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## THE ROLE OF DIGITAL TECHNOLOGY IN THE INNOVATION PROCESS ON EDUCATION IN BELARUS

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### **Inas Elsaleh. THE ROLE OF DIGITAL TECHNOLOGY IN THE INNOVATION PROCESS OF EDUCATION IN BELARUS.**

*Using a qualitative document analysis method, the research adopts a capability-based perspective with the view of identifying the patterns of actions that educational institutions in Belarus can deploy to utilize and implement a combination of digital technologies in innovation processes in the education sector. Accordingly, it examines the significance of using digital technologies to improve institutional innovation capacities, students' shifting expectations regarding the education sector and the role of digital technology, as well as the impact of digital technology on students' innovative capacity. Policymakers in Belarus have mainly emphasized post-graduation success determined by rates of employment and levels of salary on entering the workforce. However, there is little appreciation of the potential of digital technologies, as students and their family members expect instant financial returns for their investment in education. In contrast, students are found to be particularly concerned about the educational experience that can be obtained at the institutions. They expect a reduction in budgets along with a growing need to cut the costs of investment in education, as there is a growing emphasis on investing in digital technologies to make the technologies more affordable to students. Policymakers in Belarus should be made increasingly aware of the significance of technology in improving learners' experiences. They should encourage innovation in education with the view of maximizing the value of public investment. Learning institutions should encourage connected learning. The process of innovation in education needs to take advantage of digital platforms and forums, which are designed to encourage collaboration and communication.*

**Keywords:** digital marketing, market, company, services.

### **Introduction**

Globally, education systems have continued to expand substantially since the mid-20th century. Among the most prominent changes has included a trend in which developing and emerging economies persistently expand their education systems. These economies also consider education to be a necessary constituent of modernization and advancement (OECD, 2016). However, while a noticeably large number of policymakers consider the persistent expansion in numbers as one of the most prominent advancements, statistics indicate the potential of such development contributes to difficulties. According to Organization for Economic Cooperation and Development (OECD) (2016), among the most fundamental problems faced by education is that of maintaining efficiency and productivity, whereby the term efficiency denotes the balance between resources invested and the implications, particularly as regards equity and students' performance. In recent decades, more countries have taken the bold step of investing in technologies like personal computers and internet-based learning resources to encourage innovation in their education system. Indeed, across OECD countries, the average spending per student rose by at least 17 percent in the period 2005–2013 (OECD, 2016). Yet, in the same period, a survey by the Programme for International Student Assessment (PISA) indicated no major improvement in test scores. On the contrary, the percentage of top performers showed a steadily declining trend. Comparable trends have been observed in developing countries like Belarus, where the issue of innovation, efficiency, and productivity in education is elusive, particularly when the education setting is put side by side with other public policy sectors that are realizing huge productivity proceeds. For instance, in the health sector, technology like mobile health (m-health) applications remains a key driver of improved productivity and efficiency, particularly because of such notable gains like reduced costs and improved patient outcomes.

Yet, there are concerns that digital technologies are leading to comparable advancements in the education sector in Belarus, which has had a long-established tradition of a lack of regular stakeholder consultation because of strong centralized governance. Such a pattern of governance has restricted the participation of the

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education community in engaging in constructive public discourses regarding education policy directions that can facilitate greater focus on investing in digital technology in the education sector (World Bank, 2018). Accordingly, there is a valid justification to examine the role of digital technology in the innovation process of education in Belarus.

#### Statement of the problem

Being a fast growing country, Belarus needs to develop its innovation capacity in the education sector by introducing technologies like digital libraries and online courses. A recent survey by the World Bank (2018) recommended that while Belarus has attained inclusive growth in the last three decades because of a remarkable reduction in poverty, it still lags in innovation. According to the World Bank (2018), Belarus needs to hurry efforts at sustainable development.

In particular, capital investment and huge borrowing have largely boosted economic growth in Belarus. Recently, at the center of policy drives to spur innovation in the country has been The Program of Activities of the Government of the Republic of Belarus for 2016–20 (Program 2016–20), which was set up to improve living standards by enhancing innovation, competitiveness, and a greater volume of efficiency and investment (World Bank, 2018). In 2018, the Belarusian government drew up a new concept of digital transformation of its education system. In the last decade, more than 30 new IT majors have emerged in the system of higher learning, hence showing the potential to improve the country's innovation capacity (Starovoiitova, 2018).

Recently, there has been a renewed interest in improving the country's innovation capacity by investing in human capital (human beings as economic resources), which currently makes up nearly 68 percent of Belarus's overall wealth (Kremer, 2018). A 2018 survey dubbed Systematic Country Diagnostics also recommended a need to improve investment in Belarus' human capital in tertiary education, particularly because of declining demography and stressed public budgets (World Bank, 2018). The significance of advanced and generic skills continues to be acknowledged as adjuncts to investment in digital technology to improve a country's innovation and this makes higher education principally vital in this regard (World Bank, 2018). The Ministry of Education (MoEd) has taken a keen interest in innovative approaches (World Bank, 2018). Yet, the role of digital technology in the innovation process on education in the country remains unclear, owing to an apparent lack of research in the area.

#### The objective of the study

Despite the current emphasis on embracing digital technologies like online classes, greater use of the Internet, tele-teaching, social media, and robotics in innovation processes in education in Belarus, there is a clear dearth in research on the extent to which digital technology can contribute to innovation processes in the country. The current research seeks to fill this gap. It adopts a capability-based perspective with the view of identifying the patterns of actions that educational institutions in the country can deploy to utilize and implement a combination of digital technologies in innovation processes in the education sector. Accordingly, this research attempts to examine the significance of using digital technologies to improve the capacity of learning institutions to be innovative, students' shifting expectations regarding the education sector and the role of digital technology, and the impact of digital technology on student's innovative capacity.

#### Research questions

In keeping with the research objectives, the research questions that guided this research include:

- What is the significance of using digital technologies to improve institutional innovation capacities?
- What are students' current expectations regarding the education sector and the role of digital technology?
- What are the impacts of digital technology on student's innovative capacity?

#### Methodology

The research was based on a qualitative research approach. Data was collected using document analysis. The process entailed carrying out a systematic review of the literature to interpret its content with reference to the research question. Use of document analysis was considered appropriate for the research, as it made it possible to access a wide context of information. The documents mainly targeted for review include sectoral reports, research journals, research reports, and institutional reports. The criteria applied in document analysis mainly included engaging in an online search for articles on digital technology and innovation in the education sector. In developing a sampling frame, cases analyzed were specifically selected on previously published literature in Belarus. The resultant data from this research was analyzed. Data for the analysis were extracted from articles documented in the English language. However, because of a clear dearth of research in the area, a major research barrier emanated, which comprised a restricted number of researches that had previously examined the topic.

### Literature review

The significance of using digital technologies to improve institutional innovation capacities

From a review of current research on the role of digital technology in the innovation process on education, it can be recognized that advances in digital technology are rapidly opening many learning avenues, whereby technology is making information accessible (Urbinati et al., 2017; Wikramanayake, 2014; World Bank, 2018). In the education sector, Wikramanayake (2014) acknowledges that information and communication technology (ICT) is fast becoming an integral component of learning. Indeed, in the last decade, ICT has continued to be introduced in learning institutions, even though the ratio to students is still substantially high. The researcher recommended that once the educators are made aware of the significance of technology in improving learners' experiences, some reforms may occur.

Recently, Urbinati et al. (2017) ascertained that innovation practitioners and scholars are considering the significance of using digital technologies to improve institutional innovation capacities. Most of them are today emphasizing deploying digital technologies to enable management and innovation because of the important transformations that characterize firms and their innovation activities. Similar trends are observable in Belarus (World Bank, 2018). Indeed, in the past decade, technological innovation appears to have increasingly gained recognition for being a critical factor with the potential to sustain competitiveness within a globalized economy. OECD (2016) observed that innovation has the potential to accelerate growth and development and to function as a mechanism for enhancing an organization's capacity to adapt to the transforming environments. Traditionally, research on theories and policies on education have mainly concentrated on the business sector. Therefore, it is substantially recognized in current research that enterprises should innovate to sustain their competition by improving their innovation capacity.

Again, in recent decades, policy interest has spread this "innovation imperative" to educational institutions. According to Wikramanayake (2014), there is an apparent emphasis on encouraging innovation in education with the view of maximizing the value of public investment. Across the OECD countries, governments are making significant investments in the education sector. Indeed, government expenditure in education in these countries make up nearly 48 percent of the GDP, and in certain instances corresponds to nearly 50 percent of the national GDP. A number of recent national innovation strategies in OECD countries like Australia, the Netherlands, Finland, United Kingdom, and Norway show how governments are encouraging innovation in education with the view of maximizing the value of public investment. In these countries, the need to encourage innovation in the educational institutions has been driven by significant demographic pressures, greater expectations by the public, growing demand for government services, and reduced budgetary allocations – all of which account for a need to take advantage of the cost-cutting benefits of technology. For instance, mobile health (m-Health) technologies may save doctors and nurses the costs of travelling to homes of diabetic patients to monitor their health. In the same line, the World Bank (2018) concluded that innovation in education has the potential to be a key driver for important welfare gains. In a study by Fenwick and Edwards (2016), the researchers critically examined how new digital analytics are being introduced in certain fields and their effects on knowledge and practice. Their research drew attention to the effects of new digital technologies in varied fields of professional work and suggested a need for students to be introduced to such advantages. Fenwick and Edwards (2016) concluded that digital technologies encourage the use of innovations that improve teaching and learning while simultaneously cutting the costs of higher education and the period it takes to graduate from colleges and universities

### Student shifting expectations with reference to the role of digital technology

In their research, Fenwick and Edwards (2016), explain that an increase in scrutiny toward higher education institution remains a major challenge because of the growing costs and unpredictable nature of the rewards expected from investing in education. Studies have estimated that the cost of higher education overcome its total value. In which case, the degree granted to them do not provide them with the expected return on investment. The overall rate of return for higher education in Europe and Central Asia is low at 7.3 percent, compared to Latin America at 11 percent, and Sub-Saharan Africa at 10.5 percent (Psacharopoulos & Patrinos, 2018). In their recent survey, Urbinati et al. (2017) observed that while the public and legislators placed substantial emphasis on post-graduation success, as determined by rates of employment and levels of salary on entering the workforce, then was previously the case, there is a little appreciation of the potential of digital technologies. On the other hand, students and their family members expected instant financial returns for their investment in education. Similarly, Fenwick and Edwards (2016) established that a growing reduction in budgets along with a growing need to cut the costs of investment in education, continues to be a growing emphasis on investing in digital technologies to make them more affordable to students. The researchers concluded that while students expect the cost of education to be reduced, they are particularly concerned about the educational experience they obtain at the institutions.

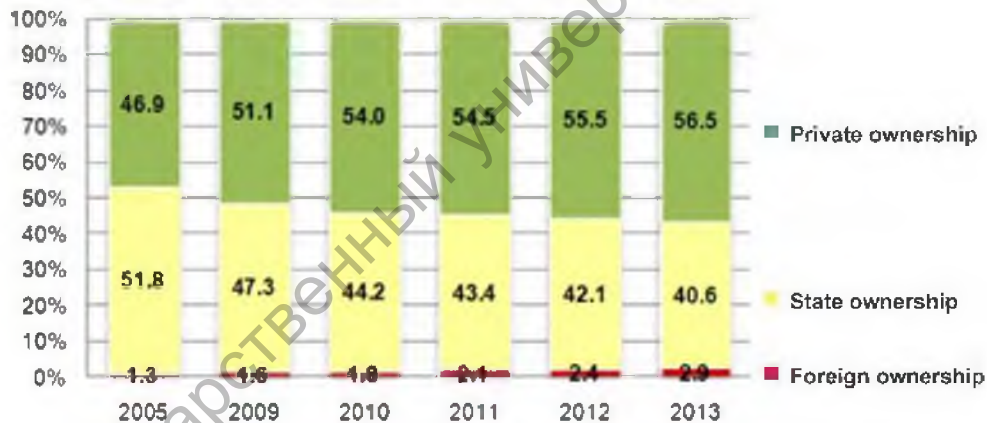
They found that students tend to seek for experiences that involve the use of technology to improve teaching and learning while simultaneously cutting the costs of higher education and the period it takes to graduate from colleges and universities. Students also hope for greater opportunities for distance learning that can enable them to fit traditional approaches to learning into their schedule.

#### Impact of digital technology on student's innovative capacity

A review of literature provides significant evidence illustrating the value of digital technology in education and the potential of these technologies to create significant learning opportunities for all groups of citizens, who look forward to improve their quality of life, as well as to encourage social innovation through their inclusion into education and the wider society (Hamburg & Bucksch, 2017). It is clearly such an appreciation of the growing recognition of digital technologies that has prompted governments and private sectors to leverage their educational systems using digital technology. According to World Bank (2018), innovation plays a vital role in improving both formal and non-formal education, both of which prepare students to become digital social innovators and entrepreneurs. They also observed that digital technologies potentially link the goals and creations of innovators. In which case, the process of innovation in education needs to take advantage of digital platforms and forums, which are designed to encourage collaboration and communication.

According to the European Training Foundation (2016), student expectations to become innovators in the service sector drive a need for market reforms as educational institutions determine the quality of workers brought to the labor force. Still, digital technologies have increased the innovation capacity of students, and in turn, led to a growth in entrepreneurship in Belarus. However, growth in entrepreneurship in Belarus has also meant a steady downward trend in the number of people employed. For instance, in the period 2009–2013, the number of people employed in the public sector declined to 40.6 percent from 47.3 percent, even as employment in the private sector rose to 56.5 percent from 51.1 percent, indicating a growing expectation of students to innovate or seek out opportunities for innovation, which were found to be more prominent in the private sector than the public sector (See figure 1).

Structure of employed population by forms of ownership (% of total)

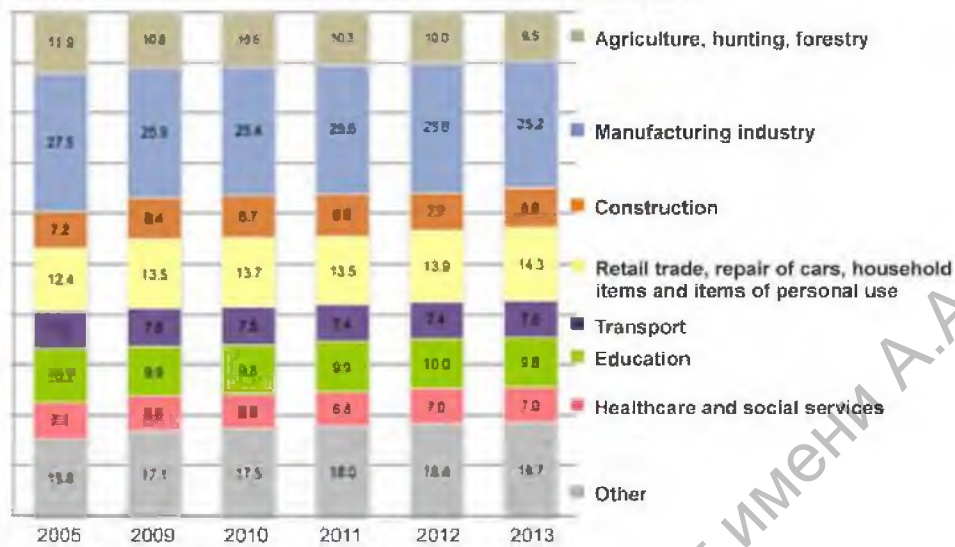


Source: Labour and employment in the Republic of Belarus, pp.40–3

Figure 1. Employment patterns in Belarus (ETF, 2016)

The European Training Foundation (2016) further elaborates that a greater focus on innovation has largely been triggered by state policies like the National Strategy for Sustainable Socioeconomic Development of the Republic of Belarus until 2020. These have led to a shift of the employment structure towards service industry growth and deindustrialization of the economy. Such trends indicate a possible decline in student's interest in some sectors like the agricultural sector and manufacturing sector, as they place their focus on their entrepreneurship, which has grown steadily from 2005 to 2013. For instance, the proportion of employed people in the manufacturing sector declined from 45.1 percent in 2009 to 42.8 percent in 2013. Employment in the agricultural sector also reduced from 11.9 percent in 2005 to 9.5 percent in 2013 (See figure 2). Those employed in the service sector increased from 54.9 percent in 2009 to 57.2 percent in 2013, showing a greater focus on innovation and entrepreneurship.

Structure of employed population by types of economic activity (% of total)



Source: Labour and employment in the Republic of Belarus, pp 47–8

Figure 2. Employment by type of economic activity (ETF, 2016)

Social networking platforms also transform how individuals can access information, work, and take part in the physical or digital community. Following a review of patterns of change that have characterized integration of digital technologies in the education sector, Hamburg and Bucksch (2017) observed that nearly a decade ago, digital technologies in education centered on developing, sharing, and ultimately gaining access to learning content in digital forms, such as digital libraries and online courses. Fundamentally, digitization of educational content and development of detached learning apps consisted of the main fundamental measures that have defined digital technology in educational institutions (U.S. Department of Education, 2017). Hamburg and Bucksch (2017) stated that such technologies have a potential to contribute to strengthening student skills sets, boosting the return on investment in education, and encouraging students to be more innovative and trigger their engagement in entrepreneurship. However, Hamburg and Bucksch (2017), observed that in the last decade, the emphasis has largely been placed on learning content, despite an increasing need for collaborative learning to ensure a greater innovation potential. In view of this concern, they elaborated that educational institutions that attempt to integrate digital technologies should start shifting focus from content to students and teachers’ networking potential, otherwise digital technologies will only strengthen existing institutional goals as well as social inequities.

Hamburg and Bucksch (2017) assumption that when a student can follow a personal interest with the support of his or her peers along with more knowledgeable adults, they are likely to have a greater capacity to connect their learning and their interests in pursuing economic, educational, or political opportunities. Accordingly, higher education institutions that focus on leveraging digital technologies to improve students’ learning and technological experience should emphasize deployment of technology and facilitating institutional reforms should consider embracing connected learning, which would fundamentally take a networked approach to social change.

Digital technologies like digital libraries and online courses have also been found to enable inclusive education and innovativeness of the students with a disability. According to Hamburg and Bucksch (2017), innovation in technology embodies prospects for inclusive education. These technologies assist in the preparation of learners of all ages, especially learners with special needs like those with disabilities, for specialized learning. When digital technologies are used, individuals are exposed to greater prospects to access learning content, manage their learning, and interact with their peers, particularly in the process of innovation – like creating and sharing new materials. Hamburg and Bucksch (2017) acknowledged that inclusive education has the potential to strengthen the education system’s capacity to be accessible to all learners. By facilitating innovation through peer to peer interaction, digital technologies also facilitate inclusive entrepreneurship by enabling social inclusion of all kinds of innovators and providing them with an equal opportunity to establish

and run their enterprises. Within this context, the specifically targeted groups in the inclusion process include the particularly disadvantaged and under-represented social groups in self-employment, entrepreneurship, and innovation, such as people with disabilities, immigrants, the elderly and women. As Hamburg and Bucksch (2017) established, digital innovations play a crucial role in the creation of efficient, adaptable, and accessible learning environment.

### Conclusions and Recommendations

#### Conclusion

As Belarusian policymakers are currently stressing on post-graduation success, there is evidently poor appreciation of the potential of digital technologies to transform the educational sector. Students expect instant financial returns from investing in education, yet the Belarusian economy has not been able to absorb them fast enough into the workforce. In contrast, students are found to be particularly concerned about the educational experience that can be exposed to at the institutions. They expect a reduction in budgets along with a growing need to cut the costs of investment in education, as there continues to be a growing emphasis on investing in digital technologies to make them more affordable to students. Students also seek for an experience that involves the use of technology to improve teaching and learning while simultaneously cutting the costs of higher education and the period it takes to graduate from colleges and universities. They also hope for greater opportunities for distance learning that can enable them to fit traditional approaches to learning into their schedule.

It is further established, digital technologies strengthen student skills sets, boost the return on investment in education, and encourage students to be more innovative and trigger their engagement in entrepreneurship. They encourage the use of innovations that improve teaching and learning while simultaneously cutting the costs of higher education and the period it takes to graduate from colleges and universities. They also create significant learning opportunities for all groups of citizens, who look forward to improving their quality of life, as well as to encourage social innovation through their inclusion into education and the wider society. Educational institutions have also emphasized learning content, despite an increasing need for collaborative learning to ensure greater innovation potential. Digital technologies have also been found to enable inclusive education and innovativeness of the students with a disability.

#### Recommendations

- Policymakers in Belarus should be made increasingly aware of the significance of technology in improving learners' experiences.
- Policymakers should encourage innovation in education with the view of maximizing the value of public investment. They need to encourage innovation in the educational institutions, which is today triggered by significant demographic pressures, greater expectations by the public, growing demand for government services, and reduced budgetary allocations.
- Policymakers also emphasize deployment of technology and facilitating institutional reforms should consider embracing connected learning, which would fundamentally take a networked approach to social change.
- As digital technologies potentially link the goals and creations of innovators, the process of innovation in education needs to take advantage of digital platforms and forums, which are designed to encourage collaboration and communication.
- As educational institutions have tended to emphasize learning content, despite an increasing need for collaborative learning to ensure a greater innovation potential, they should consider shifting focus from content to students and teachers' networking potential, otherwise digital technologies will only strengthen existing institutional goals as well as social inequities.

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#### **Инас ЭлСалех. ЦИФРОВЫЕ ТЕХНОЛОГИИ КАК ИННОВАЦИОННЫЙ ФАКТОР ПРОЦЕССА ОБРАЗОВАНИЯ В БЕЛАРУСИ.**

*Это исследование использует перспективу, основанную на возможностях, с целью определения моделей действий, которые образовательные учреждения в Беларуси могут развернуть, чтобы использовать и внедрить комбинацию цифровых технологий в инновационных процессах в секторе образования. Соответственно, в нем рассматривается важность использования цифровых технологий для улучшения институционального инновационного потенциала, переменчивые ожидания учащихся в отношении сектора образования и роли цифровых технологий, а также влияние цифровых технологий на инновационный потенциал студентов. Как установлено, политики в Беларуси делали упор на успех после окончания учебного заведения, что определяется уровнем занятости и уровнем заработной платы при приеме на работу. Тем не менее потенциал цифровых технологий мало ценится, поскольку студенты и члены их семей ожидают мгновенной финансовой отдачи от своих инвестиций в образование. Напротив, студенты, как оказалось, особенно обеспокоены образовательным опытом, который может быть получен в учебных заведениях. Они ожидают сокращения бюджетов наряду с растущей необходимостью сокращения затрат на инвестиции в образование, поскольку все больше внимания уделяется инвестициям в цифровые технологии, чтобы сделать технологии более доступными для студентов. Политики в Беларуси должны все больше осознавать важность технологий для улучшения опыта учащихся. Они должны поощрять инновации в образовании с целью максимизации стоимости государственных инвестиций. Учебные заведения должны поощрять связанное обучение. Процесс инноваций в образовании должен использовать цифровые платформы и форумы, которые призваны поощрять сотрудничество и общение.*

**Ключевые слова:** цифровой маркетинг, рынок, компания, сервис.