

Digital Transformation in Small and Medium-Sized Enterprises: Approaches and Challenges (Focus: Agricultural Sector of Georgia)

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Abstract

Introduction: The digitization process is multifaceted and serves different purposes. This process requires the effective use of various strategic assets. The paper analyzes the challenges and opportunities of the digitization process in small and medium enterprises in the example of Georgia. Various approaches have been used as research methodology, in particular, local and international scientific papers and official reports have been studied from various scientific bases. Analysis and comparison methods are used.

Aim and tasks: The main purpose of the article is to highlight the main challenges and approaches for promoting the digitization process in SMEs in Georgia. To achieve this goal foreign experience in different countries in terms of stimulating digital transformation has been studied.

Research results: The agricultural sector of Georgia is taken as the focus of the research. Accordingly, in the agricultural sector, the number of representatives of small and medium-sized businesses was initially determined. As the findings of the analysis revealed, small and medium-sized enterprises have less opportunity to implement digital transformation - the smaller the enterprise, the less likely it is to adopt new digital technologies. The impact of the number of Internet and social media users on productivity is positive.

Conclusions: Conclusions are made on the main barriers to digital transformation in SMEs. As a result of the analysis, conclusions were made and relevant recommendations were written.

Keywords: Digital transformation; Digital infrastructure; Small and medium-sized enterprises (SMEs); Agricultural sector; Digitization barriers; Online community

Abbreviations

NRI - Network Readiness Index.

OECD - Organization for Economic Co-operation and Development.

SMEs - Small and medium-sized enterprises.

Introduction

Digital space is gaining new dimensions in economic development. “Go Digital or go home” - is a slogan that most describes how enterprises' position remains modern in the world. Unfortunately, reality represents the fact that the meaning of Business Digital transformation has not been properly evaluated so far. At the modern stage, digital transformation is the modernization of enterprises and the progress of basic elements and this process can create more economic value for society [1].

Digital transformation should also be considered as an opportunity for the sustainable development of enterprises. Digitization offers new options to micro, small, and medium-sized enterprises in terms of improving product quality and minimizing costs. According to studies conducted on the problems of digital transformation of small and medium enterprises, 79% of enterprises are in the initial stage of digital transformation [2]. SMEs tend to digitize general administration or marketing functions. However, digital transformation comes with risks, which is why small and medium-sized enterprises prefer outsourcing when digitizing their business functions. In this way, they reduce the risks associated with digital transformation through external consultants [3].

According to the data of the last period, SMEs prevail among the representatives of the private sector. For example, according to the data of 2019, 98.9% of the private sector in the territory of the European Union was made up of SMEs, and the number of employees was 28.8% higher than the share of employees in large companies - 35.6% [4]. Despite the abundance of SMEs and their contribution to the economic development of the region, they are vulnerable to various force majeure situations, for example, COVID-19, which has harmed 90% of similar enterprises in the territory of the European Union alone. The pandemic has “forced” these firms to more actively use digital platforms and related tools [5]. Digitization has contributed to the survival and competitiveness of this type of enterprise.

The pandemic created a similar situation on all continents, but the problem could not be solved with equal success everywhere. This fact is related to the country's economic capabilities, as well as the presence of modern technologies and digital platforms. Despite the growing trend of the digital economy in the world, the geographic distribution of online platforms varies by country and continent, the majority of online platforms (71.6%) are owned by the US and EU member states, which in itself makes digital transformation easier for them compared to other states [6]. However, it is worth noting that the rest of the world can also reap some benefits from digital platforms and related tools.

In Georgia, as in the world, small and medium-sized enterprises are important in terms of employment (42.1% in small enterprises, 19.7% in medium-sized enterprises), produced products (28.7% in small enterprises, 24.4% in medium-sized enterprises), and other factors [7]. However, the digitization process in enterprises is not proceeding at a fast pace in some respects. For instance, the use of ERP systems in enterprises in 2020-2022 has a decreasing trend (8.7% in 2020, 6.9% in 2022), modern Internet technologies are used by only 9.3% of enterprises in 2021, and only 3.7% use artificial intelligence. As for the use of the electronic website in 2022, only 13.45% of enterprises used it [7]. Along with the statistical information, it is also important to consider the World Economic Forum's 2022 Network Readiness Index (NRI), according to which Georgia ranks 75th out of 131 countries with a score of 47.14 and ranks last among its neighbors (Turkey - 48th place, Armenia - 64th place, Azerbaijan - 74th place, Russian Federation - 40th place). Among the index's constituent factors, the use of technologies (84th place) and its subcategory - future technologies, where Georgia ranks 114th, are particularly noteworthy. Also, the category of society is important, where the subcategory - digitization of business Georgia is in 69th place, and in the digitization of the public sector, it is in 78th place [8].

Considering the given information, it is obvious that Georgia has several challenges in the direction of digital transformation. In the work process, the state and private sectors should be equally involved and concentrate on sustainable development.

In Georgia, complex studies on the problems of digital transformation of SMEs have hardly been carried out, therefore, it is necessary to answer certain questions, namely:

- At what stage of digital transformation are small and medium-sized enterprises in Georgia?

- How effectively are digital platforms and related tools being utilized?
- What is the foreign experience of digital transformation and which of them will be effective for Georgia?
- How effectively the state uses digital transformation tools and how user-friendly are Digital platforms/technologies?
- What is the impact of digital transformation on the sustainable development of the economy?
- What technologies or digital tools are needed to fully utilize the potential of digitization?
- What are the barriers faced by SMEs in the process of digital transformation?
- How can the state support the digital transformation of SMEs?

It is important to highlight the unique place of Georgia among other countries, what position we hold, what stage of development we are in and what best practices exist in other countries to compare and implement. In this regard, it is interesting to analyze the current results of the program created by EU4Digital. Within the framework of the mentioned program, the best practices of the European Union were determined for the regulation of the areas pre-selected by the Eastern Partnership countries: Intellectual Property Right Management for Digital Innovation (Armenia); New organizational forms to support information and communication technological innovations (Azerbaijan); *access to financing for small and medium-sized enterprises working on digital innovations (Georgia, Ukraine)*; Information and Communication Technology Innovation Ecosystems for Startups (Moldova); Digital transformation of industry (digital transformation of small and medium enterprises in traditional sectors) (Belarus) (EU4digital). This implies that in practice this direction was recognized as the most relevant for Georgia. The best practices from EU countries show that to lead and support digital transformation in a country, a well-balanced and equipped network of political agencies must have a central policy-making agency for digital transformation. A central policy-making agency establishes balanced support mechanisms for the development and implementation of a policy toolkit in the field of digital transformation.

Materials and Methods

The agricultural sector plays an indispensable role in the food security of countries. In developing countries, this sector is an integral source of livelihood for the population. It should also be noted that in the future it will be necessary to meet the increased demand for healthier products. Today, agro-food production is facing global challenges. Accordingly, the need to develop the agricultural sector, taking into account new approaches, is on the agenda. In this context, digital transformation is considered a promising direction for the improvement and sustainable development of existing agri-food systems. Indeed, digital technologies enable the development of precision agriculture, which can significantly increase productivity and profitability, while increasing the level of confidence for consumers [9]. At the global level, the question of how to promote sustainable agriculture based on digital technologies is on the agenda of any farmer.

Recently, scientific studies have proven that digitization helps to optimize the production process, and ensures the complex use of digital technologies in the supply chain of agri-food products, which creates new development opportunities, especially for SMEs. It can be said that digital transformation has gone beyond the concept of “digitalization” since it is not only connected to digital technologies but also includes socio-cultural processes. Difficulties related to this issue can create a significant basis for instability and uncertainty [11].

Operating in a competitive environment is a special challenge for small and medium-sized enterprises in the agricultural sector. In the conditions of technological transformation, many problems arise for food suppliers, including the complex nature of food markets, ever-increasing competition, deregulation problems, technological convergence, etc. The combination of the named factors requires the need to offer customized services or products to customers. Due to the intense competition, it is necessary to implement strategic measures aimed at customer retention, in which the use of digital technologies will play a fundamental role.

Today, any enterprise or organization is focused on the growth of the loyal customer segment, since this category of customers is more focused on long-term profit and maintaining a cooperative relationship with the manufacturer. The latter is mutually beneficial for each partner [12].

Digitization is a difficult process, particularly for small and medium-sized businesses. The subsequent COVID-19 regulations had a significant impact on the aforementioned process. Physical distance made it hard to conduct work processes in the office and hastened the digitization of internal operations to preserve business continuity. Through digital platforms, the digitization process connects the virtual and physical sectors of the economy. Through the Internet connection, it produces a value between the entrepreneur and the consumer. The pinnacle of digital infrastructure is digital platforms. It encompasses the Internet, data centers, smartphones, and other technologies. New, high-risk digital “enterprises” necessitate access to reliable digital infrastructure. The enterprise’s digital infrastructure, organizational structure, and information systems together create the so-called “Enterprise Architecture”. The latter allows business representatives to innovate to gain a competitive advantage. In addition, the process of digital transformation at the enterprise level should include all areas: corporate environment, management, personnel, operational activities, etc. Otherwise, it will cause a digital delay. And digital disruption will have a significant negative impact on business. Therefore, it is important to take relevant and timely steps to adapt to rapid changes [12].

The impact of COVID-19 has made the process of digital transformation in small and medium enterprises even more urgent. Steps have been taken to reduce negative impacts and achieve sustainability goals in SMEs: products/brands have been promoted through digital media; “Online” communities were created to increase customer loyalty; Digital marketing has evolved; Business monitoring is carried out - business owners have actively started using digital transaction channels, carrying out inventory and financial monitoring, and more [13].

Digital technology can make the agricultural sector more sustainable. Recent innovations such as Artificial Intelligence (AI), Remote Sensing (RS), Blockchain (BC), and IoT are revolutionizing the value chain of the agriculture sector and improving technologies. For example, the “Scouting” application developed by Xarvio-Digital Farming Solutions helps farmers identify weeds. They can easily download the app for free and identify weed species in their early growth stages. The algorithm identifies all weed characteristics, disease and pest frequency, nutrient deficiency, and more [14]. Similar innovations are widely used in developed countries (Netherlands, Israel, etc.), and for developing countries, digitization in any field of activity is a long-term future perspective.

As a result of studies, it is confirmed that a significant segment of farms in developing countries still do not use digital technologies due to various reasons, among them it is worth noting: uncertainty about the profitable use of digital technologies; high costs; insufficient technical support from the state; Limited broadband/mobile connection. The process of adopting digital technologies can be accelerated by the implementation of various programs by the state, which will increase the possibility of access to innovative technologies for interested farmers [15].

Scientists discuss the need to support the introduction of digital technologies in enterprises of the agricultural sector due to several arguments:

- Reducing labor intensity and increasing productivity;
- Increasing the efficiency of the resources used in the agricultural production process;
- Improving the quantitative and qualitative indicators of the manufactured product;
- Reduction of harmful effects on the environment;
- Updating and improving the technical base of agricultural production [16].

Today, most manufacturers realize that digital technologies represent an important opportunity to identify new products, expand the customer base, maintain competitiveness, generate revenues, reduce operating costs, make innovative decisions, implement effective management, and solve other important issues. In this way, it is possible to overcome a number of social challenges. According to the results of the research, almost 9 out of 10 European companies working in the agri-food sector in European countries consider digital technologies as a new opportunity and they are focused on implementing various digital technologies in their business models [17]. Accordingly, to ensure economic growth in enterprises, the key issue is the development of consistent and long-term digital strategies [17].

Digital transformation can simplify work processes and cooperation, increase efficiency, and reveal ways to absorb new markets. Therefore, digital transformation can be a highly profitable economic growth strategy for SMEs. It should be noted that digital transformation in all sectors requires different strategies. The most difficult implementation of this process is in real, traditional sectors of economy. Such a real sector is agriculture, from which real products are obtained and provided then to customers. Therefore, this sector was selected for our study and different digital transformation strategies suitable for this sector were highlighted. That is why, in order to see a complete picture, we conducted a survey on the needs among representatives of agriculture. We selected small and medium-sized entrepreneurs, because they represent a large part of the economy of Georgia. The main strategy is to digitally transform agribusiness. The major essence of this strategy is to equip small and medium-sized entrepreneurs working in the agricultural sector in Georgia with modern technologies that comply with modern standards, which will have several positive effects: more revenue with less resources in the long-term period and more productivity. The biggest challenge at this stage is raising awareness, appropriate skills development and access to digital technologies.

The expansion of the worldwide pandemic has greatly expedited the digitization of small and medium-sized businesses. In arguing the above, we can rely on the findings of an OECD survey, which found that 75% of small businesses in the United Kingdom have moved to remote working, and roughly a third have invested in new digital capabilities. Since COVID-19, 70% of SMEs worldwide have boosted their use of digital technologies, and 55% of SME marketers in Brazil said the move improved customer interactions, process speed, and even customer acquisition. Meanwhile, in Canada, 72% of SMEs polled stated that e-commerce (the capacity to sell online) is now a vital requirement for a successful firm [18]. Therefore, it is clear that digital transformation is something that all SMEs should be looking for and actively investing in. Governments play a major role in the digitization of SMEs. This role starts with realizing the importance of digital transformation, with the accompanying opportunities for economic growth, job creation, and productivity improvements. It is important to include the digitization of SMEs in the policy agenda, as this process is a powerful tool for economic development.

The state plays a vital role in facilitating B2B transactions and the active use of digital tools to improve public services (e.g., e-government websites) to facilitate the issue of SME licenses and other services [19].

The so-called “knowledge gap” related to digital transformation is the basis of several important challenges. Because of this, at the same time, the effective functioning of one of the fastest-growing e-commerce markets in the world is hindered. In the mentioned direction, first of all, it is necessary to improve access to digital infrastructure, as well as provide appropriate training, which will simplify the trade process [20].

Digital transformation creates new perspectives of economic growth for many industries. However, according to some analysts, the results of the digital revolution in agriculture lag significantly behind other industries. However, there are clear incentives to enhance the sustainability and productivity of the agricultural sector through digital technologies - production and productivity should increase in the mentioned sector to achieve a sustainable food system and food security [21].

It is also important to consider the transactions that are possible of technologies and innovation, the latest on the edge Staying, arranging an organizational structure based on digitization. The latter, in turn, is based on sustainable development [22].

In the process of digital transformation, several circumstances should be considered: this process is accompanied by a sharp increase in costs incurred on integration, which, in turn, leads to a significant increase in administrative or non-operational costs. Also, the mentioned process is of a long-term and complex systemic nature, therefore, the benefits will be recorded in the long term. Therefore, if the intensity of the firm’s digital transformation is at a low level, then the marginal cost exceeds the marginal benefit, and in such a case, the digital transformation will harm the firm’s financial performance. Most firms avoid short-term revenue constraints and do not focus on the long-term when digital transformation is positively correlated with firm profits [2].

To analyze the impact of digital transformation, it is possible to rely on studies according to which digital transformation of SMEs has a positive correlation with operational performance and an inverse U-shape relationship with innovation [23].

The objective of the study is to reveal the modern challenges of digital transformation in small and medium-sized enterprises of agriculture in Georgia and to develop recommendations on the development directions of digitization.

To achieve the research goal, various theoretical and methodological tools are used, including works by Georgian and foreign scientists (Scopus, Web of Science, Google Scholar, Researchgate), reports from international organizations, and materials posted on scientific electronic portals. The data and annual reports of the National Statistics Office of Georgia, the Ministry of Environmental Protection and Agriculture of Georgia, global statistical Internet resources, and others were defined as the empirical base of the research.

Quantitative research was carried out as part of the work on the paper. The main goal was to identify the barriers to digital transformation in small and medium-sized companies and determine the priority needs of digitization. The research was conducted in May-June 2023. 466 respondents were interviewed via a Google Form online questionnaire.

Quantitative research data allowed us to do a descriptive analysis. The type of questions asked was structured. Multiple-choice, alternative, and scale-based questions were proposed namely nominal and dimensional scales. The questionnaire included self-identification, competence, practical and assessment sections. In addition, two open discussion questions were proposed.

The database of the business register of the National Statistics Office of Georgia, the Policy Coordination and Analytics Department of the Ministry of Environment and Agriculture of Georgia, "The Fruit Farmers' Consultative Center", "Enterprise in Georgian", "Georgian Nobati" was used as the research database. The questionnaire was sent by email.

Statistical analytic methods were used to process the collected results. Data summaries are used to form findings and make recommendations. The research employs matrix, factorial, comparative, and other methodologies. Using a multiple regression model, the effect of the number of Internet and social media users on productivity was determined.

A qualitative study will be conducted to assess the steps taken by the state in the direction of digital transformation. To implement the component, a targeted sampling method was used, and interviews were conducted with representatives of the public and private sectors. Additional questionnaires to assess the digital transformation process will be sent by e-mail to representatives of the private sector.

Following the objectives of the analysis, the data obtained from the quantitative and qualitative research were processed with the MS Excel package.

Results and Discussion

Among the respondents participating in the study, 61.4% are women, and 38.6% are men. It should be noted that there are still very few producers with professional education in the field of agriculture. Their share in the total number of respondents is 12%, 67.8% have higher education, and 20.2% have secondary education.

In the process of the survey, the level of possession of digital skills by local manufacturers was determined through self-assessment on a scale from 1 to 5. The question meant basic knowledge in different directions: using the Internet, using a computer, e-commerce, digital marketing, data processing, and analysis with the help of programs, making electronic payments, using mobile applications in the production process, and others (Figure 1).

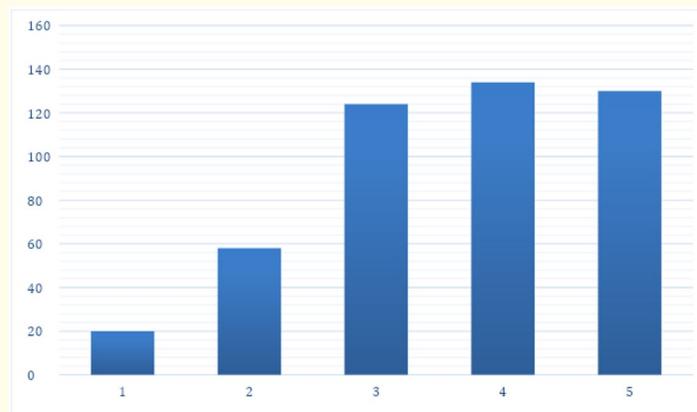


Figure 1: Level of possession of digital skills as assessed by manufacturers (rated on a scale of 1 to 5).

The majority of respondents, namely 97.4%, perceive the use of digital technologies as a new opportunity for development. However, only 87.4% express the opinion that they consider operating in the digital world in their action strategy.

The practical section included questions that required answers based on experience. First of all, the period of use of digital technologies was defined. It was found that 57.1% of respondents have been using digital technologies for 3 or more years. It should also be noted that in the conditions of the Covid-19 pandemic, 18.5% of respondents started using digital technologies in the period from 1 to 3 years. The mentioned direction is a novelty for 24.5% of producers.

67% of the manufacturers involved in the research conduct electronic sales. The share of electronic sales in total sales is small, namely 156 respondents indicate that it varies between 0-25%, 68 respondents indicate that the share of electronic sales in their activities is 25-50%, and for 32 respondents these figures are 50-75%, for 2 respondents - 75-100%.

It should be noted that the respondents' purposes for using digital technologies are different. Manufacturers mostly use mobile phones and computers (97%). And drones, GPS, and electronic sensors are used by only 2.6%. Also, the individual answer of the respondent that they use the weather station and Internet-controlled irrigation systems along with the mentioned technologies was recorded.

The technologies mentioned above are mainly used for receiving information (92.3%), participating in online training (36.9%), working meetings (33.9%), and other important purposes (Figure 2).

To achieve the stated goals, manufacturers use various applications/services, including Microsoft programs (Word, Excel, PowerPoint, Outlook, Teams), social networks (Facebook, YouTube, Instagram, Whatsapp, Messenger, LinkedIn, Viber, Telegram), electronic Mail (Gmail, Yahoo), mobile banks (BOG, Liberty), state programs (My.gov.ge). The providers of applications/services used by them are public (54.2%) and private sector (45.8%). In addition, 33% of respondents regularly update digital technologies, sometimes - 32.2%, rarely - 31.3%, never - 3.4%.

Self-awareness activities (online platforms, webinars, seminars, video lectures) are often used by 31.3% of respondents, sometimes - 35.6%, rarely - 28.3%, never - 4.7%) to improve their competencies in using digital technologies.

The evaluative section primarily assessed access to the Internet. The polls, as expected, showed that there is a so-called "Digital divide". More than half of the respondents, about 53%, state that they have limited access to the Internet (Figure 3).

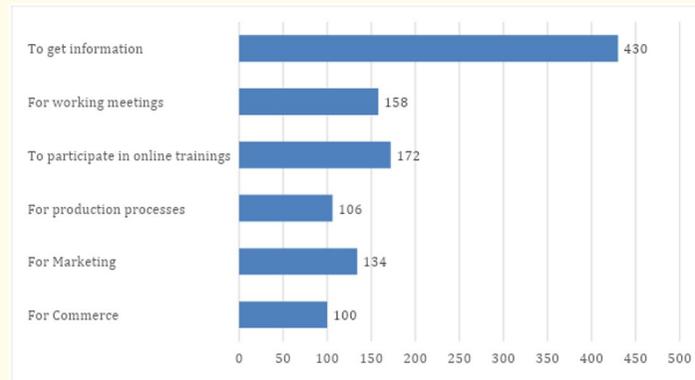


Figure 2: Objectives of using digital technologies.

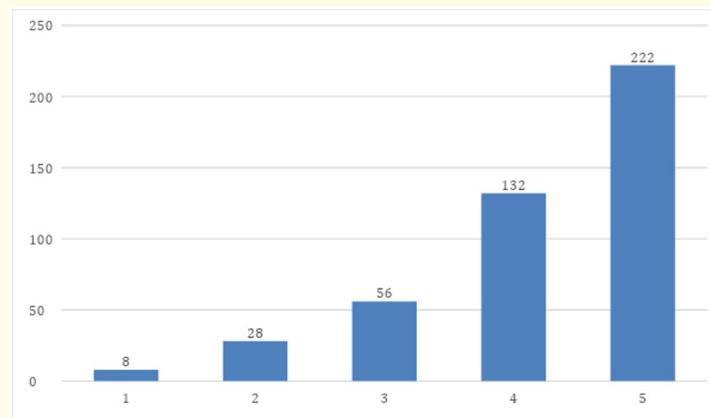


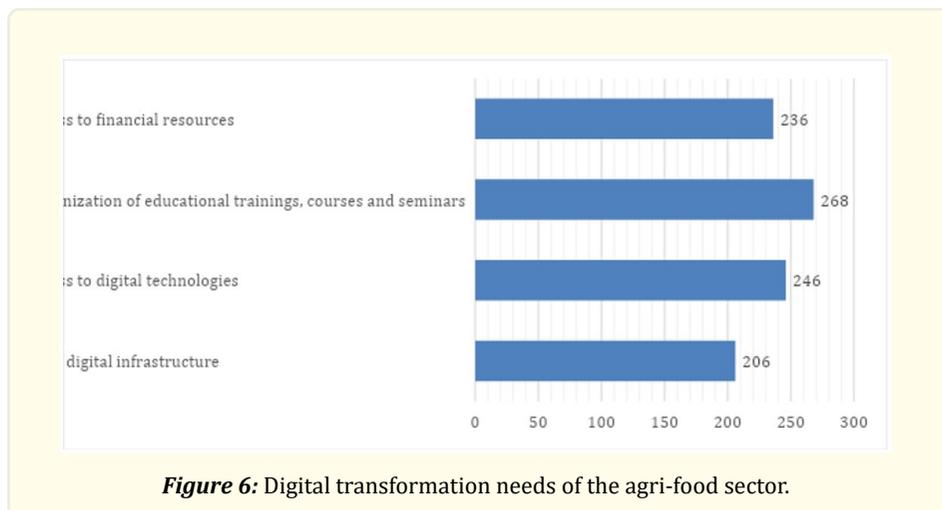
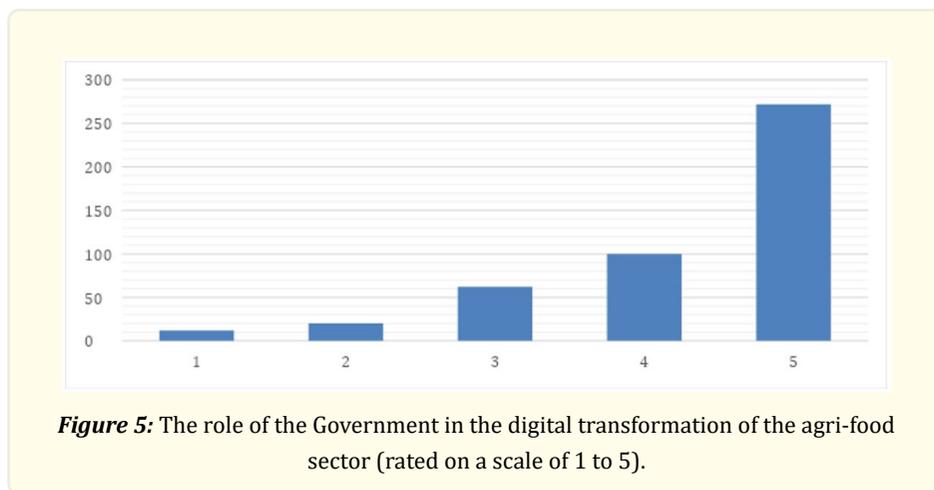
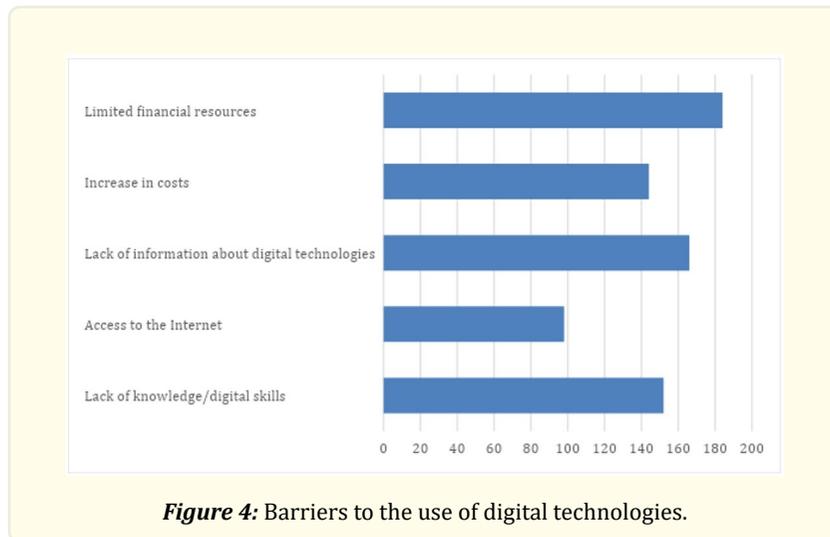
Figure 3: Access to the Internet according to manufacturers' estimates (rated on a scale of 1 to 5).

In addition to access to the Internet, manufacturers face other important barriers in the process of using digital technologies, among them are limited financial resources (39.5%), lack of information about digital technologies (35.6%), lack of knowledge/digital skills (32.6%) and others (Figure 4).

30% of respondents are aware of state programs supporting the development of digital technologies. It should be noted that none of the respondents benefited from the state programs. Accordingly, the respondents could not name the state programs known to them.

The participants in the study assessed the role of the state in the digital transformation of the agricultural sector; the assessment was made on a scale from 1 to 5. The majority (272 respondents) state that the government has an important role in the development of digital technologies (Figure 5).

The priority needs of the digital transformation of the agro-food sector were identified according to the producers' assessment. The majority mentions the necessity of systematic organization of educational training courses, and seminars, increasing access to digital technologies and financial resources, and development of digital infrastructure (Figure 6).



62.2% of the respondents plan to invest in digital technologies, while the digitization process is considered a new opportunity for the development of the agri-food sector; and when asked what benefits they expect from digital transformation, 59.7% of the respondents state that the benefits will be a simplification of work processes and/or saving of resources, 46.8% believe it will lead to increased productivity, 44.6% believe it will reduce costs, 39.1% believe it will benefit the quality of production and supply chain, 25.6% believe it will reducing the negative impact on the environment.

According to most respondents, digital transformation will have a positive impact on productivity growth.

The role of the government and what initiatives the government has taken so far to support digital transformation in small and medium-sized enterprises in Georgia should be highlighted separately. Creating an environment for the digital transformation of small and medium-sized enterprises operating in traditional sectors of the economy should include a range of specialized technological and business consulting, which can be provided by competence centers, the cooperation of the private and public sectors in country-wide initiatives (e.g. skills development and generic standards), as well as a complex financial framework to support SMEs. The state provides support in different directions, the two main platforms that contribute to the financing and support of projects in Georgia are "Enterprise in Georgia" and the Innovation and Technology Agency in Georgia (GITA), within the framework of which a number of projects have already been financed. In addition, under the Georgian Government program 2021 - 2024 "for the construction of the European state", it is highlighted that the implementation of digital and modern technologies in the business sector will continue, which will allow entrepreneurs to benefit from modern and effective digital services [24]. At the same time, the government promotes and ensures the holding of forums and conferences in the direction of digital transformation. For example, in the current year 2023, the Digital Transformation Forum was held in Georgia for the second time to discuss future perspectives in the framework of digital transformation.

Conclusion

In Georgia, as mentioned in the article, small and medium-sized enterprises account for the largest part of the Gross Domestic Product, and their performance is vital for economic development and the well-being of the population. In addition, the agricultural sector is one of the leaders, therefore, the SMEs of the agricultural sector must have all the prerequisites that modern development requires. The most pressing issue is the promotion of digital transformation, which saves time and multiplies the achieved results, while at the same time, the optimal arrangement of assets and the provision of innovative technological development take place.

To identify the factors and opportunities hindering this global irreversible process, we conducted an analysis and research, as a result of which it was revealed that the most pressing problem lies in financial access, unequal distribution of financing, and the duration of the process of introducing new technologies. However, Internet access and experience are still worth noting.

The ways to overcome the mentioned problems lie in the sustainability of digital transformation in small and medium-sized enterprises, which means the continuous process of introducing innovations, building models in the work process, training, and education to raise the competencies of employees and bring them into compliance, and increasing access to funding sources and proportional distribution of funding. Also, adopting EU best practices in this way will help build a mature information and communication technology innovation and start-up ecosystem with well-functioning support organizations in Eastern Partnership countries. At the same time, it is very important to coordinate the work of small and medium-sized enterprises, the state, and all involved and interested parties and harmonize local work specifics and international best practices in the process of sustainable development of digital transformation.

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