22. Self-esteem was characteristic of the Slovak Gen Z [48]. In the in-depth interview, the opinion was expressed that older generations do not always trust information from Gen Z, but respect the ability of young people to receive information from the Internet. The experts concluded that by the age of 18–22, almost every student has their approach and style in quickly searching for the necessary information in the information flow [40].

**Table 2.** Gen Z's assessment of the process of working with information in a semi-digital society during interviews.

Index		Rank	Points	The Level of Influence	Criterion
1	The degree of trust in the source of information	1	5	Very high level	System (group) of sources
		2	4	High level	Own experience, intuition
		3	3	Average level	Older generation, peers
		4	2	Below average level	Public opinion
		5	1	Low level	Advertising, mass media, foreign experts, country leaders
2	Time to find the necessary information	1	5	Little time	AI search engines
		2	4	Less than average time	Integrated use of search engines
		3	3	Average amount of time	Obtaining information from teachers, students, peers
		4	2	Much more time	Mass media, printed publications
		5	1	A lot of time	Libraries, archives
3	Time spent working with sources	1	5	A lot of time	Internet services
		2	4	Much more time	Social networks
		3	3	Average amount of time	Obtaining information from teachers
		4	2	Less than average time	Obtaining information from peers
		5	1	Little time	Printed publications

Searching and collecting information for this generation is unthinkable without the Internet and digital instruments. Gen Z has been using digital technologies, mobile phones, and tablets from the early years of life and can easily get access to a large amount of information, which fully corresponds to the title of “digital integrators” [49].

Reliance on other sources of information for the search of the most reliable information is also distinctive. In this aspect, they were identical to those of the Russian respondents, for whom the indicator was most important. A fifth of respondents consulted with the older generation and sought to benefit from the historical experience, fundamental knowledge, and experience of older generations. This is a certain guarantee for the timely elimination of false information. Reliance on the knowledge and experience of the older generation allows choosing specific methods for finding the required and reliable information [43]. Moreover, during in-depth interviews, it was established that not all Gen Z representatives had a systematic approach to information sources. According to the focus group, Gen Z was more likely to rely on the experience of the older generation, who were brought up in families where respect for elders was preached from early childhood. In such cases, information from other sources was assessed through comparison with the opinion of older generations.

An interesting fact turned out to be that a fairly large part of Russian (23%) and Slovak (32%) Gen Z representatives intuitively determined what they needed. During in-depth interviews, the respondents specified that they most often relied on intuition when searching for information about the youth environment, especially in social networks [50]. Focus group experts noted that combining intuition with other sources of information can have a synergistic effect.

The result of obtaining information from peers was unexpected. Slovak youth did not use the information received from their peers for decision-making. This contradicts the view that Gen Z is actively using “word of mouth” [51]. Along with this, one-fourth of Russian respondents relied on such information.

Russian and Slovak Gen Z (4–6%) did not trust advertising (Table 2). This testifies to the mistrust of the younger generation in the established advertising business and modern technologies of promotion of goods and services. In the in-depth interview, it was established that advertising has recently become more and more aggressive and acts as an irritant. The focus group noted that when being under the constant pressure of advertising from all sources of information, Gen Z developed protective properties and distrusted and ignored promotional offers and other advertising information. The respondents independently determined the goods and services that were important to them, relying on the Internet, social networks, and a range of other sources. This, to some extent, correlates with studies [27,28].

Focus group experts discussed Gen Z’s ability to quickly find information. The Russian and Slovak Gen Z representatives believed that it is their generation that is skillfully guided by the existing sources of information, their structure, and possibilities, which allows them to find the necessary information quickly. To some extent, this is logical, the experts said, as the bulk of public information is available on a variety of resources available on the Internet. Gen Z practically from birth resorts willingly or involuntarily to internal resources, which allows them to acquire the experience of searching for information and creates an extensive database of sources of information in an electronic environment. At the same time, Gen Z is very concerned about the confidentiality and security of information [50].

The complex use of sources for searching information, in which the Russian representatives of Gen Z gave twice as many votes as Slovak, was also important. The opinions of Russian and Slovak respondents differed in terms of the use of AI to increase the speed of information retrieval. Russian youth considered the capabilities of AI and Gen Z to be relatively high, pushing them to the leading positions. In this study, AI was understood as intelligent computer programs and systems whose task is to recreate intelligent reasoning and actions. For a better perception of AI by Gen Z, it was clarified that in reality, these could be robots in the form of physical objects and living beings, including humans [52]. As part of the study, in the search for information, modern electronic search engines installed on them were considered.

In the in-depth interview, respondents noted that modern search engines based on AI make it possible to find the necessary information on the Internet without additional effort and loss of time, which correlates with several studies [53,54]. Russians seem to use this resource more often, especially to identify the most appropriate information from various sources in their complex use. Then, the productivity of using AI increases. The integrated use of search engines somewhat reduces the speed of information search due to the prioritization of a particular search engine and the degree of reliability (Table 2). The resource is actively used, based on obtaining information from teachers, students, and peers. The longest process in obtaining information turned out to be in libraries and archives that do not have digitized versions of information sources. Moreover, the material obtained in this way has a high degree of originality.

The focus group raised the question of the future balance of Gen Z and AI capabilities. AI creates and develops a person until it begins to act on its own, including in learning. Searching for information dependent on the capabilities of AI can pose a threat [55].

When solving the third scientific issue, Gen Z’s approaches to the assessment of the information obtained were determined.

In the evaluation of information, the Slovak Gen Z put the advice of friends first. One does not need peers’ help in searching for information, but gets the most important information assessment from them. Slovak Gen Z’s search technology is well developed, but the analytical part of the work with information requires assistance. During the in-depth interview, a high level of trust in one’s peers was established. The focus group

suggested that the Slovak Gen Z tries to impose the opinion of peers on past experience, the views of the older generation, and their own experience and, based on this, assess the incoming information. This approach allows for a more balanced assessment of information. Skillful communications and the ability to think systemically and be creative are the key requirements that the fourth industrial revolution makes to society [4]. These qualities are necessary for Gen Z to skillfully navigate the physical, information, and biological worlds united by innovative technologies, which the President of the World Economic Forum, K.M. Schwab, described as the fourth industrial revolution [56].

Similarly, during the in-depth interview, Russian respondents noted the priority of their own experience in assessing information. In their experience, there were incorrect actions based on false assessments of others. To a lesser extent, this happened when relying on the experience of the past and representatives of the older generation.

The focus group noted that respect for the elders and their experience is traditional for Russian society, which continues to hold in a semi-digital society. Self-assessment based on the experience and knowledge of older generations creates an enabling environment for the qualitative assessment of information. Trust in Generation Y is based on their rich life experience, more systemic thinking, and balanced assessments of modernity [57].

Below average, Russian and Slovak respondents had roughly the same level of confidence in expert opinions in the media, foreign data, and AI. During the in-depth interview, the respondents noted that they spent little time behind television screens and listen to information from the media. Therefore, the opinions of media and foreign experts are not often used to assess information. The degree of trust in them is also low (Table 2). Gen Z grows up in a dynamic environment heavily influenced by the introduction of new technologies. As a result, young people are rapidly changing their value orientations [58]. The focus group noted that the experts of the older generation do not always have time to realize these changes, and Gen Z develops a certain distrust of the media and the expert community.

In the view of the respondents, AI has not yet reached the level where it would be possible to carry out a qualitative analysis of complex information. At the same time, more AI-based systems are becoming available, allowing the evaluation of certain characteristics and qualities of a person in a short term, as well as diagnosis and analysis of the data obtained [59,60]. During the in-depth interview, the respondents spoke out in evaluating information about the benefits of AI in high-tech issues. The focus group noted that more highly qualified specialists and Gen Z use AI when evaluating information. Therefore, their opinion is of certain interest. A comparative analysis by experts from the focus group of search engines made it possible to give a higher assessment of such systems using AI than without it [61]. Robots quickly cope with the search for information by choosing the right one on web pages.

The Russian and Slovak Gen Z is characterized by a lack of confidence in the countries' leaders. During in-depth interviews, we found out that activities and statements of senior leaders did not arouse particular interest among young people due to their rare and selective implementation. This is indicative of the frequent failure of managers at various levels to deliver on their promises [62], including top management. This negatively sensitizes Gen Z to the country's leadership, causes mistrust, and encourages protests [63,64]. This, according to the focus group, explains the increased protest activity of young people and the fight against injustice in its various forms.

When it comes to the question of who evaluates information better in a qualitative sense, the opinions of the Slovak and Russian respondents turned out to be identical. Despite the trust in various categories, the Slovak Gen Z gives priority to Gen Z and Y and AI.

Recently, specialized assessment programs based on AI [60,65] have become increasingly common. Russian Gen Z believes that it is important to use the potential and resources of all participants in the information process.

The focus group noted that such a combination of approaches and methods for assessing information is positive. A systematic approach would help to avoid errors in the evaluation of information and neutralize Gen Z's dissatisfaction with the senselessness of processing unnecessary information [66].

## 6. Discussion: Working in a Semi-Digital Society, and Open Innovation Culture

The use of modern technologies in working with information is determined by their effectiveness. This was experienced, first of all, by representatives of Gen Z. They actively use innovative technologies in collecting, processing, storing, and issuing the necessary information in the required volume, quality, and speed. These include cloud technologies, which are a model of fast and comfortable access to digital information resources, including storage devices and data transmission networks [9]. Gen Z increasingly finds application for 3D virtual world technologies and information modeling [11] using various forms of storing information and documents (vector, multimedia, video, sound, 3D) [2]. Therefore, companies focused on attracting young customers need to plan a development strategy in two directions.

- a. Development of personnel strategy. Modern management of teams in an organization must be built considering functional and generational characteristics. Increasing market share requires fast and competitive solutions. Innovation management should ensure the maximum concentration of management on all the resources of the company [67]. The production of modern digital and networked products is effective if young and talented employees, who can generate innovative ideas and form innovative products on their basis, are actively involved in their development.
- b. The development of products focused on the characteristics of the perception of information by young generations should be formed in the quality management system. Companies at the planning stage must plan business processes in the interests of producing high-quality products that are in high demand. This approach requires the involvement of intellectual resources that the company does not have.

In this regard, the application of the open innovation model is a promising solution for the development of two highlighted strategic directions for attracting external ideas and producing innovative products. Work within the open innovation model allows one to constantly improve the innovation process, increase its accuracy, as well as speed, and achieve the emergence of the innovation system as a whole. All this has a positive effect on reducing the company's research and development costs and product promotion; increasing involvement of the client base in the company's activities; increasing the synergistic effect from the competent combination and addition of internal and external innovations.

The basic parallel that determines the influence of the potential of Gen Z on the dynamics of open innovation is the social and labor profile of a digital economy worker in the first half of the 21st century, which is formed under the influence of external conditions of a demographic, globalization, organizational, and technological nature.

Among the global demographic trends, we will focus on the fact that the social and labor profile of the worker of the new (digital) economy in the first half of the 21st century is formed under the influence of such shifts as a decrease in the proportion of young ages, the rising average age of workers (the "silver" population of the "silver" economy and society), a decrease in the share of working-age workers, and an increase in the number of working pensioners employed in social production [68].

Population aging, a leading component of current and future large-scale demographic changes, occurs both due to a decrease in the birth rate and an increase in life expectancy.

In the composition of the economically active population, the representation of Gen Z will increase annually. At the same time, the relative share of young age groups in the labor force will not have growth dynamics, primarily due to a decrease in the birth rate and an increase in the employment of the population of older (retirement) age groups. Considering the predicted demographic trends, we believe that Generation Z, which usually has a high level of education, a propensity for risky professional decisions, and a new, "network" type



of thinking, in the near future will not determine the portrait of the worker of the new (digital) economy [69].

In the middle of the last century, during the period of the active life of one generation, there was one change of technological structures and two or three changes of generations of technology. According to available forecasts, in the middle of the 21st century, during the period of active labor activity, a person will have to deal with two technological structures and three or four generations of technology [70]. This data alone is enough to predict that the potential for adaptation to open innovation will be on the side of Gen Z.

In the context of the new format of the world economy globalization, first of all, let us focus on events, phenomena, and processes that personify open innovations and are most correlated with the characteristics of Gen Z.

Thus, the inclination of Gen Z to information and communication technologies and positive rather than negative perceptions by representatives of this generation of the practice of changing workplaces make it possible to effectively participate in the development of disruptive innovation [71].

The development of future globalization will be characterized by two alternatives to the movement of people—remote employment and remote robotics, which will become a real manifestation of the virtualization of the labor process and its separation from workers. Such virtual immigration (distance employment) can dramatically expand the list of jobs open to international competition.

Let us focus on the consequences of the development and functioning of open innovations in the context of new opportunities and challenges for Gen Z. The main ones, as follows from the study [72], are the diversity of employment forms, the dominance of its atypical over typical and non-standard over standard forms, growing differentiation of the workforce by the level of professional training and competence, increasing requirements for professional training, personal qualities, and abilities of those employed in the new economy, new prerequisites and opportunities for communication, dialogue, and cooperation, increased intensity in most activities, shortening life cycle of using the acquired knowledge and updating it, and new competencies (abilities, skills).

However, the changes that accompany the spread and implementation of open innovations are directly consistent with the characteristics of Gen Z. This applies to the following trends in the digital economy:

- The emergence of new types of labor activity and, accordingly, professions that 10 years ago were not in the staffing tables of organizations (for example, SMM-manager, story-maker). Today, they are becoming widespread, given the development of various innovations and the diversity of economic and labor activities;
- Intensive filling of both new and traditional professions with new meaningful characteristics (work skills) (for example, data analyst (big data)).

Cardinal changes in business models, organizations, and personnel management as a whole as a content component of the introduction of open innovations are more and more focused on the qualities that distinguish Gen Z from others: high information search, assessment, and processing speed. In the era of digitalization, a person appears as a bearer of new competencies, and their activities are carried out in the coordinates of mobility, autonomy, transparency, and network control.

## 7. Conclusions

In the study, Gen Z's views in Russia and Slovakia on the search and assessment of information in a semi-digital society were identified and assessed, and the goal of the study was achieved.

- It was established that Gen Z's views on methods to search and accelerate the acquisition of information in a semi-digital society are generally similar in Slovak and Russian youth. As a rule, they rely on a source of information that, in their opinion, is reliable, services on the Internet, and a complex of information sources for their further analysis and selection of the most reliable information. Intuition is important

to them. At the same time, the Slovak respondents focused on their own opinions and Internet resources, which positions them as informationally mature and, at the same time, Internet-dependent. For them, information coming from peers is not relevant. Russian Gen Z prefers a complex of information sources to a greater extent guaranteeing the reliability and quality of information. Low confidence in information from advertising is characteristic of both Russian and Slovak youth. Russian and Slovak Gen Z representatives believe that their generation can quickly find the information they need. This confirmed one of the assumptions.

- In assessing information, the approaches of Slovak and Russian youth are largely similar. At the same time, Slovak Gen Z puts the advice of friends in the first place—86% of respondents, and Russian—its own experience—64% of respondents (Figure 3). All respondents demonstrate a low level of confidence in the quality of information assessment in the opinions of experts in the media, foreign data, and AI. Moreover, the lack of trust in the countries' leadership was revealed among Slovak and Russian youth. This creates the preconditions for insufficiently effective management of the country, the absence of a clear model for building the future, and the development of protest sentiments. The greatest confidence in the quality of information assessment among the Slovak respondents is associated with Generations Z and Y and AI; among the Russian respondents—the potential and resource of all participants in the information process. By skillfully assessing information, Gen Z seeks to improve its social status. Skillful assessment of information allows making reasonable and competitive decisions that lead to success, which, in turn, leads to an increase in respect and trust in Gen Z. This confirmed the second assumption.

The study revealed direct causal relationships with high enough degrees of positive correlation: the older the representatives of Gen Z, the faster they find the necessary information, and the younger the generation that evaluates information, the better it does it. The correlation coefficient turned out to be  $r = 0.65$ .

A difference in the assessment of AI by Russian and Slovak Gen Z in information work and a contradiction in the assessment of AI by Slovak youth were revealed. On the one hand, there is a low level of confidence in the assessment of information; on the other hand, there is confidence in the quality of the assessment. The basic problem of this contradiction is the speed of processing information by AI and carrying out assessment procedures. AI-based specialized assessment programs being introduced in various areas of the economy reduce the severity of this contradiction.

In general, the hypothesis put forward was confirmed; the search and assessment of information in a semi-digital society by Gen Z representatives in Russia and Slovakia has similar features concerning the main issues and some differences concerning secondary.

The problems of working with information in a semi-digital society, identified in the study, according to the views of generation Z students, indicate the absence of a well-developed methodology for finding the necessary data and a qualitative assessment of the growing diversified flow of information coming in different forms and from various sources. The creation of such a technique is necessary to improve the efficiency of working with information.

The main directions of further development of this research can be: technologies for the transition of work with information from a semi-digital society to a digital one; technologies to improve the efficiency of search and evaluation of information by Gen Z students; forms and methods of mutual adaptation in the Gen Z information space and the developing digital economy and skillful use of Gen Z potential in the Open Innovation model.

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## Appendix A. Questionnaire “Working with Information in a Semi-Digital Society”

Dear students,

We invite you to take part in the survey. This is very important for the development of a society in which you will occupy a leading position in the near future. In the survey, a semi-digital society is understood as a state of socio-economic ties of modern civilization, in which digital technologies are only partially introduced both into the economy of states and the social sphere. Artificial intelligence (AI) refers to intelligent computer programs, systems whose task is to recreate intelligent reasoning and actions. In reality, these can be robots in the form of physical objects or living beings, including humans. In the search for information, modern electronic search engines installed on them are evaluated.

We ask you to answer a few questions. When filling out the questionnaire and answering a question in the option of choosing one from the list, it is necessary to mark exactly the field that, in your opinion, is the most appropriate option for answering this question. When answering the questions “Who, in your opinion, will evaluate the information better?”, “How do you find the information you need in the information flow?”, “Who, in your opinion, will find the necessary information faster?”, and “How do you assess the received information?”, you can choose several options from the list, which, in your opinion, are most suitable.

We hope that you will answer the questions sincerely and thoughtfully. All answers are anonymous, the data will be presented in a summary form. Thank you for your assistance!

1. Your gender (female, male)
2. Your age (18–19 years old, 20–22 years old)
3. Work experience (1 year, 1–3 years, less than a year, temporary work, no work experience)
4. Who, in your opinion, will find the necessary information faster?
  - Generation X
  - Generation Y
  - Generation Z
  - with common effort
  - artificial intelligence
  - difficult to answer
5. Who, in your opinion, will evaluate the information better?
  - Generation X
  - Generation Y
  - Generation Z
  - with common effort
  - artificial intelligence
  - difficult to answer
6. How do you find the information you need in the information flow?
  - I rely on the experience of older generations
  - based on a reliable in my opinion source of information
  - I intuitively guess that this is what I need
  - I consult with my elders
  - I consult with peers
  - based on the services offered on the Internet
  - based on promotional offers

- I use all sources of information for their further analysis and selection of the most reliable information
7. How do you assess the received information?
- I compare with the experience of the past
  - I listen to the opinion of my elders
  - based on my experience
  - I consult with peers
  - I listen to the opinion of experts in the media
  - based on public opinion
  - positions of the country's leadership
  - based on the opinion of foreign data
  - based on the analysis of artificial intelligence

## References

1. Khitskov, E.A.; Veretekhina, S.V.; Medvedeva, A.V.; Mnatsakanyan, O.L.; Shmakova, E.G.; Kotenev, A. Digital transformation of society: Problems entering in the digital economy. *Eurasian J. Anal. Chem.* **2017**, *12*, 855–873. [\[CrossRef\]](#)
2. Veretekhina, S.V. Technology for Developing a Digital Ecosystem of Cultural Objects Data. In Proceedings of the 2020 13th International Conference Management of Large-Scale System Development (MLSD'2020), ICS RAS, Moscow, Russia, 28 September 2020; pp. 1–5. [\[CrossRef\]](#)
3. Howe, N.; Strauss, W. *Generations: The History of America's Future, 1584 to 2069*; William Morrow and Company: New York, NY, USA, 1992.
4. Grenčíková, A.; Vojtovič, S. Relationship of generations X, Y, Z with new communication technologies. *Probl. Perspect. Manag.* **2017**, *15*, 557–563. [\[CrossRef\]](#)
5. Moran, K. Millennials as Digital Natives: Myths and Realities. Nielsen Norman Group. 2016. Available online: <https://www.nngroup.com/articles/millennials-digital-natives/> (accessed on 29 January 2021).
6. Ozhiganova, E.M. The theory of generations by N. Hove and W. Strauss. Possibilities of practical application. *Bus. Educ. Knowl. Econ.* **2015**, *1*, 94–97.
7. Libin, E. Future competencies for digitally aligned specialties: Coping intelligently with global challenges. In *Proceedings of the 6th International Conference on Higher Education Advances (HEAd'20)*; Universitat Politècnica de València: Valencia, Spain, 2020; pp. 1119–1125.
8. Lopez-Zafra, J.M.; Queralt, R.A.; De Paz-Cobo, S. Good-bye email, welcome Slack. In *Proceedings of the 6th International Conference on Higher Education Advances (HEAd'20)*; Universitat Politècnica de València: Valencia, Spain, 2020; pp. 1–8.
9. Saorín, J.L.; de la Torre-Cantero, J.; Melián Díaz, D.; López-Chao, V. Cloud-Based Collaborative 3D Modeling to Train Engineers for the Industry 4.0. *Appl. Sci.* **2019**, *9*, 4559. [\[CrossRef\]](#)
10. Bayhan, H.G.; Karaca, E. Technological innovation in architecture and engineering education—An investigation on three generations from Turkey. *Int. J. Educ. Technol. High. Educ.* **2020**, *17*, 33. [\[CrossRef\]](#)
11. Ovtšarenko, O.; Makuteniene, D.; Timinskas, E. Virtual Technologies possibilities for improving background knowledge of Civil Engineering Education. In *Proceedings of the 6th International Conference on Higher Education Advances (HEAd'20)*; Universitat Politècnica de València: Valencia, Spain, 2020; pp. 509–517.
12. Rösel, B. A concept of a mainly digitalized course on control theory including problembased practical units and digital supported exams. In *Proceedings of the 6th International Conference on Higher Education Advances (HEAd'20)*; Universitat Politècnica de València: Valencia, Spain, 2020; pp. 587–594.
13. Kohler, T.; Rosel, B. Experiences with a new Digitalized Concept for Teaching Control Theory as Minor Subject at a University of Applied Science. In Proceedings of the 2019 IEEE Global Engineering Education Conference (EDUCON), IEEE, Dubai, United Arab Emirates, 8–11 April 2019; pp. 593–600.
14. Frolova, E.V.; Rogach, O.V.; Ryabova, T.M. Digitalization of Education in Modern Scientific Discourse: New Trends and Risks Analysis. *Eur. J. Contemp. Educ.* **2020**, *9*, 331–336. [\[CrossRef\]](#)
15. Beltramini, E. Evil and roboethics in management studies. *AI Soc.* **2019**, *34*, 921–929. [\[CrossRef\]](#)
16. Appel, M.; Izydorczyk, D.; Weber, S.; Mara, M.; Lischetzke, T. The uncanny of mind in a machine: Humanoid robots as tools, agents, and experiencers. *Comput. Hum. Behav.* **2020**, *102*, 274–286. [\[CrossRef\]](#)
17. Edwards, S.D. The HeartMath coherence model: Implications and challenges for artificial intelligence and robotics. *AI Soc.* **2019**, *34*, 899–905. [\[CrossRef\]](#)
18. Totschnig, W. The problem of superintelligence: Political, not technological. *AI Soc.* **2019**, *34*, 907–920. [\[CrossRef\]](#)
19. Veretekhina, S.V. Digitization, scanning, and reverse engineering technology for creating 3D virtual space. *J. Phys. Conf. Ser.* **2020**, *1679*, 022085. [\[CrossRef\]](#)
20. Crane, B.D. Teacher Openness and Prosocial Motivation. *Manag. Teach. Rev.* **2017**, *2*, 7–16. [\[CrossRef\]](#)

21. Rogach, O.V.; Frolova, E.V.; Kirillov, A.V.; Bondaletov, V.V.; Vinichenko, M.V. Development of favourable learning environment and labor protection in the context of harmonization of social interaction of educational system objects. *Math. Educ.* **2016**, *11*, 2547–2558.
22. Demchenko, T.S.; Vinichenko, M.V.; Demchenko, M.V.; Ilina, I.Y.; Buley, N.V.; Duplij, E.V. Students' Satisfaction with Interactive Forms of Training with Elements of Gamification. *Int. J. Eng. Technol.* **2018**, *7*, 109. [\[CrossRef\]](#)
23. Lee, A.N.; Nie, Y.; Bai, B. Perceived principal's learning support and its relationships with psychological needs satisfaction, organisational commitment and change-oriented work behaviour: A Self-Determination Theory's perspective. *Teach. Teach. Educ.* **2020**, *93*, 103076. [\[CrossRef\]](#)
24. Matraeva, A.D.; Rybakova, M.V.; Vinichenko, M.V.; Oseev, A.A.; Ljapunova, N.V. Development of Creativity of Students in Higher Educational Institutions: Assessment of Students and Experts. *Univers. J. Educ. Res.* **2020**, *8*, 8–16. [\[CrossRef\]](#)
25. Vinichenko, M.V.; Melnichuk, A.V.; Karácsony, P. Technologies of improving the university efficiency by using artificial intelligence: Motivational aspect. *Entrep. Sustain. Issues* **2020**, *7*, 2696–2714. [\[CrossRef\]](#)
26. Frolova, E.V.; Ryabova, T.M.; Rogach, O.V. Digital Technologies in Education: Problems and Prospects for "Moscow Electronic School" Project Implementation. *Eur. J. Contemp. Educ.* **2019**, *8*, 779–789. [\[CrossRef\]](#)
27. Goldring, D.; Azab, C. B2B New rules of social media shopping: Personality differences of U.S. Gen Z versus Gen X market mavens. *J. Consum. Behav.* **2020**, cb.1893. [\[CrossRef\]](#)
28. Aljukhadar, M.; Senecal, S.; Bériault Poirier, A. Social media mavenism: Toward an action-based metric for knowledge dissemination on social networks. *J. Mark. Commun.* **2020**, *26*, 636–665. [\[CrossRef\]](#)
29. Clark, R.A.; Goldsmith, R.E.; Goldsmith, E.B. Market mavenism and consumer self-confidence. *J. Consum. Behav.* **2008**, *7*, 239–248. [\[CrossRef\]](#)
30. Broussard, M. *Artificial Unintelligence: How Computers Misunderstand the World*; MIT Press: Cambridge, MA, USA, 2018.
31. Kapferer, J.N.; Michaut, A. Are millennials really redefining luxury? A cross-generational analysis of perceptions of luxury from six countries. *J. Brand Strateg.* **2020**, *8*, 250–264.
32. Winkle, K.; Caleb-Solly, P.; Turton, A.; Bremner, P. Mutual Shaping in the Design of Socially Assistive Robots: A Case Study on Social Robots for Therapy. *Int. J. Soc. Robot.* **2020**, *12*, 847–866. [\[CrossRef\]](#)
33. Kalmady, S.V.; Greiner, R.; Agrawal, R.; Shivakumar, V.; Narayanaswamy, J.C.; Brown, M.R.G.; Greenshaw, A.J.; Dursun, S.M.; Venkatasubramanian, G. Towards artificial intelligence in mental health by improving schizophrenia prediction with multiple brain parcellation ensemble-learning. *NPJ Schizophr.* **2019**, *5*, 2. [\[CrossRef\]](#) [\[PubMed\]](#)
34. Reyes, A.; Galvan, R.; Navarro, A.; Velasquez, M.; Soriano, D.R.; Cabuso, A.L.; David, J.R.; Lacson, M.L.; Manansala, N.T.; Tiongco, R.E. Across Generations: Defining Pedagogical Characteristics of Generation X, Y, and Z Allied Health Teachers Using Q-Methodology. *Med. Sci. Educ.* **2020**, *30*, 1541–1549. [\[CrossRef\]](#)
35. Isaacs, A.N.; Scott, S.A.; Nisly, S.A. Move out of Z way Millennials. *Curr. Pharm. Teach. Learn.* **2020**, *12*, 1387–1389. [\[CrossRef\]](#)
36. Mendez-Reguera, A.; Lopez Cabrera, M.V. Engaging My Gen Z Class: Teaching with Memes. *Med. Sci. Educ.* **2020**, *30*, 1357–1358. [\[CrossRef\]](#)
37. Lerchenfeldt, S.; Attardi, S.M.; Pratt, R.L.; Sawarynski, K.E.; Taylor, T.A.H. Twelve tips for interfacing with the new generation of medical students: iGen. *Med. Teach.* **2020**, 1–6. [\[CrossRef\]](#) [\[PubMed\]](#)
38. Alegre-Martínez, A.; Martínez-Martínez, M.I.; Alfonso-Sánchez, J.L. Transforming YouTube into a valid source of knowledge for Anatomy students. In *Proceedings of the 6th International Conference on Higher Education Advances (HEAd'20)*; Universitat Politècnica de València: Valencia, Spain, 2020; pp. 293–300.
39. Vizcaya-Moreno, M.F.; Pérez-Cañaveras, R.M. Social Media Used and Teaching Methods Preferred by Generation Z Students in the Nursing Clinical Learning Environment: A Cross-Sectional Research Study. *Int. J. Environ. Res. Public Health* **2020**, *17*, 8267. [\[CrossRef\]](#) [\[PubMed\]](#)
40. DiMattio, M.J.K.; Hudacek, S.S. Educating generation Z: Psychosocial dimensions of the clinical learning environment that predict student satisfaction. *Nurse Educ. Pract.* **2020**, *49*, 102901. [\[CrossRef\]](#)
41. Hogan, M. From Times Square to Eyre Square: Hackathons as Authentic Learning for Information Systems Students. In *Proceedings of the 6th International Conference on Higher Education Advances (HEAd'20)*; Universitat Politècnica de València: Valencia, Spain, 2020; pp. 301–308.
42. Mouton, M.; Rootman-Le Grange, I. Scientific Discourse: Can Our First-Year Students Express Themselves in Science? In *Proceedings of the 6th International Conference on Higher Education Advances (HEAd'20)*; Universitat Politècnica de València: Valencia, Spain, 2020; pp. 579–586.
43. Twenge, J.M.; Campbell, S.M. Generational differences in psychological traits and their impact on the workplace. *J. Manag. Psychol.* **2008**, *23*, 862–877. [\[CrossRef\]](#)
44. Alexandrov, D.; Tenisheva, K.; Savelyeva, S. No-Risk Mobility: Through College to University. *Educ. Stud. Mosc.* **2015**, *3*, 66–91. [\[CrossRef\]](#)
45. Cherednichenko, G. *Russian Youth: From Education to Work (Based on Sociological Studies on Trajectories in Education and Careers)*; Russian Christian Humanitarian Academy: St. Petersburg, Russia, 2016.
46. Jurenka, R.; Stareček, A.; Vranaková, N.; Cagánová, D. The learning styles of the generation group Z and their influence on learning results in the learning process. In *Proceedings of the 2018 16th International Conference on Emerging eLearning Technologies and Applications (ICETA)*, Stary Smokovec, Slovakia, 15–16 November 2018.



47. Krpáľková, K.; Kreslová, K. *Stýly Učenia a Vyučovania*; Alumni Press: Trnava, Slovakia, 2010.
48. Turek, J. *Učebné Stýly a Rozvoj Schopností Žiakov Učít Sa*; Metodicko-pedagogické centrum: Banská Bystrica, Slovakia, 2002.
49. McCrindle, M. *The ABC of XYZ: Understanding the Global Generations*, 3rd ed.; McCrindle Research: Bella Vista, Australia, 2014.
50. Lanier, K. 5 things HR professionals need to know about Generation Z. *Strateg. HR Rev.* **2017**, *16*, 288–290. [CrossRef]
51. Scheglova, D. What is Generation Z and how they see their education. *RBK* **2020**. Available online: <https://trends.rbc.ru/trends/education/5ef1ddbc9a794733b37dcfff> (accessed on 18 June 2021).
52. Vinichenko, M.V.; Frolova, E.V.; Nikiporets-Takigawa, G.Y.; Karácsony, P. Interpretation of the views of east European Catholics on the impact of artificial intelligence on the social environment. *Eur. J. Sci.Theol.* **2021**, *17*, 11–23.
53. Abubakar, A.M.; Behraves, E.; Rezapouraghdam, H.; Yildiz, S.B. Applying artificial intelligence technique to predict knowledge hiding behavior. *Int. J. Inf. Manag.* **2019**, *49*, 45–57. [CrossRef]
54. Burrell, L. Artificial intelligence brings out the worst and the best in us. *MIT Sloan Manag. Rev.* **2019**, *60*. Available online: <https://sloanreview.mit.edu/article/artificial-intelligence-brings-out-the-worst-and-the-best-in-us/> (accessed on 18 June 2021).
55. Xu, Z.; Choo, K.K.; Dehghantanha, A.; Parizi, R.; Hammoudeh, M. (Eds.) *CSIA, Advances in Intelligent Systems and Computing. In Cyber Security Intelligence and Analytics*; Springer: Shenyang, China, 2019; Volume 928. [CrossRef]
56. Schwab, K. *The Fourth Industrial Revolution*; Eksmo: Moscow, Russia, 2016.
57. Macky, K.; Gardner, D.; Forsyth, S. Generational differences at work: Introduction and overview. *J. Manag. Psychol.* **2008**, *23*, 857–861. [CrossRef]
58. Valtere, L. Perspective on generation: Their impact on higher education marketing. Proceedings of changes in social and business environment (CISABE'13). In *Book Series: Changes in Social and Business Environment*; Panevezys Inst, Kaunas Univ Technol: Panevezys, Lithuania, 2013; pp. 213–219.
59. Human Resources. Search Teams. Available online: <https://www.unilever.ru/careers/professionals/human-resources/> (accessed on 18 June 2021).
60. Launches Virtual Career Fairs. Speed Is Your Greatest Recruiting Asset. Available online: <https://www.textrecruit.com/> (accessed on 18 June 2021).
61. Shcherbakov, D. How Artificial Intelligence Has Impacted Search Engines. 2018. Available online: <https://www.uplab.ru/blog/artificial-intelligence/> (accessed on 31 January 2021).
62. Demchenko, T.S.; Karácsony, P.; Vinichenko, M.V.; Demchenko, M.V.; Melnichuk, A.V. Youth involvement in social control of the implementation of the youth personnel policy in the company management system. *Rev. Espac.* **2018**, *38*, 8.
63. Nikiporets-Takigawa, G. Youth and youth policy in the UK: Post-brexite view. *Sovrem. Evropa* **2018**, *1*, 47–58.
64. Oseev, A.A.; Dudueva, F.A.; Karácsony, P.; Vinichenko, M.V.; Makushkin, S.A. The peculiarity of the ethno-social conflicts in the Russian labor market: Comparative analysis of Russia, Great Britain and Germany. *Rev. Espac.* **2018**, *39*, 12.
65. Make the Right Hire. Right Now. Available online: <http://www.pomato.com/> (accessed on 18 June 2021).
66. Fratričova, J.; Kirchmayer, Z. Barriers to work motivation of generation. *J. Hum. Resour. Manag.* **2018**, *21*, 28–39.
67. Gureva, M.A.; Kirillov, A.V.; Vinichenko, M.V.; Melnichuk, A.V.; Melnychuk, Y.A. Management of innovations and innovative process: Concept, essence, classification and diffusion. *Int. Rev. Manag. Mark.* **2016**, *6*, 147–153.
68. World Bank Group. Demographic Trends and Urbanization. World Bank, Washington, DC. 2021. Available online: <http://hdl.handle.net/10986/35469> (accessed on 16 June 2021).
69. Ozkan, M.; Solmaz, B. The Changing Face Of The Employees- Generation Z And Their Perceptions of Work. *Procedia Econ. Financ.* **2015**, *26*, 476–483. [CrossRef]
70. Maioli, D.E. New Generations and Employment—An Exploratory Study about Tensions between the Psycho-social Characteristics of the Generation Z and Expectations and Actions of Organizational Structures Related with Employment. *J. Bus.* **2017**, *2*, 1–12. [CrossRef]
71. Szymkowiak, A.; Melovic, B.; Dabic, M.; Jeganathan, K.; Singh Kundi, G. Information technology and Gen Z: The role of teachers, the internet, and technology in the education of young people. *Technol. Soc.* **2021**, *65*, 101565. [CrossRef]
72. Singh, A.P.; Jianguanglung, D. Understanding the generation z: The future workforce. *South-Asian J. Multidiscip. Stud. (SAJMS)* **2019**, *3*, 2349–7858.