



ISET

International School of Economics at TSU
Policy Institute



Information
Technology
Association of
Georgia

Survey on the Impact of COVID-19 on the ICT Sector in Georgia

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Table of Contents

Table of Contents	2
Executive Summary	3
Introduction	5
Literature Review	6
Methodology	7
Questionnaire.....	8
Instruments of the Survey	9
Results.....	9
Characteristics of Respondent Companies	9
The impact of COVID-19 pandemic on ICT firms’ revenues.....	11
The impact of the COVID-19 pandemic on companies’ partnerships and new opportunities	13
The impact of COVID-19 pandemic on current and planned investments in technology, IT spending.....	14
The impact of COVID-19 pandemic on retainment and hiring the workforce in the ICT sector.....	16
The impact of COVID-19 pandemic on the overall competition level in the ICT sector	18
Assessing the willingness of the ICT firms to participate or intensify engagement in dual VET programs	20
Analysis of factors affecting ICT company’s ability to do business	22
COVID-19 Support Proposed by the Government.....	24
Identifying government programs supporting ICT sector and describing mechanisms of receiving support.	24
COVID-19 Support Needed for ICT Companies.....	26
Annex 1	32
Annex 2	34

Executive Summary

The development of ICT (Information and Communications Technology) service sector is one of the strategic priorities for the Georgian economy. The sector is characterized with unique potential to contribute to the country's long-term growth, create positive productivity spillovers into other industries and, in the longer term, transform the existing industrial structure of Georgia by moving away from primary production and primary exports. Like most other sectors of the Georgian economy the ICT sector has been impacted by the COVID-19 pandemic. Currently, however, there is only very limited understanding of the ways in which the sector has been impacted, what are the top-most concerns and constraints faced by ICT firms in Georgia, what the industry practitioners see as a way forward and which government policies could be helpful. The survey of ICT firms conducted by ISET Policy Institute with the support from the Information Technology Association of Georgia (ITAG) and the PSD TVET South Caucasus Programme (GIZ) aims to close this gap. Below we outline the most important and interesting takeaways from the survey conducted in August-September 2020 on a sample of companies representing ICT services sub-sectors in Georgia.

Effect on business revenues: 68% of companies stated that their revenues decreased compared to last year, and for over one fifth of the companies the decrease exceeded 40 percent. Not surprisingly, the firms specializing in retail and wholesale of ICT equipment suffered the most, while half of the firms in software publishing seem to have increased their revenues relative to last year. For most of the firms the decreased demand and cancellation of contracts from local (Georgian) clients drove the change in revenues.

Effect on current investment plans: over half of the firms in the sample reported that they had to postpone new investment plans for 2020. Once again, the retail and wholesale trade sub-sector was the most negatively affected, while a quarter of software publishing and half of telecommunications firms surveyed increased planned investment this year.

Effect on future investment plans: Encouragingly, the future investment plans did not change for the majority of surveyed companies. About equal shares (30% and 28% respectively) said they will either decrease new technology investment or, on the contrary, increase investment in 2021.

Retaining qualified workforce: Majority of the companies reported that their ability to retain qualified workforce did not change with the pandemic. However, about 1/5th of the companies reported that it became harder to retain workers. Among the companies (12% of surveyed) who reported that it became easier to retain qualified workers, majority are those that have a share of female staff over 50%.

Hiring qualified workforce: Once again, majority (56% of firms) reported that the pandemic did not affect the ability to hire qualified workforce. The remaining 44% were split almost equally between those who said it became more difficult to hire qualified workers, and those who said it became easier to hire.

Plans for hiring new workers in 2020 and 2021: most of the firms reported that their 2020 hiring plans were not affected, while 30% said they planned to hire additional staff this year. For 2021, majority of companies plan to hire more workers (51%) and 35% state that the number of staff and their working hours will remain the same. Only small percentage of firms (around 7%) plan to fire core staff or send them on unpaid leave in 2020, while 7% plan to let go of non-essential staff. Similar picture is observed for 2021. This is encouraging, as it suggests that ICT sector in Georgia is still in an active development and expansion phase.

Willingness to engage in dual TVET programs: Only very few companies reported that they are now participating in dual TVET programs. Of these companies the average satisfaction score is 7.7 out of 10. No companies reported that they were dissatisfied with the programs. Two-thirds of the currently participating companies with scale up their participation either significantly or moderately. They see the program as a useful tool for recruiting new talent. Of those companies who are not part of dual TVET program currently, 68% would be willing or very willing to engage in the future, 6-10 on the 10-point scale (with 15% very willing to engage). Only 13% of the companies have no interest in TVET participation (reported 1 on a 10-point scale). 21% of the answers were in the range of 2-5 on the 10 points scale.

Constraints to doing business: Macroeconomic conditions and related difficulties (exchange rate uncertainty, inflation, taxation) was the highest scoring constraint for companies overall (average score for this constraint was 3.1 out of 5 on average). This was especially true for retail and wholesale ICT equipment trade companies. Late payments from clients and uncertainty about future demand were the second highest-scoring constraints on average (3 out of 5). The least concerning factors were: the disruption of supply chain; space and equipment (technology) constraints; impossibility to fulfill health and safety regulations.

Governmental measures: About half of the companies stated that *postponing tax payments* would be necessary to either avoid big cuts or avoid a bankruptcy. *Access to low interest rate loans* was reported as necessary by 47% of the companies, while 30% said it would not help them. The relevance of low interest rate loans varied to a great extent by sub-sector. Only a third of companies said that *assistance in paying salaries to the employees* would be necessary. About a third stated this will not be a big help for their company. Among suggestions for government intervention were: supporting clients ICT companies to avoid big demand shocks; improving access to finance and low interest rate loans; reducing taxes for ICT companies; providing further trainings for ICT companies; promote export of IT services, etc.

Among main risks, the respondents mentioned: bankruptcy of clients; further lockdowns; difficulties in finding qualified workforce and the competition from the banking sector for qualified workers. Lack of investment in process automation by companies; lack of technological development and R&D in the country. Political instability and lack of proper government policy for IT development, etc.

Among main opportunities: exporting services abroad; supporting other companies by offering online sale platforms, education and trainings, promoting importance of cloud service, improvements in the areas of artificial intelligence; remote work and the opportunities that it offers for ICT companies; full digitalization process, etc.

Introduction

The Georgian economy has been decimated by the COVID-19 pandemic in ways that are yet to be fully understood. A significant sector to the economy is the ICT (Information and Communications Technology) sector. The development of the ICT sector is strategically important because of its potential to impact productivity growth in other sectors of the economy. Studies have shown that deepening of ICT infrastructure has positively impacted economic growth in EU countries in 2000-2017¹. Similar results are observed for developing economies, although, as studies caution, there is limited evidence that growth could be affected by more in developing economies due to the “leapfrogging” effect².

For Georgia one of the goals in ICT sector development is to encourage the participation of the sector in VET (Vocational Education Training) in order to promote private sector development and broad-based, sustainable economic growth. In particular, German development cooperation promotes this goal via the Private Sector Development and TVET programme in South Caucasus.

The aim of the survey undertaken by ISET-PI with support from Information Technology Association of Georgia and PSD TVET South Caucasus Programme, is to analyze the impact of the COVID-19 pandemic on the strategically important ICT sector in Georgia. In particular, the survey aims to assess the impact of the pandemic on ICT sector’s revenues, technology investment plans, general IT spending, the retention and retraining of a qualifying workforce for the sectors’ recovery, etc. Another goal is to assess the sector’s readiness to engage/continue/intensify engagement in the dual VET system as well as to provide insights into the barriers to such engagement based on the specific challenges/needs of the companies in the sector.

The literature review section below provides a brief discussion of the state of the ICT sector development and its challenges in Georgia prior to COVID-19 pandemic. The next section details methodological approach of the study, followed by the discussion of the results and the concluding remarks.

¹ Toader, E.; Firtescu, B.N.; Roman, A.; Anton, S.G. Impact of Information and Communication Technology Infrastructure on Economic Growth: An Empirical Assessment for the EU Countries. *Sustainability* **2018**, *10*, 3750.

² Niebel, Thomas. ICT and economic growth – Comparing developing, emerging and developed countries. *World Development*, Volume 104, **2018**, Pages 197-211,

Literature Review

ICT sector development is regarded as one of the premises of Georgia's economic development. Despite promising activities in this field due to increasing state and donors' support, the gaps remain. According to the World Economic Forum's Networked Readiness Index (2019), which evaluates the propensity of the country to exploit new opportunities created by ICT sector, Georgia is ranked 68th out of 121 nations and stays behind Armenia, Ukraine and Moldova. Georgia stands at 84th place in its Economic Impact pillar of the index, where much should be done to improve the country's standing for Medium and High-tech Industry (94) and high-tech export (88). It also shows poor performance in the Future Technologies sub-pillar, depicting somewhat lower levels of Availability of Latest Technologies (103) and Company Investment in Emerging Technology (91)³.

In GIZ's Georgian ICT cluster potential evaluation study⁴, information-technology⁵ sub-sector was identified to be less developed in Georgia compared to the communications⁶ sub-sector, the latter serving as an enabler for the new product and service development in ICT industry. The telecommunications sector was also regarded as the most developed sub-sector of ICT in G4G/USAID Georgia's ICT sector assessment report⁷. Georgia's communication sub-sector is characterized by gradual retail revenue growth during the period of 2010-2019. Trends show that revenues are increasing for innovative technologies. For example, revenues for fixed telephone services had been decreasing since 2010 annually on average by 13%, while revenues for internet service providers during same period had been increasing annually on average by 15%. Revenues are increasing for mobile service providers as well. The increase is mainly caused by mobile internet usage, while revenues from voice calls are decreasing annually on average by 10%, mostly due to alternative communication platforms such as Skype, Messenger, Viber, WhatsApp, etc.⁸

While the COVID-19 is expected to bring many opportunities for ICT companies, it would be particularly important for them to both respond to the new challenges caused by pandemic and resolve already existing challenges in this sector. Until now, the expansion of Georgia's ICT sector has been mainly constrained by low-level ICT education and skills, limited market size, access to finance problems, and underdeveloped ICT facilities. Based on GIZ's ICT sector study mentioned above, the greatest challenges for growth identified by company executives (mainly focused on firms operating in information-technology sub-sector) are found to be limited market size, sales, lack of sales force (32%); lack of elementary technology production services (20%); lack of qualified staff (16%); and limited

³ Network Readiness Index, World Economic Forum (2019).

⁴ Georgian ICT Cluster Potential: Strengths, Weaknesses and Internationalization Opportunities. GIZ (2017)

⁵ E.g. software and mobile application development, electronics and hardware, software sales and integration, support, and IT services.

⁶ E.g. mobile, fixed-line phone, internet, TV and radio broadcasting.

⁷ Innovation and Technology in Georgia. USAID/Governing for Growth (G4G) in Georgia (August 2017).

⁸ Data Source: National Communications Commission.

experience in international markets (8%), having very limited intelligence on other markets. In addition to the identified challenges, the lack of access to seed financing was considered as one of the obstacles for ICT firms, particularly for startups. Even though this constraint was expected to be somewhat mitigated through the introduction of new state support programs for startups, COVID-19 pandemic challenges the situation more. The study also highlights the advantage of domestic companies in terms of lower cost of hardware production against international bands, however due to the limited local facilities and general lack of professional staff, large scale production is constrained in Georgia. Lack of qualifications in addition to high staff turnover is also identified as a weakness of software production.

Underdeveloped vocational education system which largely affects ICT skill development in Georgia has been discussed for a long time. The problem was addressed in the “e-Georgia strategy and action plan 2014-2018“, underlining the particular need for ICT skills development through reforms and investments in the educational offerings at schools, at higher education institutions as well as in institutions providing vocational trainings⁹. Other challenges in vocational education system regarding ICT development include match-making between collages and private companies as well as institutionalizing dialogue between those two. Such environment creates obstacle for further development of the dual IT vocational education system, which is a well-known and useful practice for Germany.¹⁰

Methodology

The data was collected via online and telephone survey of mainly small and medium-size companies in the ICT services sector in Georgia.

The project team utilized both the list of ITAG member companies and ICT cluster, as well as Geostat database of companies based on the classification of ICT services sector (Table 1).

Table 1. Codes of the relevant economic activities fulfilling the official definition of the ICT services sector

	Code	Sector title
ICT Services	47.4	Retail sale of information and communication equipment in specialized stores
	46.5	Wholesale of information and communication equipment
	58.2	Software publishing
	61	Telecommunications
	62	Computer programming, consultancy and related activities
	63.1	Data processing, hosting and related activities; web portals
	95.1	Repair of computers and communication equipment

⁹ E-Georgia Strategy and Action Plan 2014-2018.

¹⁰ The Potential for Dual Vocational Education and Training in Georgia. GIZ

Source: Eurostat

For analytical purposes the companies were grouped into the following 5 sectors (corresponding codes in parenthesis):

- 1) Trade of information and communication equipment (47.4 and 46.5)
- 2) Software publishing (58.2)
- 3) Telecommunications (61)
- 4) Programming, data processing, consultancy, hosting and related activities; web portals (62, 63.1)
- 5) Other activities (including repair of computers and communication equipment, integration of security systems, IT training and education, etc.) (95.1, other).

The 5th category included all repair companies, as well as companies in remaining sub-sectors which were not in categories 1-4. The survey took place in August-September 2020. Prior to the main task of survey administration, the pilot survey was conducted with the few pre-determined ICT companies aimed at testing the respondents' understanding of the questions to avoid the ambiguity in questionnaire.

The project team administered the online survey through bilingual Google Form questionnaire to a set of identified companies. The link to the questionnaire was disseminated via social media and via e-mail. The research team then followed up with the phone calls to survey participants to improve the response rate.

Questionnaire

The questionnaire included both closed and open-ended questions to provide detailed overview of COVID-19's impact on the ICT companies. More specifically, the following themes were elaborated in the questionnaire:

- general information about the surveyed companies
- effects of COVID-19 pandemic on ICT firms' businesses, revenues
- effects on technology investment and IT spending
- retainment and capacity development of the workforce for the ICT sector recovery
- willingness of the firms to participate or intensify engagement in dual VET programs
- financial and non-financial assistance needs for companies in post-crisis period
- major risks that the companies face
- suggestions and recommendations for crisis management

The survey content was agreed with the GIZ and ITAG. The detailed questionnaire is presented in the Appendix.

Instruments of the Survey

Prior to the main task of survey administration, the pilot survey was conducted with the few pre-determined ICT companies aimed at testing the respondents' understanding of the questions to avoid the ambiguity in questionnaire.

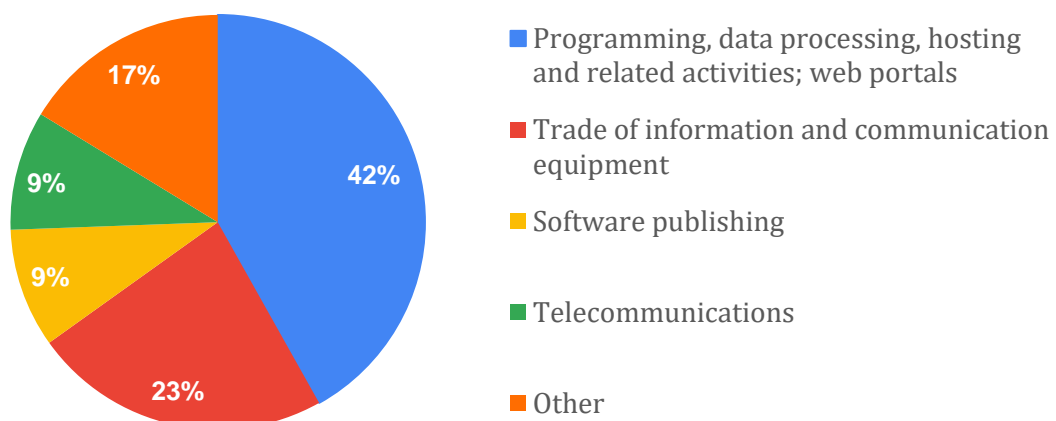
The project team administered the online survey through bilingual Google Form questionnaire to a set of identified companies. The link to the questionnaire was disseminated via social media and via e-mail. The research team then followed up with the phone calls to survey participants to improve the response rate.

Results

Characteristics of Respondent Companies

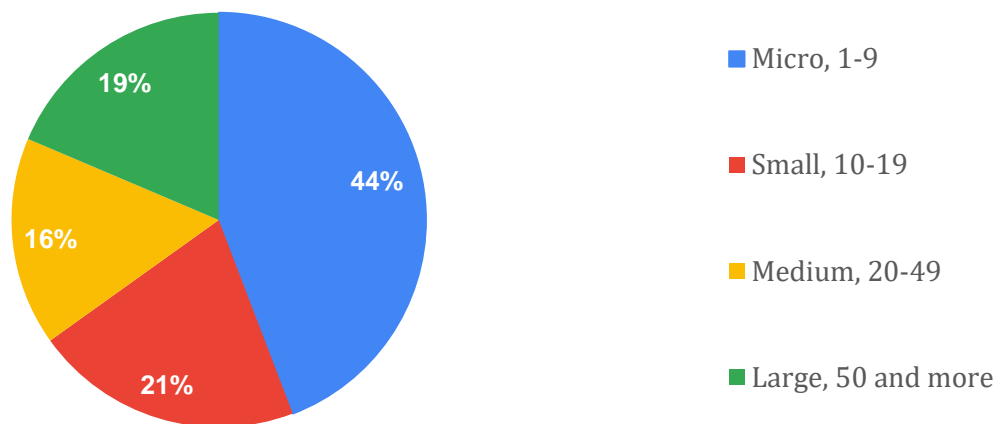
We received responses from 43 companies working in ICT services. The majority of them (42%) represent *programming, data processing, consultancy, hosting and related activities; web portals*, followed by *trade of information and communication equipment (23%)*, *software publishing (9%)* and *telecommunications (9%)* (see Figure 1). 17% of the businesses represent various sub-sectors: repair of computers and communication equipment, integration of security systems, IT training and education, etc. All these companies were grouped in *other* sub-sector. Some of the surveyed companies (7) operate in more than one sector. In such cases, company were included in corresponding sub-sector according to their main activity.

Figure 1. Distribution of respondent companies by sub-sector



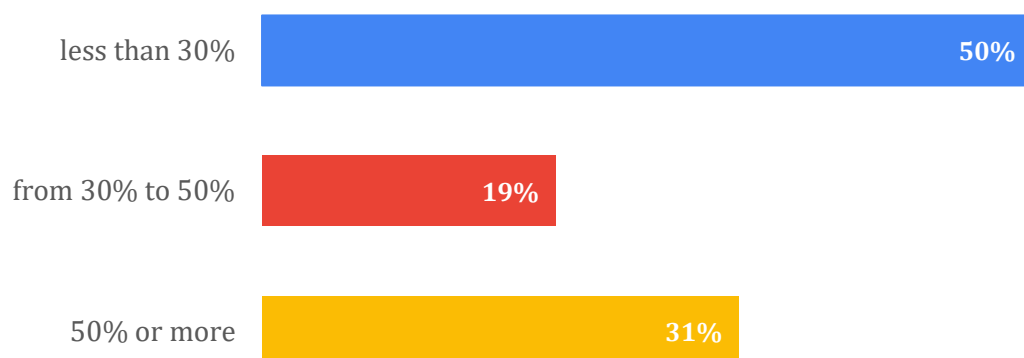
The companies could be distinguished by the size of their business using the number of employees. We identified four main categories: micro, small, medium and large¹¹ (see Figure 2)¹². According to our definition, 44% of respondent companies are micro businesses – enterprises with less than 10 employees. At the same time, the survey includes a significant share of large companies, which employ 50 people or more (19%).

Figure 2. Distribution of respondent companies by number of employees



Furthermore, we collected information on gender and age structure of employees in respondent companies. According to the results of the survey, ICT services sector seems to be male-dominated (Figure 3). Surprisingly, in 70% of the respondents average age of their workers is higher than 30 years (Figure 4).

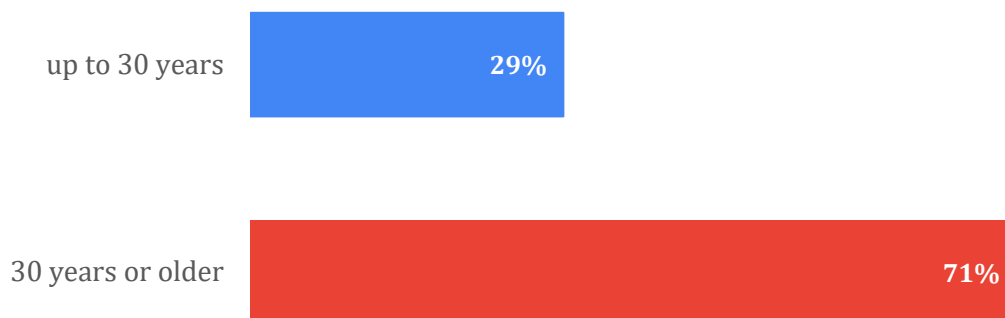
Figure 3. Distribution of respondent companies by share of female staff



¹¹ The terms are used for the purposes of the report, they do not correspond to the official (Geostat) definitions of micro, small, medium, large companies.

¹² The definition of size of enterprises used in this study does not coincide with Geostat methodology.

Figure 4. Distribution of respondent companies by average age of employees



Additional questions about education level and skills level of employees were asked during the survey. The results suggest that obtaining high education is an important criterion for job-seekers in ICT sector, as 95% of businesses indicated that on average they employ university graduates, while staff in only 5% of respondent companies (two companies) are TVET graduates. Concerning the demanded skills, 67% of companies reported that their employees are required to have prior experience and specialized education, while other 33% think that training which can be provided by the company is sufficient.

The impact of COVID-19 pandemic on ICT firms' revenues

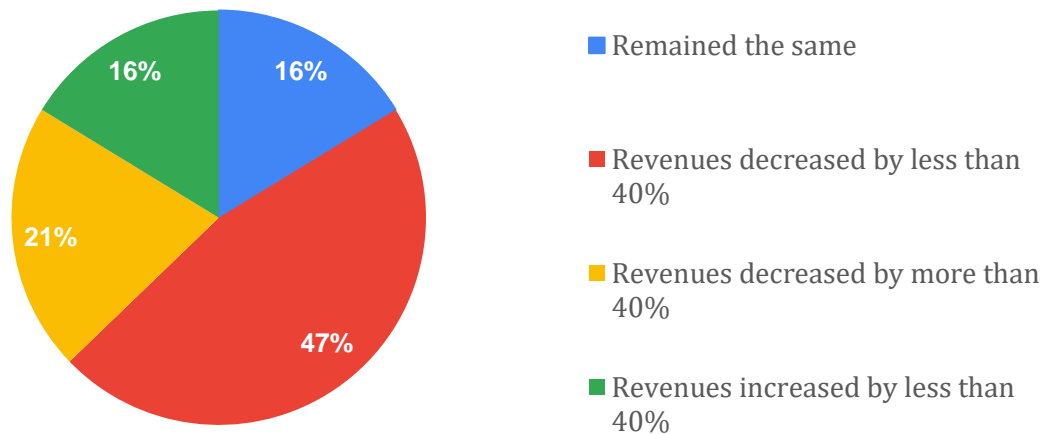
In order to assess the COVID-19 impact on ICT firms' performance, we first look at the changes in their revenues and identify the main drivers of these changes. The survey revealed that for the majority (47%) of the respondent firms, revenues have decreased by less than 40% because of the pandemic. For 21% of firms, the reduction is more than 40%. Only 16% of the firms stated that their revenues increased by less than 40% due to the COVID-19 pandemic. For the same percentage of respondents, revenues remained the same. None of the respondent companies reported that their revenues increased by more than 40% (Figure 5).

There are clear differences revealed in firms' performance if we break up these responses by sub-sectors of ICT industry. The research results show that out of the firms that did the worst during the pandemic (for which revenues decreased by more than 40%), "Trade of information and communications equipment"¹³ sub-sector experienced greater loss in revenues (90% of these firms have experienced revenues decrease, either severe more moderate). Telecommunications and Software publishing sub-sector firms performed better overall (about 50% of firms in these categories reported their revenues either remained the same or increased by less than 40 percent). About 45% of firms in

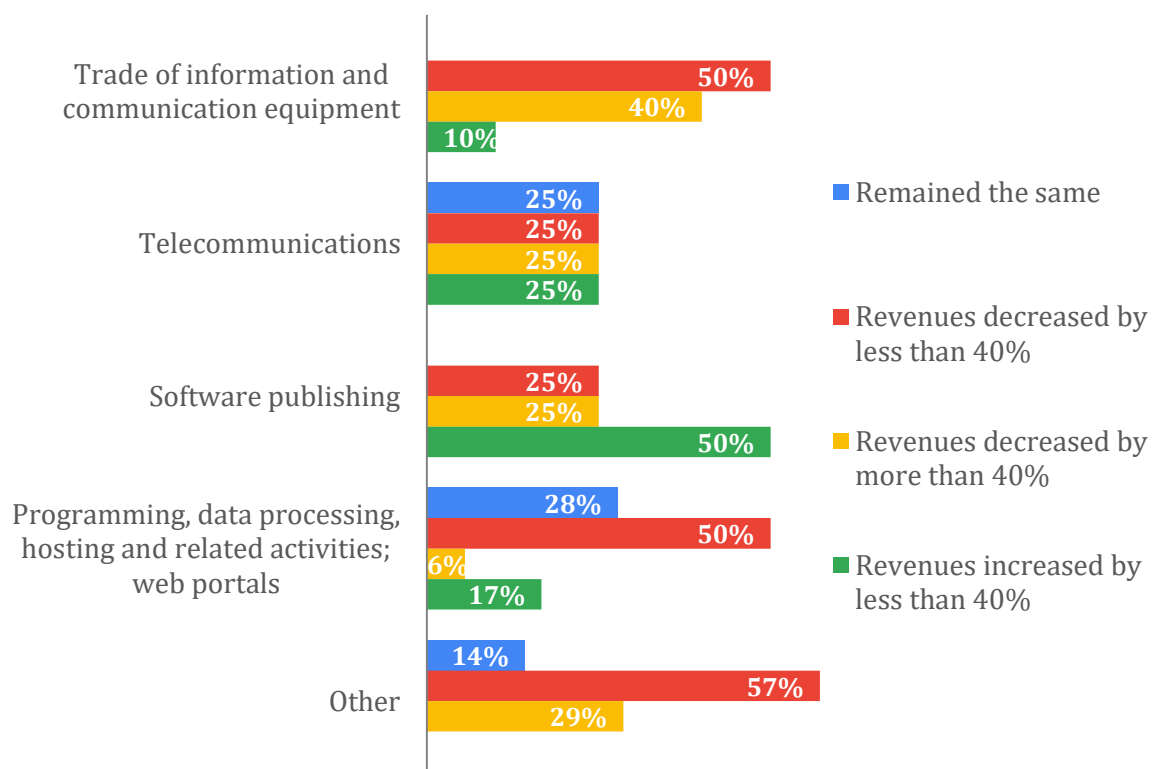
¹³ Includes the following sub-sectors: Retail sale of information and communication equipment in specialized stores; and Wholesale of information and communication equipment.

“Programming, data processing, hosting and related activities; web portals” category reported that revenues remained the same or increased.

Figure 5. Distribution of answers to the question "How did COVID-19 pandemic affect your firm’s revenues?" Overall, and by sub-sector

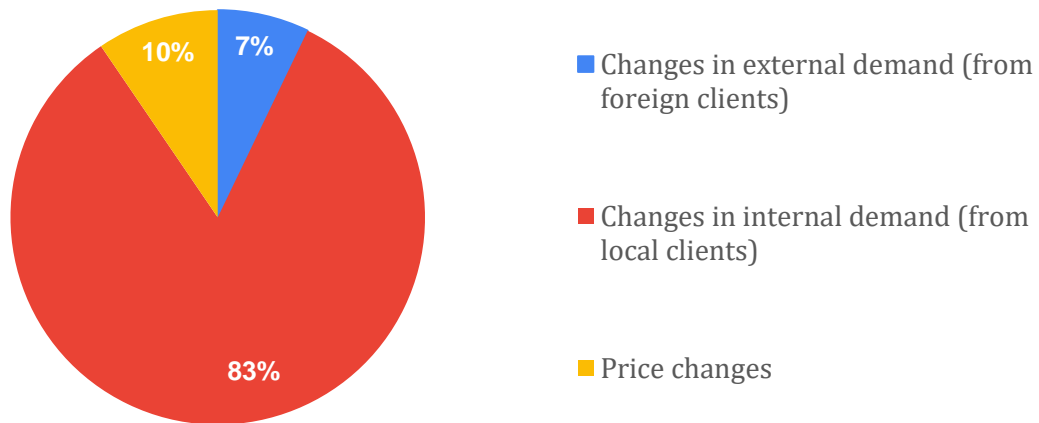


By sub-sector



The survey revealed that the impact of the pandemic on firms’ revenues was mainly driven by changes in internal demand from local clients, as stated by 83% of the respondents. For 10% of the firms, mainly price changes affected their revenues, while for only 7% of the surveyed firms it was the changes in external demand (from foreign clients) that drove the changes in the revenues (Figure 6).

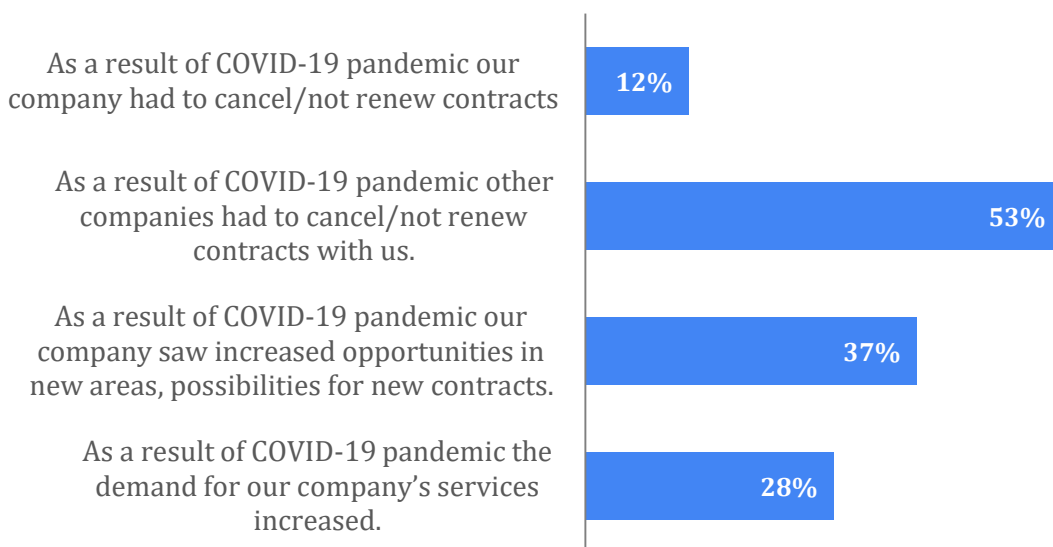
Figure 6. Distribution of answers to the question “The Covid-19 Impact on your firm’s revenues was mainly driven by?”



The impact of the COVID-19 pandemic on companies’ partnerships and new opportunities

As expected, the pandemic affected the ICT companies’ in both negative and positive ways in terms of existing partnerships and areas of new opportunities. Majority (53 % of the respondent firms) claimed that as a result of COVID-19 pandemic other companies had to cancel or not renew contracts with them. In only 12 % of the cases, the respondents stated that they had to cancel or not renew the contacts themselves. In the same time, for 37% of the surveyed companies, the pandemic lead to increased opportunities in new areas and offered possibilities for new contracts. For some of the companies (28%), the demand for their companies’ services even increased due to the COVID-19 pandemic.

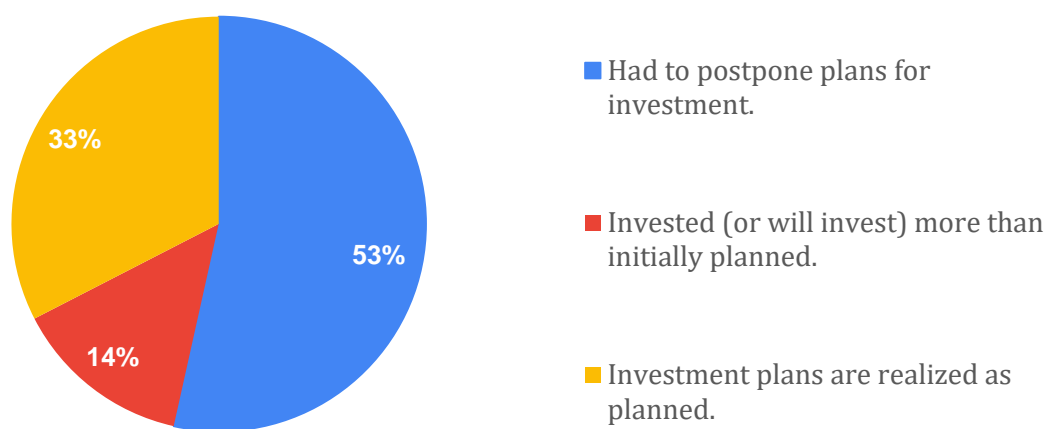
Figure 7. The impact of the COVID-19 pandemic on companies’ partnerships. Note: the respondents were able to mark more than one answer.



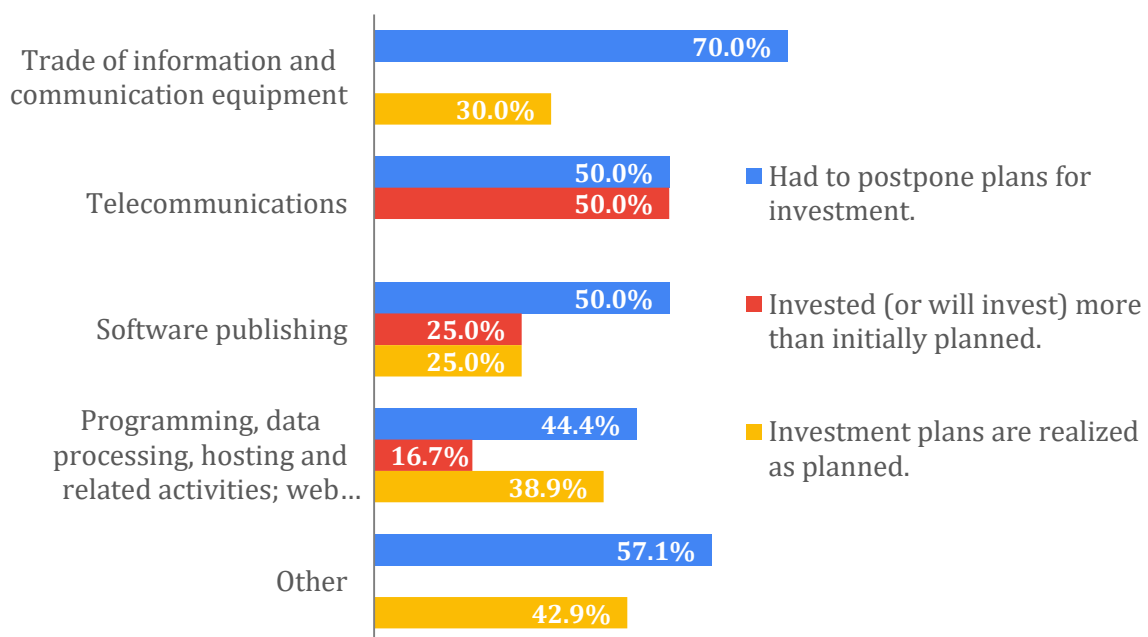
The impact of COVID-19 pandemic on current and planned investments in technology, IT spending

The study analyzed the impact of the COVID-19 pandemic on current (2020) and planned (2021) investments in technologies and IT spending of ICT companies. The survey revealed negative effects in this regard. The majority of the respondent firms (53%) had to postpone plans for investments in 2020. For 33% of the companies the existing investment plans are realized as planned. Only 14% of surveyed firms confirmed that they invested (or will invest) more than initially planned (Figure 8).

Figure 8. Distribution of answers to the question “How did COVID-19 pandemic affect your plans for investment in new technology, IT spending in 2020?” Overall and by sub-sector



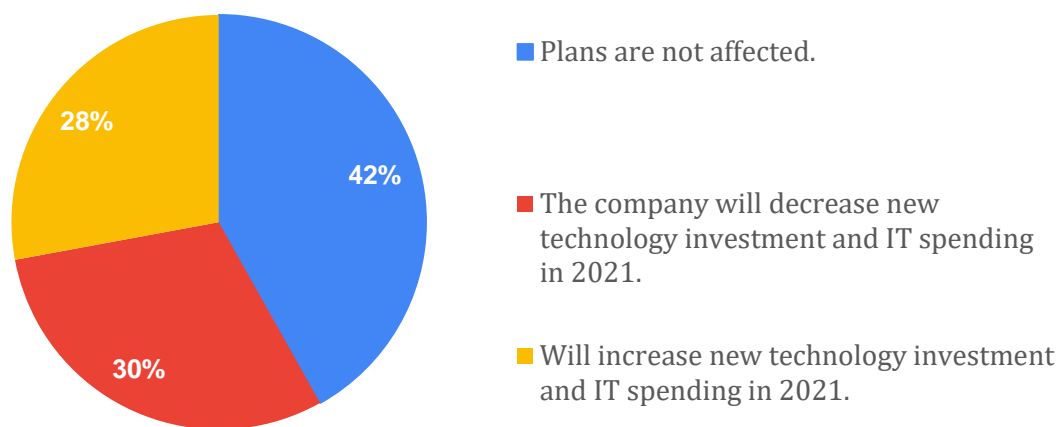
By sub-sector



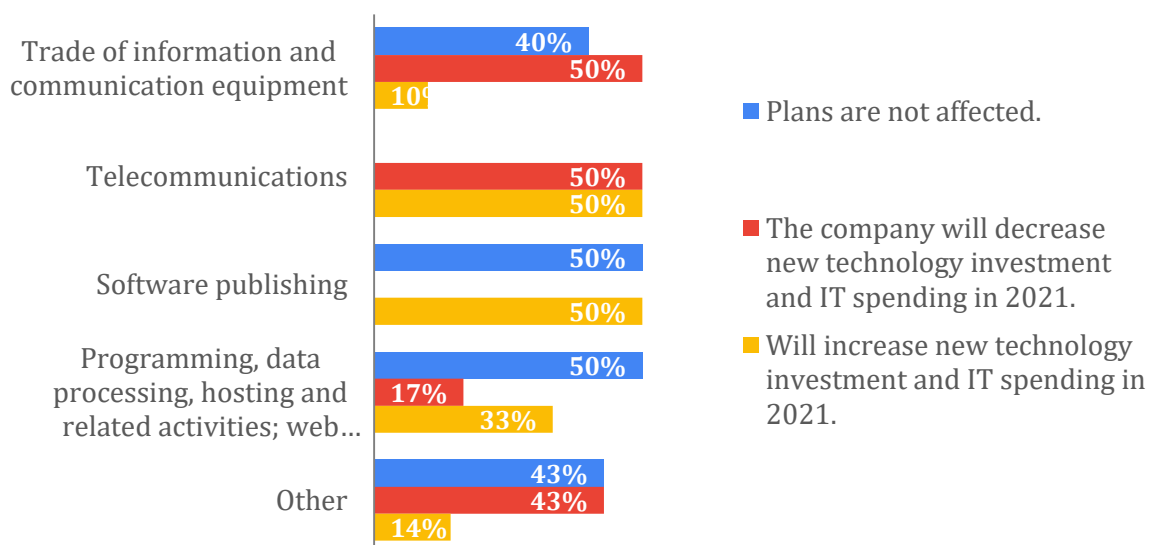
Distribution of these answers by sub-sector shows that “Trade of information and communication equipment” is experiencing the highest negative impacts on current investments due to the pandemic. Half of telecommunication firms and a quarter of Software publishing forms reported that they invested or will invest more than initially planned in 2020.

Figure 9 below shows the effects of the pandemic on planned investments of ICT sector companies in Georgia. To the question “How did COVID-19 pandemic affect your plans for investment in new technology, IT spending in 2021”, majority of firms stated that their future investment plans are not affected. 30% of companies responded that they will decreased new technology investment and IT spending in 2021. Whereas, 28% of surveyed firms confirmed that in 2021 they will increase the new technology investment and IT spending (Figure 9).

Figure 9. Distribution of answers to the question “How did COVID-19 pandemic affect your plans for investment in new technology, IT spending in 2021? “



By sub-sector:



Within the sub-sectors one can see that only 33% of the companies operating in “Programming, data processing, hosting and related activities; web portals” sub-sector are planning to increase future investments in new technologies and IT spending. While for their majority (50%) the pandemic did not affect the investment plans. The majority of companies (50%) operating in “Trade of information and communication equipment” sub-sector confirmed that their future investments will be decreased. Only Software publishing companies did not report plans to decrease investment in 2021.

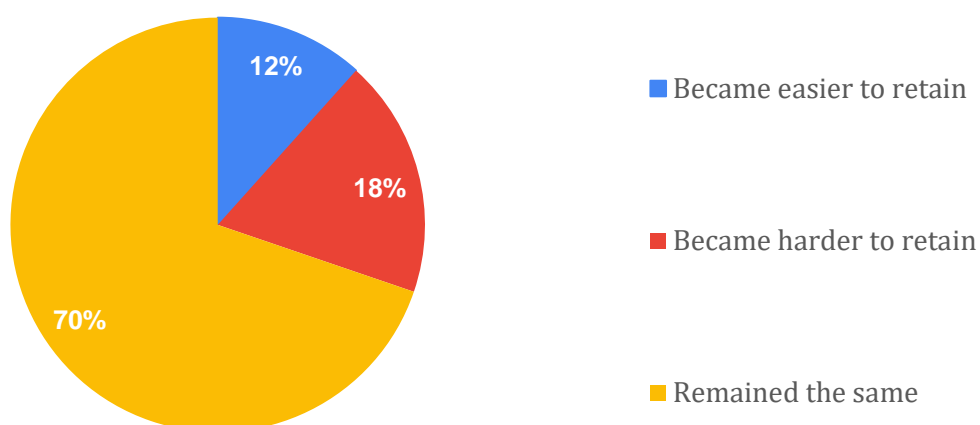
The impact of COVID-19 pandemic on retainment and hiring the workforce in the ICT sector

The study also analyzed the impact of the pandemic on ICT companies’ ability to retain and hire qualified workforce and their current (2020) and future plans (2021) for company’s staff and employees.

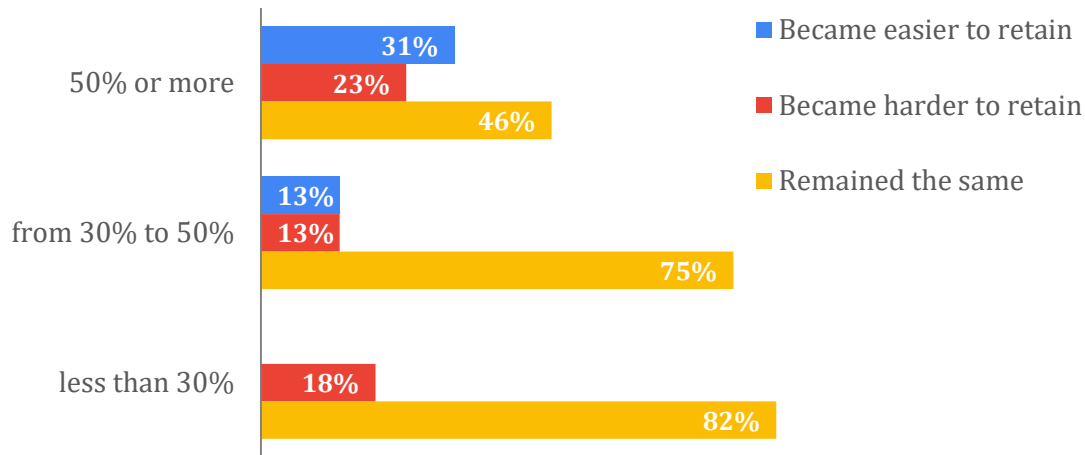
The distribution of answers to the question “How did COVID-19 pandemic affect the ability to *retain* qualified workforce in your company”, are as follows: for the majority of surveyed companies (70%), the COVID-19 pandemic did not have an effect in this regard. For 19% of the respondents, it became harder to retain qualified workforce in their companies, whereas 12% of firms claimed that it became easier to retain them (Figure 10).

Distributing these answers by the share of female employees in the company, one can observe somewhat interesting picture, majority of those companies with >50% share of female employees it also became easier to retain the qualified workforce.

Figure 10. Distribution of answers to the question “How did COVID-19 pandemic affect the ability to *retain* qualified workforce in your company?” By the share of female employees in the company



By the share (%) of female employees in the company:



As for the ICT companies' current plans for their staff and employees, the survey results show that 30% of the respondents plan to hire additional staff in 2020. The number of staff and their working hours remain the same in current year for 56% of the surveyed firms. Problems related to reducing or dismissing workforce are also evident from the conducted survey. 7% of the companies mentioned that they fired or will need to fire some core staff or ask them to go on unpaid holiday. The same percentage of companies confirmed to do the same in case of their non-essential staff (Figure 11).

ICT companies' future plans in this regard show somewhat promising picture (Figure 12). 51% of respondents plan to hire additional staff in 2021. In 35% of the survey companies the number of staff and working hours will remain the same. The share of companies that will need to fire some core staff or ask them to go on unpaid holiday in 2021 decreased to 5%. Though, 9% of the respondents will need to do it in case of the non-essential staff. 2% of the companies remain not sure about their future employment plans.

Figure 11. Distribution of answers to the question “What are your plans for your company's staff and employees in 2020?” Note: the respondents were able to mark more than one answer.

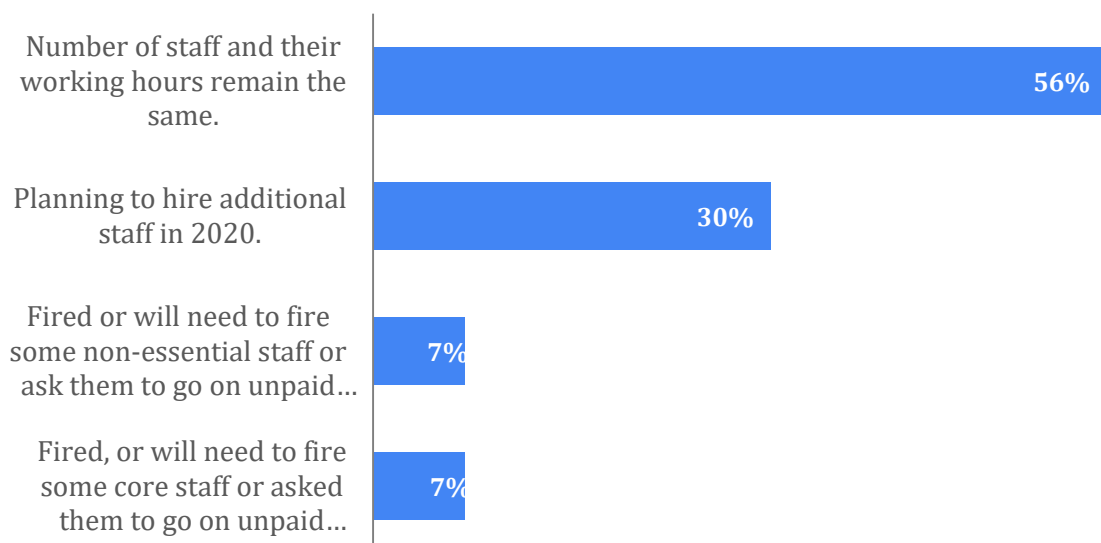
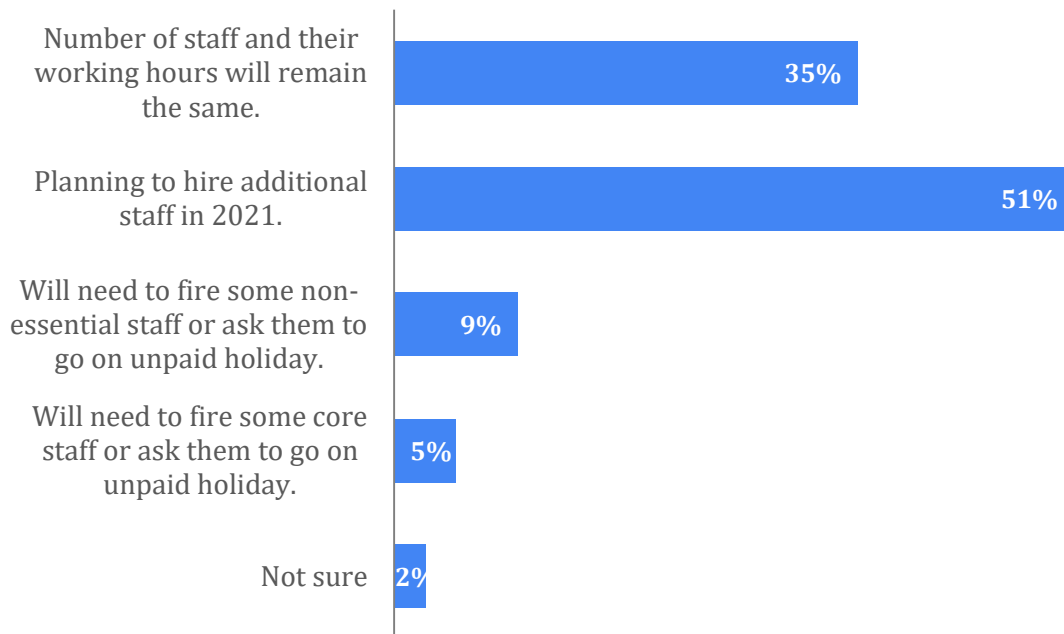
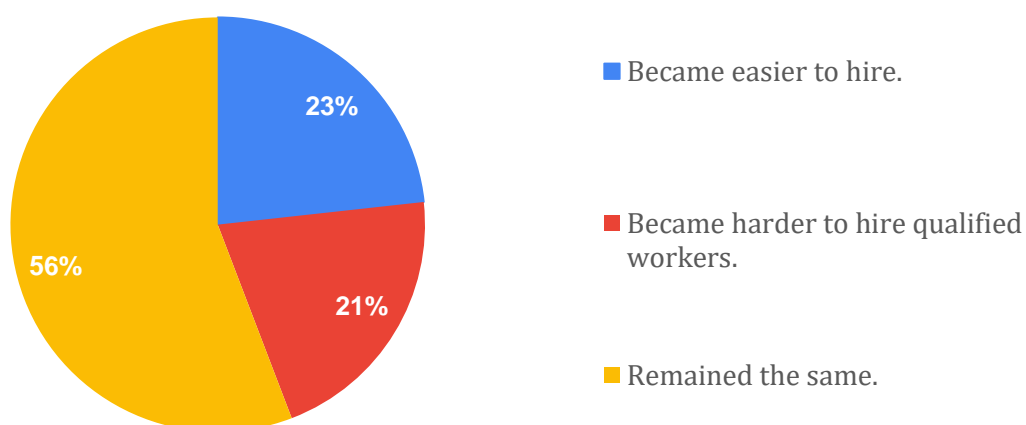


Figure 12. Distribution of answers to the question “What are your plans for your company's staff and employees in 2021?” Note: the respondents were able to mark more than one answer.



In regard to the question: “how do you think the COVID-19 pandemic affected your ability to *hire* qualified workforce?”, only 21% of the companies said that it became harder to hire qualified workforce. For the majority (56%) of the respondents it remained the same, while 23% of the firms claim that it became easier to hire qualified workforce (Figure 13).

Figure 13. Distribution of answers to the question “How do you think the COVID-19 pandemic affected your ability to *hire* qualified workforce?”



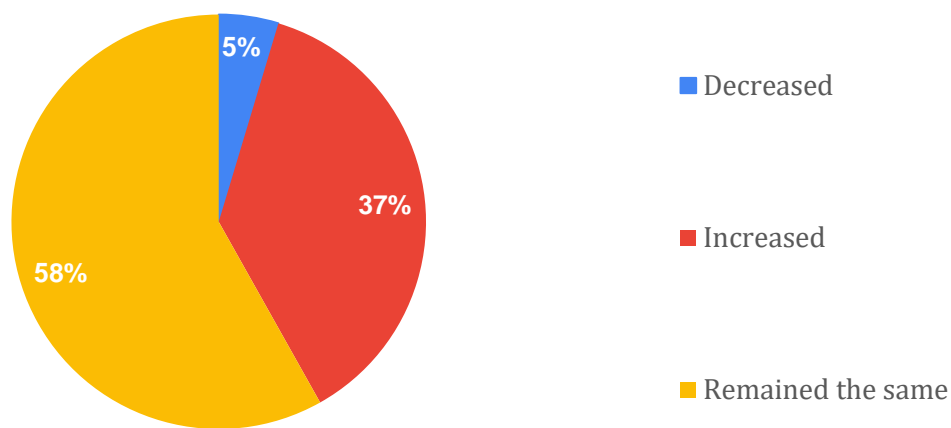
The impact of COVID-19 pandemic on the overall competition level in the ICT sector

This study also tried to analyze if the overall competition level in the ICT sector and the sub-sectors affecting the surveyed companies changed due to the crisis. In this regard, the

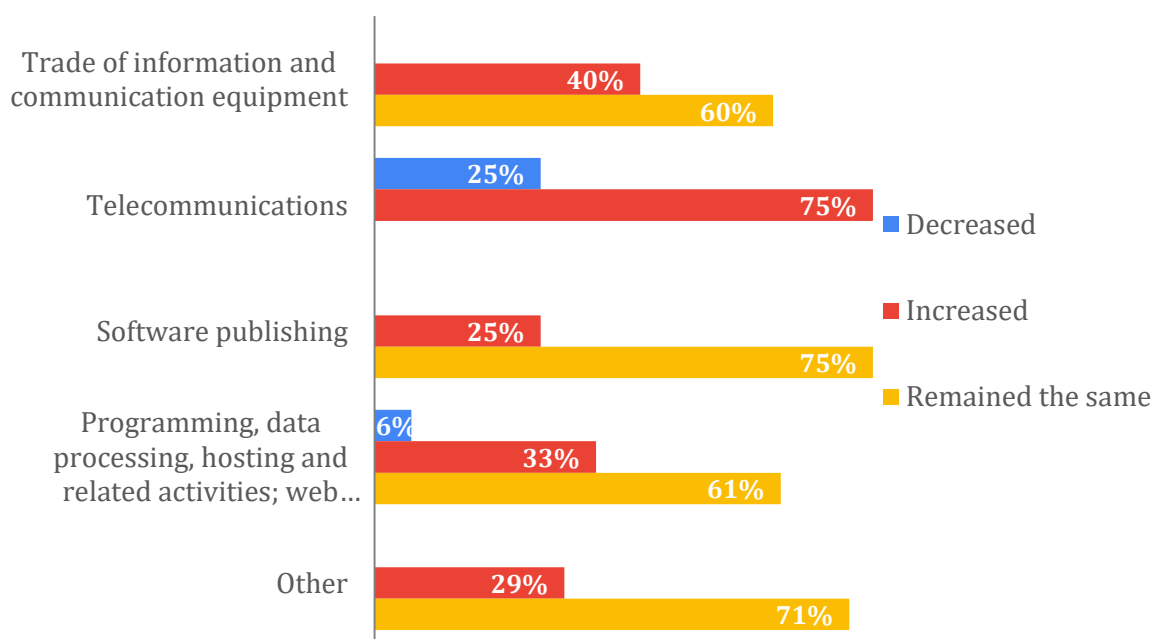
pandemic seems to be mostly neutral in majority of the cases, as 58% of the companies confirmed that the competition level remained the same. Still, there is a big share (37%) of companies that believe the overall competition level has increased due to the COVID-19. Only 5% of firms think opposite and pointed to the decreased overall competition level (Figure 14).

The distribution of these answers by sub-sector shows that the respondents referring to the increased competition level mainly operate in “Programming, data processing, hosting and related activities; web portals” sub-sector of the ICT industry.

Figure 14. Distribution of answers to the question “How did the overall competition level in the ICT sector and the sub-sector affecting your company change as a result of COVID-19 pandemic?”



By sub-sector:



Assessing the willingness of the ICT firms to participate or intensify engagement in dual VET programs

One of the objectives of this study is to assess the ICT sector's readiness to engage, continue, or intensify engagement in the dual VET system. We first distinguished between the companies that currently participate in dual TVET program and those that are not participants and later ask the respective groups of respondents about their willingness and motivation to be involved in such programs, as well as to rate their satisfaction with the program.

As Figure 15 shows, the majority (93%) of surveyed companies are not participating in dual TVET program currently.

Figure 15. Distribution of answers to the question “Does your company currently participate in dual TVET program? (Specifically, does your company have an agreement with any TVET school to provide practical training experience to their students?)”



The companies that participated in dual TVET program at the moment of survey were asked to rate their level of satisfaction with the program on the scale from 1-10, where 1 means that they are extremely dissatisfied, and 10 that they are extremely satisfied. The answers were distributed as follows with the overall average point of 7.7:

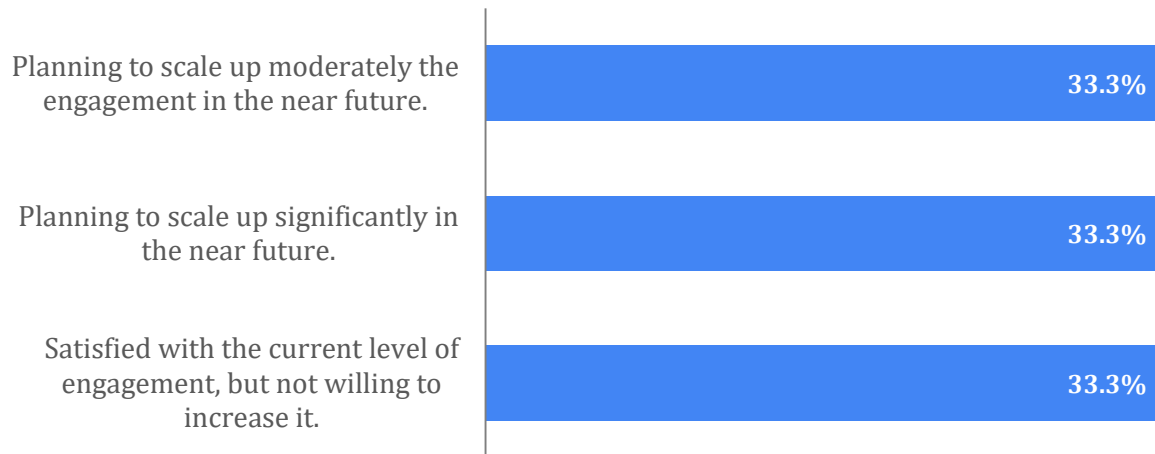
On the scale from 1-10 rate your level of satisfaction with the program (1- extremely dissatisfied, 10- extremely satisfied)

1	2	3	4	5	6	7	8	9	10
					33.3%		33.3%	33.3%	

In the regard to the question: “how willing are you to continue and/or intensify your engagement with TVET program in the near future?”, the responses of the dual program participants were evenly divided between the following responses: satisfied with the current level of engagement, but not willing to increase it; Planning to scale up significantly

in the near future; Planning to scale up moderately the engagement in the near future (Figure 16). No companies were planning to discontinue their engagement with TVET.

Figure 16. Distribution of answers to the question “How willing are you to continue and/or intensify your engagement with TVET program in the near future?”



To the question “what is your main motivation to participate in dual TVET program” all companies that currently participate in such programs said that it is a good source for future recruitment.

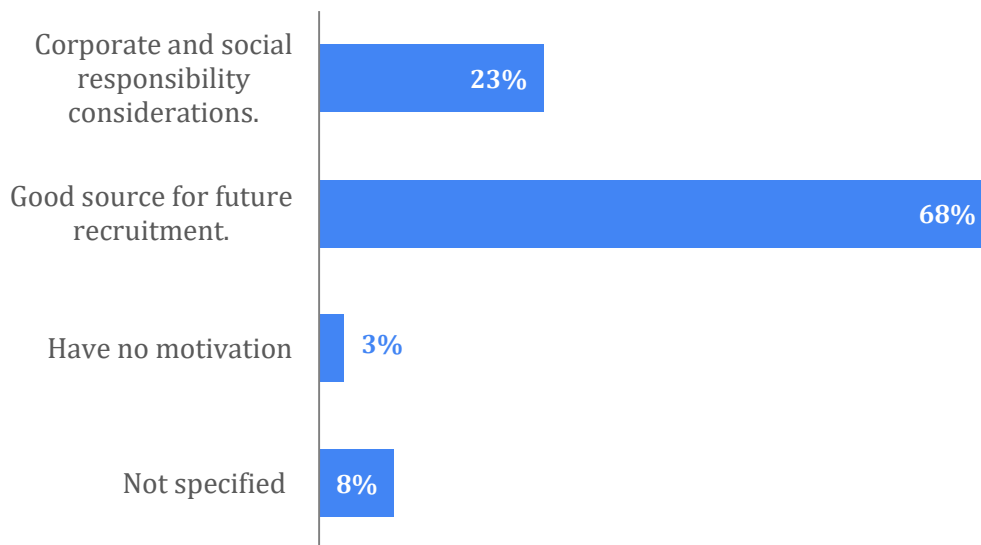
If the respondent companies did not participate in dual TVET program at the moment of survey, they were asked to indicate **on the scale from 1 to 10 how willing they were to engage in the dual TVET program, where 1 means that they have no will to engage, and 10 that they are very willing to engage.** The answers were distributed as follows with the overall average point of 6.4:

On the scale from 1 to 10 how willing are you to engage in the dual TVET program? (1- not at all willing to engage, 10- very willing to engage)

1	2	3	4	5	6	7	8	9	10
13%	3%	5%	3%	10%	8%	15%	25%	5%	15%

To the question “what is your main motivation to engage in dual TVET program?”, the majority of companies (70%) identified such programs as a good source for future recruitment. For 23% of the companies, their main motivation relates to the corporate and social responsibility considerations. 3% of the companies do not have any motivations to be involved in dual TVET program. 8% of the respondents did not specify their motivation. (Figure 17).

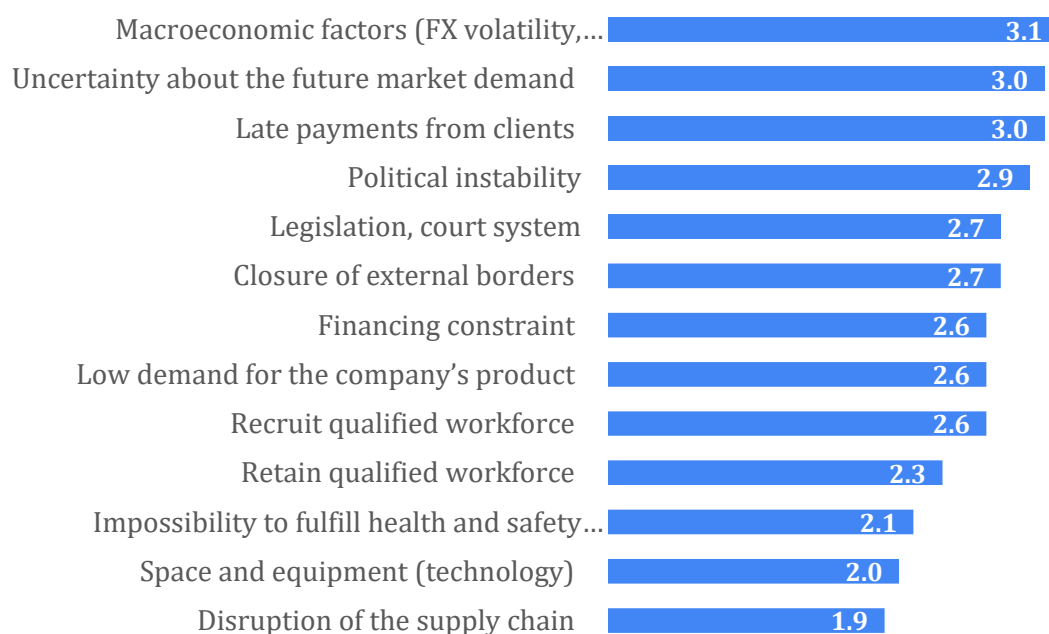
Figure 17. Distribution of answers to the question “What is your main motivation to engage in dual TVET program?” Note: the respondents were able to mark more than one answer and even specify their own motivation.



Analysis of factors affecting ICT company's ability to do business

During the COVID-19 pandemics ICT sector companies had different constraints affecting their ability to do business in the usual manner and different risks of possible disruption in business development. The survey revealed that on average, economic and political disturbances has had only limited effect on the ICT companies – all of the factors (except macroeconomic factors) scored below the median value (see Figure 18, detailed diagrams are presented in the Annex 1).

Figure 18. On the scale from 1 to 5 how is the following factors affecting your company's ability to do business, develop and grow – weighted average score (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)



The highest scoring constraint was deteriorating macroeconomic indicators (related to the exchange rate uncertainty, inflation and taxation). This was not surprising, as COVID-19 pandemic caused notable depreciation of lari against USD which created further pressure on highly dollarized companies due to currency mismatch. Furthermore, the pandemic worsened situation in the external sector (in particular, tourism) and led to a severe recession. Inflation rate exceeded National Bank of Georgia's target even before crises and this trend remained stable during the pandemic as well.

Two other factors having the most severe negative impact on ICT sector companies were late payments from client (which is again related to deteriorated economic condition), and uncertainty about the future market demand (which is connected to uncertainties related to pandemics (i.e. risks of the second wave of virus outbreak, lockdown and introducing further restrictions). The least limiting factors were disruption of the supply chain, space and equipment (technology) restrictions, and impossibility to fulfill health and safety regulation. These factors on average scored less than 2.1 out of 5.

The distribution of answers by sub-sector shows that the most limiting factors for companies operating in the trade of information and communication equipment sub-sector are deteriorated macroeconomic environment (notably high average score of 4.1 out of 5), uncertainty about future demand (average score of 3.8 out of 5), and closure of external borders (average score of 3.1 out of 5), while the least restrictive factors were ability to retain qualified workers (average score of 2 out of 5), impossibility to fulfill health and safety regulations (average score of 2.2 out of 5), and surprisingly financial constraints (average score of 2.5 out of 5).

The most limiting factor for software publishing sub-sector companies was political instability (average score of 3.5 out of 5), while the least restrictive factors were distribution of supply chain (average score of 2 out of 5), and ability to recruit qualified workers (average score of 2.3 out of 5).

Moreover, late payments from clients (average score of 3 out of 5), financial constraints (average costs of 2.7 out of 5), and macroeconomic factors were the highest scoring factors for the programming, data processing, hosting and related activities and web portals sub-sector, while satisfying safety regulations was again the least restrictive factor with the score of 1.9 out of 5.

Lastly, companies operating in the telecommunication sub-sector noted that the most restrictive factors were mostly pandemic-related: closure of borders (average score of 3.75 out of 5), and deteriorated macroeconomic indicators (average score of 3.5 out of 5). The third highly scored factor was related to the legislation and court system (average score of 3.5 out of 5), which might be related to new regulations introduced by Georgian National Communications Commission (GNCC)¹⁴. The least scored factors were financial constraints

¹⁴ Source: <https://oc-media.org/watchdogs-fear-new-communications-bill-puts-georgian-media-freedom-at-risk/>

(average score of 2.25 out of 5), and space and equipment (technology) constraint (average score of 2.5 out of 5).

Overall, the limiting factors for companies in all sectors were mostly (indirectly) related to the pandemics, while the direct measures for avoiding COVID-19, health and safety requirements were the least restricting.

COVID-19 Support Proposed by the Government

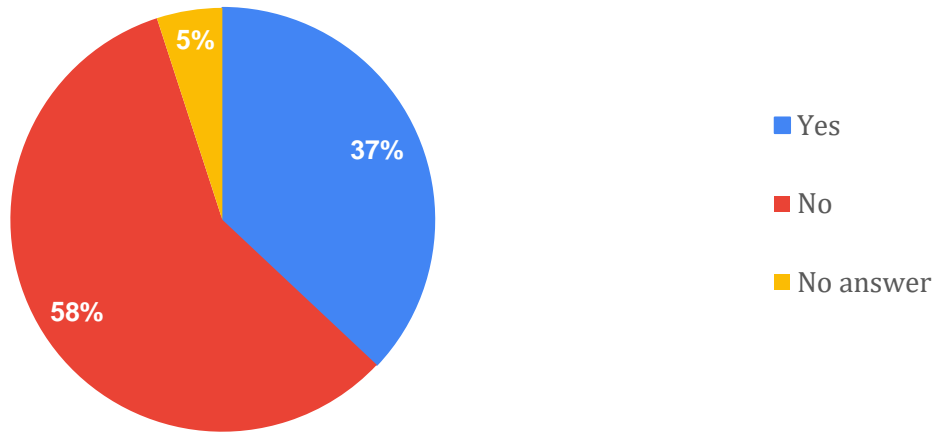
COVID-19 had severe negative impact on economic activity, external statistics, employment, and poverty. To address these challenges, the Government of Georgia adopted different measures: (1) the Unemployment Assistance Benefit (transfer of 1,200 GEL for six months); (2) Income Tax Waiver for Low-Income Citizens (exempting firms from income tax for employees with monthly salary less than 750 GEL provided workers are kept in the payroll); (3) Informal Sector Assistance (one-time benefit of 300 GEL)¹⁵; (4) Subsidies for Mortgage Loans; (5) Grants for small businesses; (6) cover utility fees; (7) One-Time Assistance of 200 GEL per Child; (8) All students who have a rating score of 150,000 from the Social Service Agency receive full tuition; etc.

Identifying government programs supporting ICT sector and describing mechanisms of receiving support.

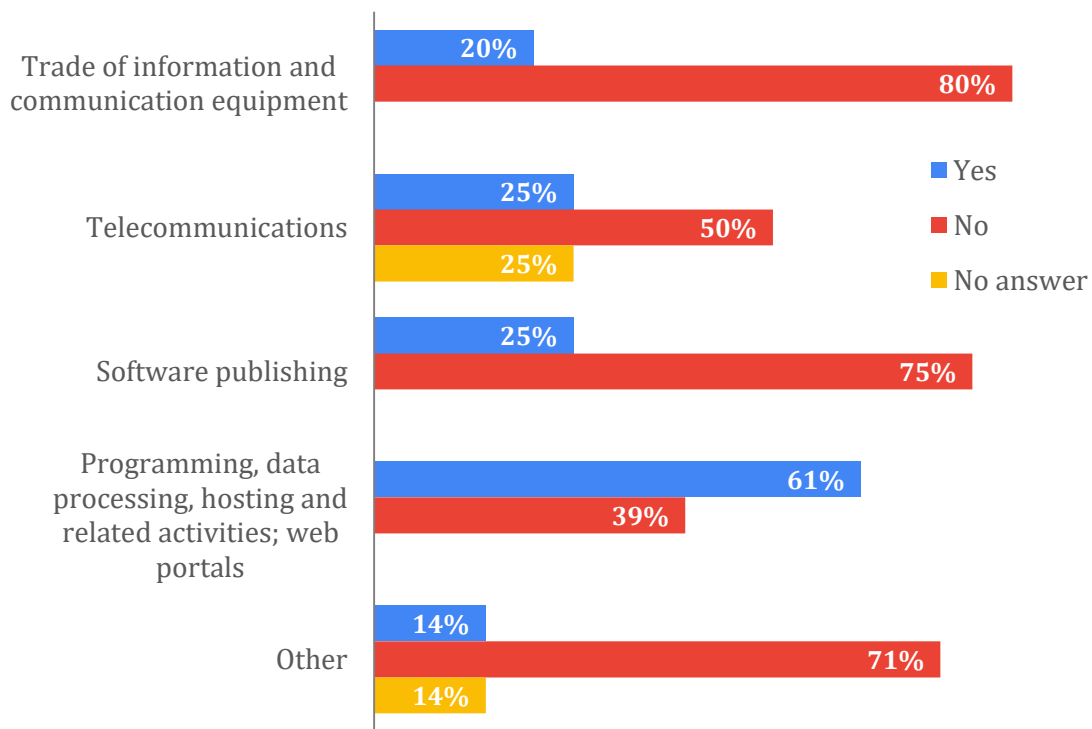
Around 30% of the ICT companies claimed that they were eligible of income tax waiver for low-income citizens (i.e. subsidizing salaries), but companies do not have enough information about the cap of the monthly salary – some respondents have mentioned 750 GEL, while the others - 1,000 and 1,500 GEL. 35% of respondents clearly indicated that they were not eligible and did not get any government support. Few companies have also mentioned financial support from government, loan payments rescheduling from commercial banks and letting companies to continue functioning during quarantine period (having exempt from regulations). Respondents' comments about this issue were similar for companies employing different number of employees, operating in various sub-sectors (answers are not sector specific).

Figure 19. Distribution of answers to the question “If your company is eligible for support, have you already received this support?”

¹⁵ Self-employed people who do not have documentation pertaining to their work status will still receive 300 GEL assistance.



By sector:



58% of the respondents mentioned that they did not receive any support from government. The distribution of answers by sub-sector shows that more than 71% of the respondents did not receive any support in the trade of information and communication equipment, software publishing and other sub-sectors. In contrast, 61% of the companies operating in programming, data processing, hosting and related activities, and web portals sub-sector received government support programs eligible for them.

Moreover, 63% of the respondents operating in the largest (employing more than 50 people) and the smallest (employing less than 10 people) companies did not get any support from government. Companies mostly employing women participated in government support programs more actively compared to companies mostly employing men. 62% of

the companies mostly employing women (more than 50%) received government support, while in case of companies mostly employing men - 67% were not able to receive any support. In particular, 5 out of 6 companies operating in the programming, data processing, hosting and related activities, and web portals and employing women more than 50% received government support.

Interestingly, 7 out of 9 companies (78%), which has lost more than 40% of their revenue during the pandemic period claimed that they did not receive any government support (60% in case of companies who lost less than 40%). While 5 out of 7 companies who gained less than 40% of revenue received government support.

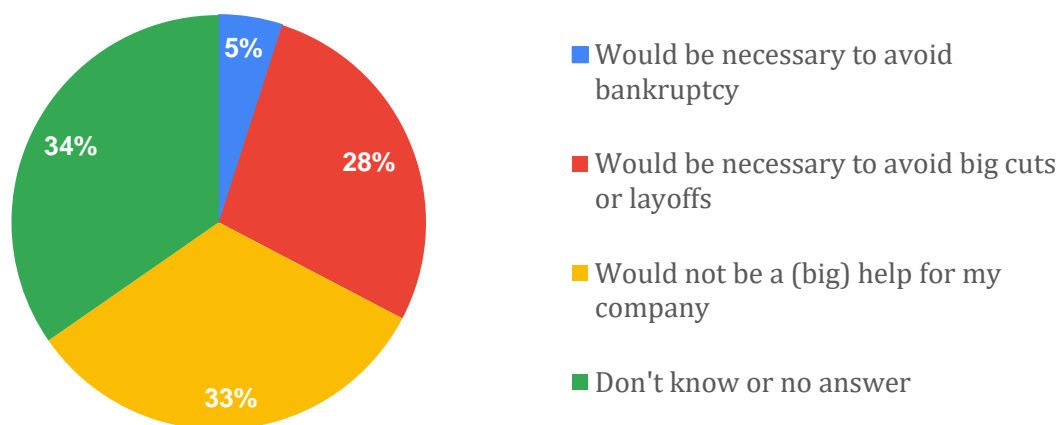
Also, slightly more than half of the respondents mentioning that financial constraints were a somewhat limiting factor for the company received government support. While companies for whom financial constraints were not that limiting mostly did not get any help from the government. There is a similar pattern for the other constraints as well.

The most frequently mentioned government agencies responsible for assistance to get government support were Ministry of Economics and Sustainable Development (MoESD), Revenue Service Agency, and Georgian National Communications Commission (GNCC) (for companies operating in the telecommunication sub-sector). The others mentioned that they automatically got support without contacting anybody (in case of the payment delay of the income tax).

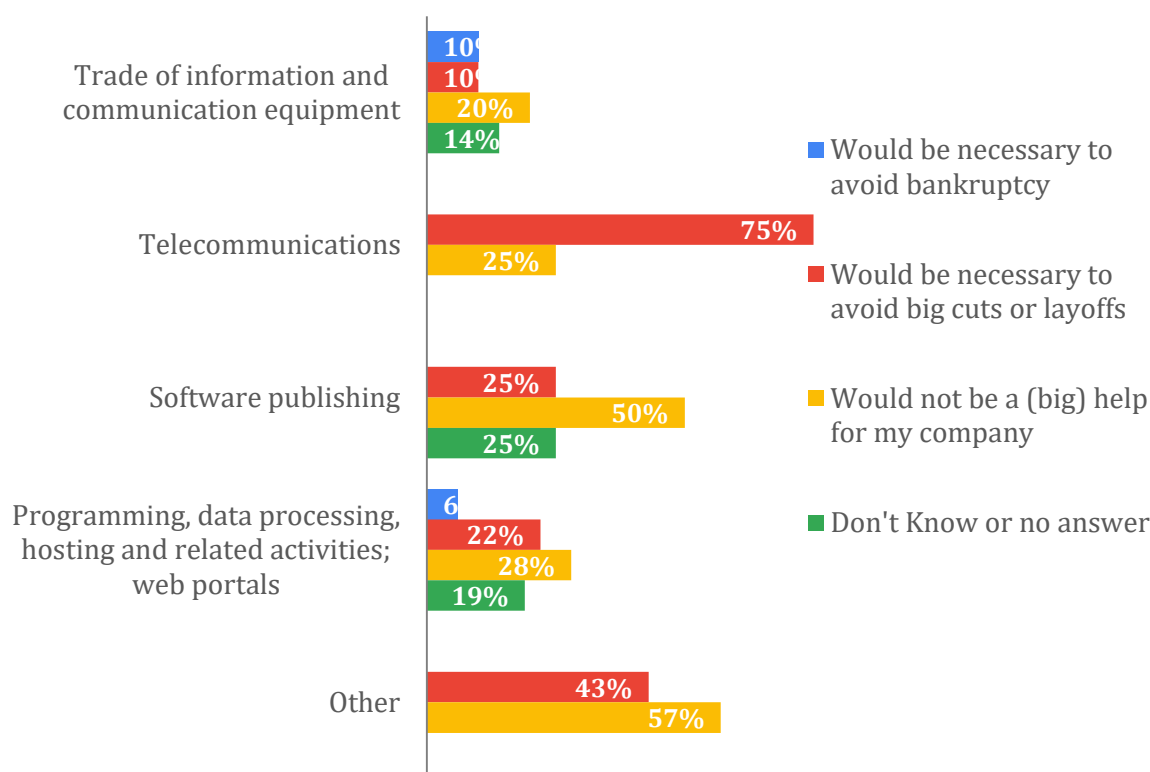
COVID-19 Support Needed for ICT Companies

The survey also aims at assess the need for different government programs for ICT sector companies. 33% of the respondents stated that assistance from government to pay a share of employee salaries would not be a big deal for them. While 28% of respondents claimed they need this kind of help to avoid big cuts and layoffs, and only 5% of respondents stated they required government support not to go bankrupted.

Figure 20. To what extent you agree or disagree with the following statements: [Assistance from government to pay a share of employee salaries]



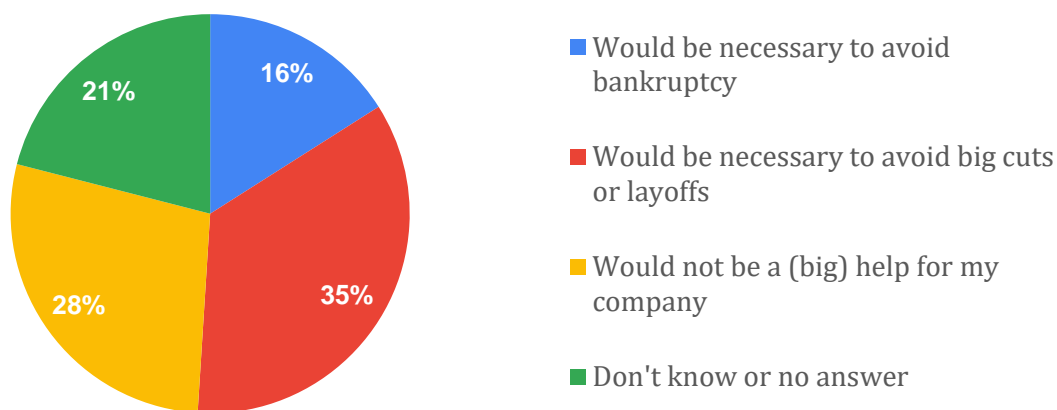
By sector:



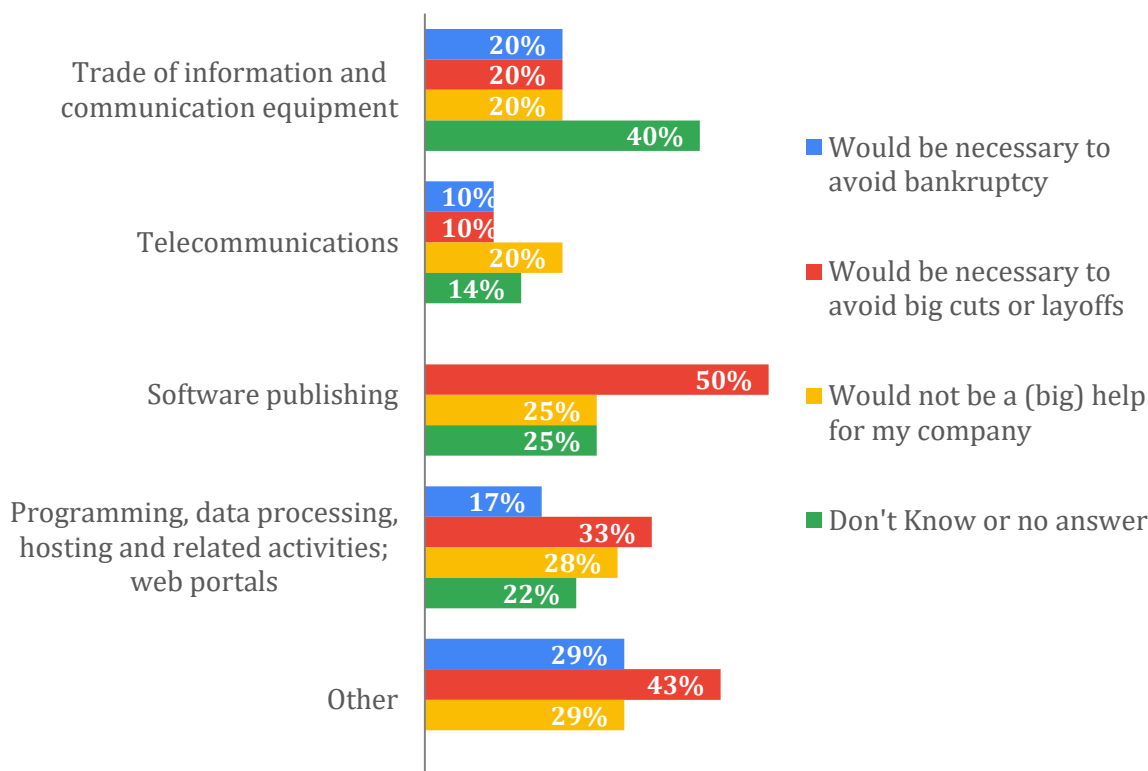
The distribution of the answers by sub-sector shows that government support would not be that essential for software publishing and other sub-sectors, while telecommunication sub-sector would have notable risk of big cuts and layoffs without further support from the government. For both large and small companies, respondents believe that government assistance would not be a big deal for a company - it is also notable that this number is quite high for companies mostly employing women, and ICT firms losing less than 40% of their revenue.

There are similar patterns in case of the government policy of proposing tax payments. 28% of the respondents believe that this policy would not be big help for ICT companies, and 35% of the respondents think that postponing tax payments would be quite helpful for companies to avoid big cuts and layoffs. However, unlike the previous case, quite large number of respondents – 16% stated that the abovementioned policy would be necessary to avoid bankruptcy.

Figure 21. To what extent you agree or disagree with the following statements:



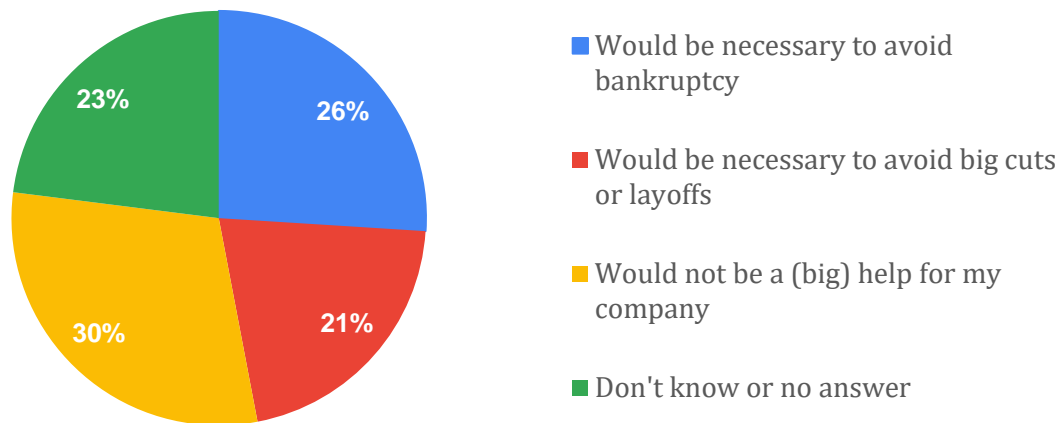
By sector:



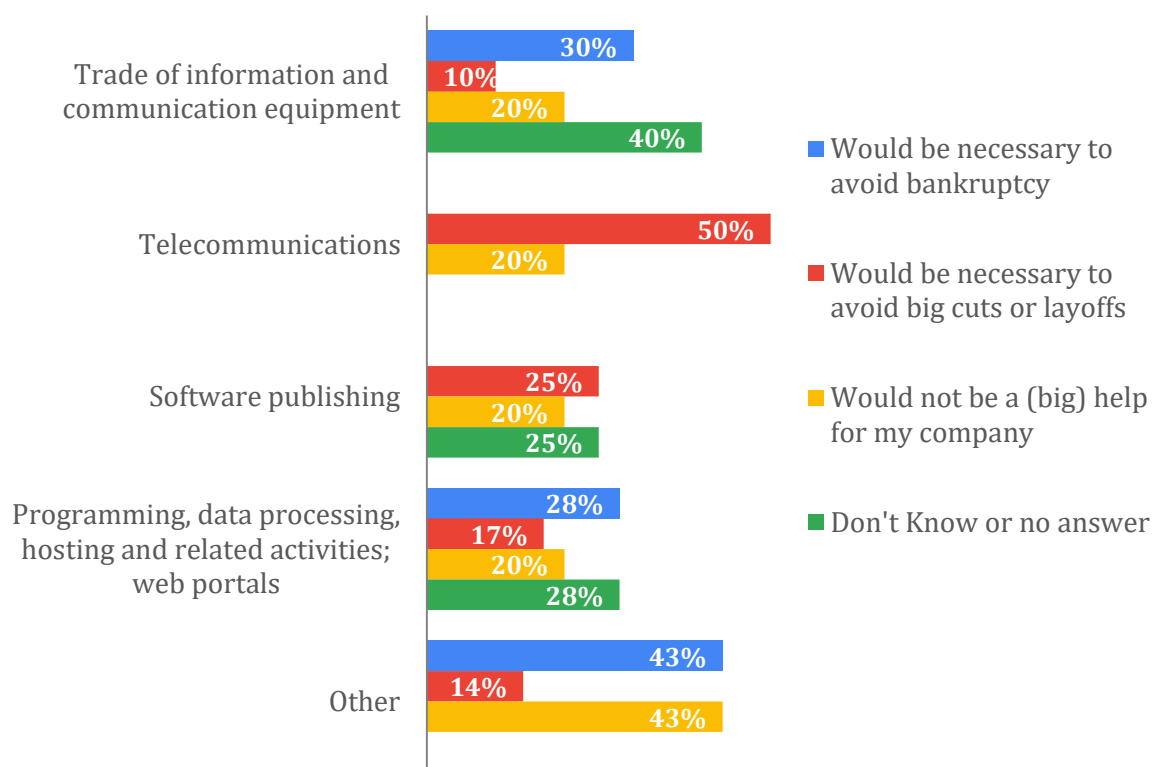
The distribution of the answers by sub-sector shows that for 40% of trade of information and communication equipment sub-sector companies would not require this kind of support. Postponing tax payments would be quite important for programming, data processing, hosting and related activities, and web portals, and other sectors to avoid bankruptcy (for these sub-sectors this kind of support tend to be quite important). Postponing tax payments are less important policy measure for very small companies (employing less than 10 people) compared to the large and medium size ones. Furthermore, this policy measure is absolutely necessary for companies, which lost more than 40% of their revenue.

In addition, 30% of the respondents stated that access to the low interest rate loans would not be an important measure, while 21% of the respondents needs this measure to avoid cuts or layoffs. The number of respondents, which requires increased access to low interest rate loans to avoid bankruptcy are even more than the same measure for other two policies (even reaching 26%).

Figure 22. To what extent you agree or disagree with the following statements: [Access to low interest rate loans]



By sector:



The distribution of the answers by sub-sector shows that access to low interest loans are relatively less helpful for telecommunication, software publishing, and other sub-sectors, while this measure would play an important role to avoid the most severe consequence –

bankruptcy for companies operating in trade of information and communication equipment, programming, data processing, hosting and related activities, web portals, and other sub-sectors. The abovementioned policy would be less necessary for smaller size companies than medium and large ones, and for companies mostly employing women.

Within the survey, ICT companies also provided specific suggestions and recommendations to help them overcome the crisis caused by the pandemic. Respondents provided the following suggestions, government should:

- Support the clients of the ICT companies to avoid dramatic decrease of demand.
- Improve access to finance and to low interest loans.
- Provide further trainings (there are very few cases that government provide an appropriate training in this sphere).
- Reduce taxes (reducing income tax to 5% only for IT sector), implement planned government projects.
- Creating environment for distance working.
- Plan the process better.
- Propose further tax reliefs.
- Promote exports of IT services

In addition, companies should try to improve access cloud and managed service portfolios, better take care of cash management and try to find new opportunities (due to increased importance of IT sector after pandemic), conduct necessary optimization.

Respondents commented about the main risks to their sector going forward:

- Economic instability, risks of economic crisis.
- Bankruptcy of clients.
- Further lock down due to COVID-19 pandemic.
- Prolonged closing national borders.
- Low demand for the company services.
- Low level of education.
- Difficulties to find qualified workers and offering competitive salaries (commercial banks absorbing qualified workforce).
- Lack of investment (in technologies, automatization of processes), including FDI.
- Lack of technological development (not active involvement in R&D).
- Depreciation of domestic currency (currency risks in general).
- Low competitiveness of the sector.
- Nonstable government policy, not proper government policy for IT development, political instability.
- Not considering of international practices.

Respondents also mentioned the main opportunities to the sector going forward:

- Opportunity of remote work.
- Higher demand on company services (high technologies, digital products).
- Increased education level.
- Improved access to finance.
- Exporting service abroad.
- More support from donor organizations.
- Increased access to online services.
- Improved economic situation.
- Full digitalization of processes.
- Supporting other companies by offering online sale platforms, education and trainings, improving importance of cloud services.
- More stable exchange rate.
- Improvements in the area of artificial intelligence.

Annex 1

On the scale from 1 to 5 how is the financing constraint affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
30%	12%	33%	16%	9%

On the scale from 1 to 5 how is the low demand for the company's product affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
21%	28%	28%	16%	7%

On the scale from 1 to 5 how is the disruption of the supply chain affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
56%	12%	21%	7%	5%

On the scale from 1 to 5 how is the ability to recruit qualified workforce affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
35%	12%	23%	23%	7%

On the scale from 1 to 5 how is the ability to retain qualified workforce affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
37%	16%	30%	12%	5%

On the scale from 1 to 5 how is the macroeconomic factors (exchange rate uncertainty, inflation, taxation affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
19%	19%	23%	14%	26%

On the scale from 1 to 5 how is the uncertainty about the future market demand affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
19%	19%	26%	16%	21%

On the scale from 1 to 5 how is the political instability affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
23%	14%	30%	14%	19%

On the scale from 1 to 5 how is the legislation, court system affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
23%	21%	30%	16%	9%

On the scale from 1 to 5 how is the space and equipment (technology) affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
49%	16%	23%	5%	7%

On the scale from 1 to 5 how is the closure of external borders affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
30%	7%	16%	30%	12%

On the scale from 1 to 5 how is the impossibility to fulfill health and safety regulations affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
47%	16%	26%	7%	5%

On the scale from 1 to 5 how is the late payments from clients affecting your company's ability to do business, develop and grow (1 – not at all limiting, not a constraint, 5 – very limiting, crucial constraint)

1	2	3	4	5
26%	9%	23%	26%	16%

Annex 2

QUESTIONNAIRE

Introductory page: select a language

- 1) **Which IT sub-sector does your company belong to?** a drop-down menu with more than one option allowed will include the following sub-sectors:
 - a. Retail sale of information and communication equipment in specialized stores;
 - b. Wholesale of information and communication equipment;
 - c. Software publishing;
 - d. Telecommunications;
 - e. Computer programming, consultancy and related activities;
 - f. Data processing, hosting and related activities; web portals;
 - g. Repair of computers and communication equipment;
 - h. Other (please specify)
- 2) **For how many years has your company been in operation?** (specify)
- 3) **Number of staff/employees in your company** (choose ranges: less than 10; 10-20; 20-50, 50+)
- 4) **Average age of employees in your company** (specify)
- 5) **What is the share (%) of female employees in your company?** (specify)

- 6) **Average education level of employees** (choose one: 1- university graduates; 2- TVET (technical and vocational education and training program) graduates; 3- secondary school graduates; 4-other - please specify)
- 7) **Average skills level required of employees** (choose one: 1- High – prior experience and specialized education required; 2- Medium – some training that can be provided by the company is enough, no prior experience or specialized education required. 3- Low- no specialized training or education required; 4- Other – please specify)
- 8) **How did COVID-19 pandemic affect your firm's revenues** (choose one: Relative to last year revenues 1- Revenues decreased by more than 40% 2- revenues decreased by less than 40%; 3- remained the same; 3- increased by more less than 40% ; 4- revenues increased by more than 40%.)
- 9) **The main impact on your firm's revenues was driven by** (1- price changes; 2- changes in demand)
- 10) Please click all that apply:
 - a. **As a result of COVID-19 pandemic** our company had to cancel/not renew contracts
 - b. **As a result of COVID-19 pandemic** other companies had to cancel/not renew contracts with us.
 - c. **As a result of COVID-19 pandemic** our company saw increased opportunities in new areas, possibilities for new contracts.
 - d. **As a result of COVID-19 pandemic** the demand for our company's services increased.
- 11) **How did COVID-19 pandemic affect your plans for investment in new technology, IT spending in 2020?** (choose one: 1- had to postpone plans for investment; 2- investment plans are realized as planned; 3- invested (or will invest) more than initially planned).
- 12) **How did COVID-19 pandemic affect your plans for investment in new technology, IT spending in 2021?** (choose one: 1- the company will decrease new technology investment and IT spending in 2021; 2- plans are not affected; 3- will increase new technology investment and IT spending in 2021)
- 13) **How did COVID-19 pandemic affect the ability to *retain* qualified workforce in your company?** (choose one: 1- became easier to retain; 2- remained the same; 3- became harder to retain)
- 14) **What are your plans for your company's staff and employees in 2020?** (choose one: 1- fired, or will need to fire some core staff or asked them to go on unpaid holiday;

2 - fired or will need to fire some non-essential staff or ask them to go on unpaid holiday 3- number of staff and their working hours remain the same 4- planning to hire additional staff in 2020)

- 15) **What are your plans for your company's staff and employees in 2021?** (choose one: 1- will need to fire some core staff or ask them to go on unpaid holiday; 2 - will need to fire some non-essential staff or ask them to go on unpaid holiday 3- number of staff and their working hours will remain the same 4- planning to hire additional staff in 2021.)
- 16) **How do you think the COVID-19 pandemic affected your ability to *hire* qualified workforce?** (choose one: 1- became easier to hire; 2- remained the same; 3- became harder to hire qualified workers).
- 17) **As a result of COVID-19 pandemic the overall competition level in the ICT sector and the sub-sector affecting your company** (1- decreased 2- remained the same 3- increased)
- 18) **Does your company currently participate in dual TVET program?** (specifically, does your company have an agreement with any TVET school to provide practical training experience to their students?) Yes/No.

If Yes:

- **On the scale from 1-10 rate your level of satisfaction with the program¹⁶**
- **How willing are you to continue and/or intensify your engagement with TVET program in the near future?** (1- not willing, planning to scale down or discontinue TVET participation; 2- satisfied with the current level of engagement, but not willing to increase it; 3- planning to scale up moderately the engagement in the near future; 4- planning to scale up significantly in the near future)
- **What is your main motivation to participate in dual TVET program:** (possible to choose more than one: 1- good source for future recruitment; 2- corporate and social responsibility considerations; 3- other (please specify)).

If No:

- **On the scale from 1 to 10 how willing are you to engage in the dual TVET program?¹⁷**

¹⁶ Below the question there will be a scale that will explain 1- extremely dissatisfied, 10- extremely satisfied.

¹⁷ 1- not at all willing to engage, 10- very willing to engage

- **What is your main motivation to engage in dual TVET program:** (possible to choose more than one: 1- good source for future recruitment; 2- corporate and social responsibility considerations; 3- other (please specify)).

19) Currently how are the following factors affecting YOUR company's ability to do business, develop and grow – rate on the scale from 1 to 5:¹⁸

- Financing constraint
- Low demand for the company's product
- Disruption of the supply chain
- Ability to recruit qualified workforce
- Ability to retain qualified workforce
- Macroeconomic factors (exchange rate uncertainty, inflation, taxation)
- Uncertainty about the future market demand
- Political instability
- Legislation, court system.
- Space and equipment (technology)
- Closure of external borders
- Impossibility to fulfill Health and Safety regulations
- Late payments from clients
- Other 1 (please state)
- Other 2 (please state)
- Other 3 (please state)

20) What kind of COVID-19 support is your company eligible for this year? (please specify)

¹⁸ Each of the items below will have the following 1 through 5 clickable scale attached, including the following explanations below the numbers options:

1 – not at all limiting, not a constraint; 3 -constraining on average, but not the most crucial constraint 5- very limiting, a crucial constraint.

21) If your company is eligible for support, have you already received this support?
Yes/No

22) Which government agency do you communicate with / would consider addressing to get help? (please specify)

23) To what extent you agree or disagree with the following statements:

	Would be necessary to avoid bankruptcy	Would be necessary to avoid big cuts or layoffs	Would not be a (big) help for my company	Don't know	NA
Assistance from government to pay a share of employee salaries					
Postponing tax payments					
Access to low interest rate loans					
Other (please specify)					

24) Please provide a short comment on the following question: what are your specific suggestions and recommendations to help the ICT sector companies overcome the crisis caused by the pandemic? _____

25) Where do you see the main risks to your sector going forward? _____

26) Where do you see the main opportunities to your sector going forward? _____