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Digital Transformation and New Methods of Sociological Research

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Abstract

Today, digital transformation assists us to search for information on the Internet, to digitize data, to store and broadcast it conveniently; however, digital transformation changes not only the quality of technologies, but also the social reality, the structure of society, the ways of social interactions, the social actor, and research methods. Four breakthrough technologies — cloud computing, big data, artificial intelligence, and the Internet of things — determine the direction of these changes. The question is how sociology may use these technologies for its own purposes. In this paper, the outdated approaches of authorities are considered in relation to the monitoring criteria they use to evaluate their activities. We emphasize the potential to obtain representative data by using traditional survey methods. Nevertheless, changes in the socio-psychological characteristics of respondents actualize the transition from mass surveys to big data analysis and force us to replace directly posed questions with the indirect confirmation of hypotheses. The new technologies open greater opportunities for building correlations, identifying hidden patterns, and making predictions than it was possible till now. Thus, we need scientifically based coherent patterns across individual factors in order not to see cause-and-effect relationships in random matches. Research community has to develop these patterns.

Keywords: Digital Transformation, Big Data, Cloud Computing, Artificial Intelligence, the methods of sociological research

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1. Introduction

In 2019, Thomas Siebl, an American billionaire, a founder and CEO of Siebl Systems, a talented scientist with degrees in computer science and philosophy, published his new book "Digital Transformation: Survive and Thrive in an Era of Mass Extinction" [6]. It's about digital transformation, its risks and opportunities. In it, he states that the stakes have never been as high as they are today, both in terms of the risk of companies disappearing and the opportunities for profit.

According to Siebl, four breakthrough technologies — cloud computing, big data, artificial intelligence and the Internet of things — cause the mass disappearance of

industries; as a result, a large number of companies have either ceased to exist or become irrelevant.

Following Daniel Bell, the author of the Information Society concept, Siebl believes that new technologies lead to a new social order with radically different social relationships. The way knowledge is created and disseminated is changing; the nature and structure of the workforce is changing, and etc.

It is not enough to simply follow the trends. Currently, organizations and governments have to invent a new way to interact with the changing world. They have to understand that the existing way of interacting doesn't work; and it's time to evolve. They have to create innovative processes that use the most accessible resources. They have to build something that establishes a clear existential advantage in order to survive and thrive in this new stasis. It is the process of rapid innovation and constant learning that will determine the difference between a thriving existence and eventual extinction. Companies that manage to benefit from using big data, cloud technologies, artificial intelligence, and the Internet of things, will be the next to enter the market.

To clarify, digital transformation is neither a series of generational changes in information technologies nor the migration of processes, data and information to a digital platform. The forerunners of digital transformation are digitalization and the Internet, but this is not digital transformation per se. The impact of the Internet and the digitization was primarily in the digitization of existing competencies. They were simply outsourced to computers. Digitization is the use of digital tools to automate and improve the existing working processes; it does not change the processes or create new rules. We are on the verge of a tipping point, because cloud computing, big data, the Internet of things, and artificial intelligence converge to manage network effects and create exponential changes.

These exponential changes, according to MIT professors Eric Brynjolfsson and Andrew McAfee [3] are due to the fact that computers are now able to learn; and their ability will have dramatic consequences for the world. Sibel believes that digital information in the twenty-first century requires leaders, businesses, and governments to initiate and stimulate digital transformation. Visionary leaders, individually, are the engines of mass change [6: 74]. The main idea is that we have accumulated enough quantitative changes to make a qualitative leap. The transformation initiative will come from digital process leaders who can best adapt four breakthrough technologies — cloud computing, big data, artificial intelligence, and the Internet of things — to their business needs.

2. Result and Discussion

Until now, sociologists understood digitalization and the Internet as a means of digitizing data about social facts, which made it easier and faster to process, store, use, and transmit social information. Indeed, these were only forerunners of real qualitative changes in the methods of processing social information. Now, cloud computing provides access to shared pools of configurable hardware and software resources — computer networks, servers, data stores, applications, and other services that can be quickly prepared for use with minimal effort, usually in the Internet [1].

Cloud providers can do a better and cheaper job of running a huge number of servers and storage devices across global networks of secure and reliable data centers. The public cloud allows researchers to use crowdsourcing [4], while big data and artificial intelligence promise qualitatively new opportunities.

The first and obvious advantage of big data is the ability to search for unknown correlations [2]. To find correlations, it is necessary to develop coherent patterns across variables, and such patterns are being created [7, 9]. Nowadays, machine learning can not only detect empirical patterns in the data, but also predict their dynamics. When we identify the correlations of parameters, we might influence on one of the parameters and observe changes in the other, or try to break the correlation. Meanwhile, machine learning is only one of the classes of artificial intelligence methods. The machine learning technology continues to develop; and in the nearest future, the computer is highly likely to master of something that a human cannot do.

Therefore, we need to think of how to identify the target for it correctly.

Researchers are developing new methods for studying social reality not only because of their potential, but because the traditional methods do not perform the task properly. In case the sample population is not representative, the findings are considered to be neither objective nor scientifically justified. All monitoring assessments of government activities are based on representative studies. But in reality, sociology has never been able to provide complete representativeness. There was always the part of the general population that the interviewer could not reach. Therefore, the confidence probability was initially determined.

Soviet sociology relied on studies of social psychology and gave consideration to the characteristics of the individual (dispositional theory, hierarchizing personal attitudes). But it should be recognized that the disposition of personal attitudes of the modern social actor has changed in comparison with those actors for whom traditional methods of mass surveys were developed. The latter lived in an industrial society in which the

majority of the population dismissed any thought that they could refuse to answer the interviewer's questions. Today, respondents know that they can refuse to participate in the survey; and they often refuse.

So, there are two questions to answer: What is the socio type of a person who contacts the interviewer? And might a study based only on the survey of those who agreed to answer be considered representative?

Some researchers believe that CATI technology (Computer Assisted Telephone Interview) may be a compromise option [5]. But in telephone interviews, there are also mass refusals; in addition, there are restrictions on the wording of questions, since respondents perceive questions only by ear.

So, we have to admit that the used interpretation of representativeness is not relevant now. One more argument for it is that current monitoring studies are becoming more and more specific; in these monitoring studies, not all the population acts as the carriers of the examined traits.

To prove that management decisions are often made on the basis of monitoring data obtained by irrelevant methods, we give an example.

In pursuance of the National anti-corruption plan, the Ministry of economic development has developed "The Procedure of Sociological Research" to assess the level of corruption in the regions and republics of the Russian Federation. The procedure implies conducting a representative sociological survey of the population in each sub-federal region, a three-stage combined territorial sample, and a household survey, that is, an interview at the place of residence, from 400 to 800 sampling units in each sub-federal region. The survey is supposed to be conducted using an individual formalized interview based on the 'face -to- face' principle. The survey is planned to be conducted annually.

Everyone who is familiar with sociological research [5] knows that a representative household survey using the personal interview method is the most expensive type of enquiry. And what is more important, it is very difficult to control the quality, especially when it comes to the quality of field-survey information. For instance, during the field control, when re-traversing the apartments where the survey took place, it is often found that there are no such addresses. That is, researchers consciously choose the most expensive survey method, in which the results are vulnerable to criticism. Moreover, research teams usually perform such surveys for the benefit of local administration; and the contract specifies refuse to certify the act of completed works without expected adjustments of findings.

There is a reasonable question: what result so much effort was spent for? According to the Ministry, the purpose of the study is to assess the level, structure and specifics of corruption in the Russian Federation; it is also to assess the effects of anti-corruption measures taken. At the beginning of the questionnaire, respondents are asked their personal opinion about how corrupt the authorities are; they need to evaluate 19 public services from the Cabinet of Ministers to Housing Maintenance Services. The question is how a layman who has nothing to do with the corruption of the government or state security agencies can help to assess the level of corruption in these structures? How much is their opinion influenced by the media or individual opinion leaders?

There is an extensive pool of 16 questions on petty corruption, for example, the receiving of a voucher to the kindergarten. Corruption in the distribution of vouchers is caused by the lack of available space and the non-transparency of decisions. The authorities are able to erase the social base of corruption by introducing electronic queues available for public control or establishing new schools, etc. Therefore, document analysis is sufficient to determine how decisions are made, and this will help answer the question of whether the social base of corruption remains.

Receiving data on the facts of the respondent's participation in corruption schemes by asking direct questions is particularly doubtful. During a personal interview at the respondent's apartment, it is difficult to convince them that the survey is conducted anonymously.

Therefore, the respondents refuse to answer the questions or do not tell the truth. Quite the opposite, household surveys conducted by the Russian Federal State Statistics Service relate to the everyday routine of the respondents: their income level, housing comfort, and educational background, etc. When answering these questions, respondents do not feel personally threatened during the survey. As a result, household survey is not effective for achieving the intended objectives.

3. Conclusions

We firmly believe that our society cannot afford such a formal and costly approach to solving everyday issues. Therefore, it is necessary to use the technologies of the digital society and apply the new forms and methods of information processing such as indirect data, correlation analysis, big data analysis, and monitoring.

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