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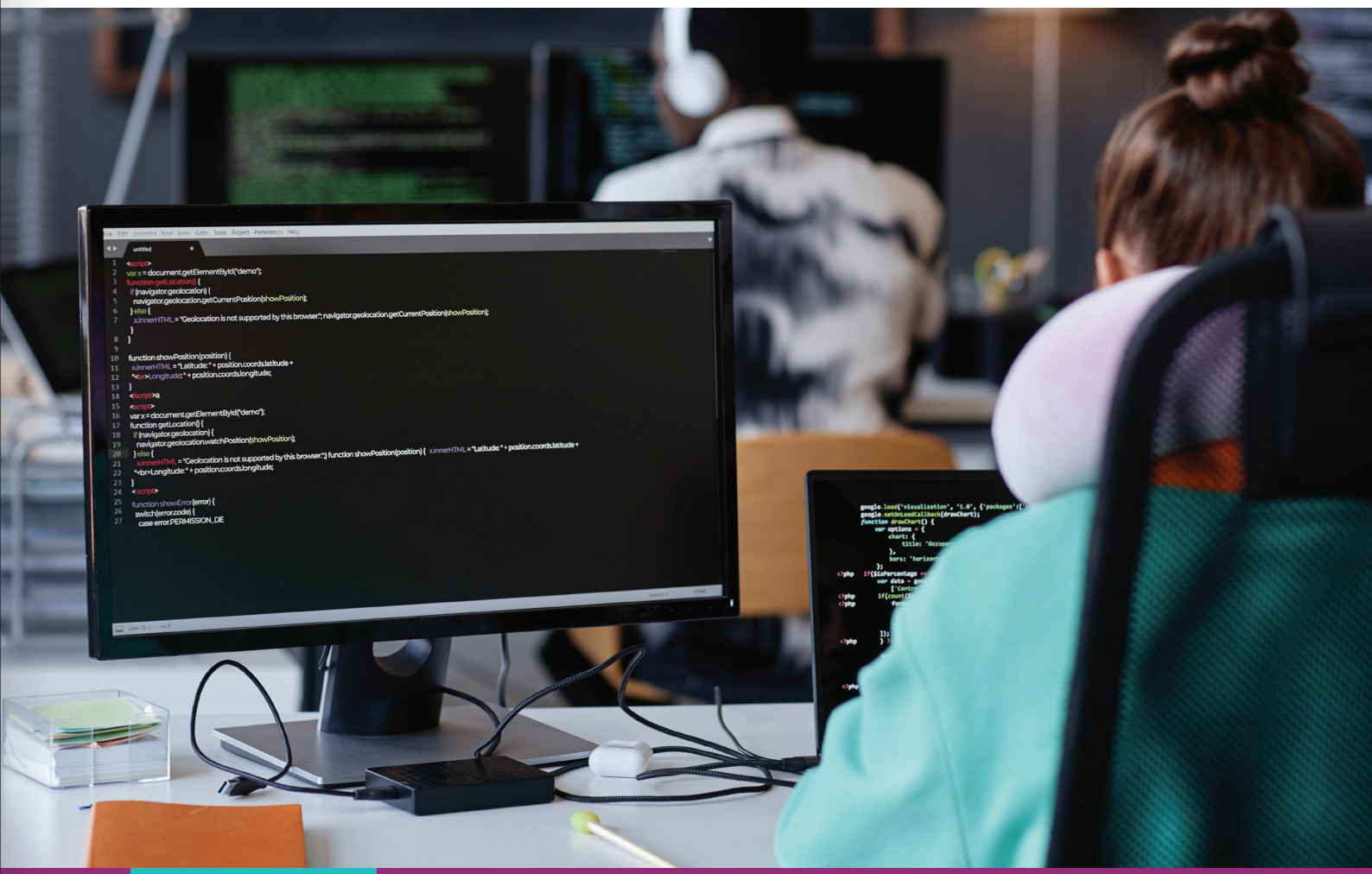

KOSOVO ICT VALUE CHAIN STUDY

OCTOBER 2023

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List of Abbreviations

AI	Artificial Intelligence
B2B	Business to Business
BD	Big Data
BMO	Business Member Organization
BoP	Balance of Payment
BPO	Business Process Outsourcing
CEFTA	Central European Free Trade Agreement
CBK	Central Bank of Kosovo
CMMI	Capability Maturity Model Integration
CRM	Customer Relationship Management
DACH	Germany, Austria, and Switzerland
DIH	Digital Innovation Hubs
EFTA	European Free Trade Association
EITO	European Information Technology Observatory
ENIF	Enterprise Innovation Fund
ERP	Economic Reform Program
EBRD	European Bank for Reconstruction and Development
EU	European Union
FITD	The Fund for Innovation and Technology Development
FOSS	Free and Open-Source Software
GDPR	General Data Protection Regulation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH
GoK	Government of Kosovo
ICK	Innovation Centre Kosovo
ICT	Information and Communication Technology
IFME	Institute for Free Market Economy (IFME)
IoT	Internet of Things
IP	Intellectual property
IPR	Intellectual Property Rights
ISO	International Organization for Standardisation
IT	Information Technology

ITP	Innovation and Training Park
JIC	Jakova Innovation Center
KAS	Kosovo Agency of Statistics
KBRA	Kosovo Business Registration Agency
KCC	Kosovo Chamber of Commerce
KCGF	Kosovo Credit Guarantee Fund
KfW	Kreditanstalt für Wiederaufbaum
KIESA	Kosovo Investment Enterprise Support Agency
KITB	Kosovo IT Industry Barometer
KODE	Kosovo Digital Economy
ME	Ministry of Economy
MESPI	Ministry of Environment, Spatial Planing and Infrastructure
MEST	Ministry of Education, Science and Technology
MFLT	Ministry of Finance, Labour and Transfers
MIET	Ministry of Industry, Entrepreneurship and Trade
MSME	Micro, Small and Medium Enterprises
NACE	Nomenclature statistique des Activités économiques dans la Communauté Européenne
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
SEA	Search Engine Advertising
SEO	Search Engine Optimisation
SITC	Standard International Trade Classification
SME	Small and medium enterprises
SPS	Slovenian Enterprise Fund
STIKK	Kosovo Association of Information and Communication Technology
TAIEX	Technical Assistance and Information Exchange
TAK	Tax Administration of Kosovo
ToR	Terms of Reference
UNICEF	United Nations International Children's Emergency Fund
USA	United States of America
WB	Western Balkan
WDI	World Bank World Development Indicators

Executive Summary

The present report takes a deeper look into the Information and Communication Technology (ICT) sector of the Republic of Kosovo. The ICT sector in Kosovo has developed very well in recent years. It has grown successfully and can be seen as a job accelerator and economic growth driver. According to the Kosovo Agency of Statistics (KAS), there are more than 1.200 companies and 11.500 jobs. Based on the survey of more than 70 companies, more than 81% are engaged in export activities. ICT services and products are acknowledged by national and international customers due to good quality, price, delivery time, punctuality, and good technical know-how.

Despite the fact that the domestic ICT sector has developed well, there are raising concerns, which are not only about the development of the ICT sector itself, but rather about the fact that this sector is a pacesetter for the digitization of other domestic sectors that are important for the country's economy as well. For example, the metal manufacturing and food & beverage sector are significantly under digital transformation. Thus, it is safe to assume that there will be an increasing need for ICT-related services and products from these sectors. To what extent Kosovan ICT providers are interested and able to satisfy such a demand in the future remains unclear.

Consequently, the study identifies further barriers that might hamper the development of the domestic ICT sector as in the past, as well as allow cross-sectoral cooperation with other key sectors on their way to digitalise. The identified challenges are listed below:

1. Shortage of employees' skills and capacities in relation to specific skills required by the domestic ICT enterprises. The shortage of skilled workforce is, by far, among the most critical barriers to further grow the domestic ICT sector.

2. The vast majority of the Kosovan ICT companies are micro and small firms with limited manpower and financial capacities. Such small firms face challenges in gaining access to the necessary financial means or taking over bigger assignments for national or international clients. The limited firm size can be considered a barrier to future growth opportunities.

3. There is a lack of cooperation and coordination between different stakeholders, especially in regard to education and skills development. These challenges hamper the national system from moving and adapting to industrial needs. Private training providers are still an exception in Kosovo that might contribute to reducing this shortage.

4. Weak legal framework and the lack of implementation of dedicated interventions to support sector development. Although the ICT sector developed comparably well over the recent past, the current legal framework conditions are not entirely conducive for the ICT sector.

5. The lack of advanced export support programs by the government, incl. support in finding the right business partners or tailor-made market information, provision of export-oriented training and business development activities or availability of financial instruments for export activities (e.g. export financing schemes).

Thus, the Value Chain Mapping Report deducted the following recommendations, which are further specified in chapter 7.

Recommendation 1: Support in workforce development

Recommendation 2: Addressing the 'brain drain effect'

Recommendation 3: Implementation of new financial mechanisms to allow ICT companies to grow

Recommendation 4: Improving the national patenting and Intellectual property (IP) system

Recommendation 5: Stimulate Smart Procurement and introduce incentives for ICT companies in public procurement

Recommendation 6: Support Business Member Organizations (BMO) in setting-up new services

Recommendation 7: Setting-up a voucher system to stimulate firm-level innovation and digitalisation

In case the recommendations are consequently turned into practice, the ICT sector will be able to play a double role. To create jobs and prosperity, but also enable other Kosovan key sectors to digitalise.

Introduction

In recent years, the ICT sector has proliferated, playing a pivotal role in the economic development of any country. Ranking as one of the world's largest industries, the ICT market is forecasted to reach a size of 5.5 trillion dollars in 2022 and almost six trillion by 2023.[1] The ICT market is typically defined to encompass technologies related to computer and telephone networks, along with the relevant software, hardware, and services. These promising global trends are significant for small countries like Kosovo to grasp opportunities for expansion and growth of the ICT sector. Despite being a relatively new sector, ICT has rapidly developed, and currently, it is among the top priority sectors contributing to the country's economic development. Among others, ICT is considered an attractive sector for promoting export, creating jobs for the youth, returning youth from the diaspora and most importantly, keeping young talents in Kosovo.

The global COVID-19 pandemic provided another input to the growth of the ICT sector as the global and European ICT industry is exposed to new trends and challenges. The impact of the COVID-19 pandemic on the overall supply chain and the recent supply shock due to shortages and increased oil prices has affected all industries and has urged the need for digital transformation to meet the new challenges of business execution. The partial disruption of value chains worldwide can be an opportunity for ICT companies in Kosovo. Many ICT companies in United States of America (USA) and European Union (EU) are shifting their subcontracting activities to other parts of the world, presenting a window of growth opportunity for the companies in Kosovo.

According to the time series data of the Central Bank of Kosovo, the export of ICT products/services in 2021 in Kosovo reached a record of €98.8 million, while the import of ICT products/services in 2021 was €48.0 million. This trade yields a €50.8 million positive trade balance for ICT services. The results come from the Balance of Payment (BoP) transactions, including the export and import of telecommunications, computers, and information services. Between 2007 and 2020, the share of ICT service export to total service export (BoP) in Kosovo ranged between 3.4% and 16.4% - the average percentage during this period was 7.2% (World Bank 2022)[2]. Therefore, Kosovo needs to design and implement policies to promote the ICT sector to utilise the potential for export growth.

The present value chain mapping report is an integral part of designing future interventions the Ministry of Industry, Entrepreneurship, Trade and Industry of the Republic of Kosovo (MIET) and The Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH could utilise to support the competitiveness of selected industrial sectors, including ICTsector. Becoming part of the global ICT value chains is crucial for utilising the opportunity for growth, innovation, and increased competitiveness for many domestic firms. Overrecent years, the Kosovan ICT sector has made substantial progress, but further support is needed to create an environment for promoting this sector to the next level and remain an essential partner in global value chains.

It is the first value chain mapping report for the ICT industry for the Republic of Kosovo after the COVID-19

1 https://www.statista.com/statistics/263801/global-market-share-held-by-selected-countries-in-the-ict-market/

2 Key Reforms Can Boost Kosovo's Growth and Raise Living Standards, 2022, The World Bank

pandemic and complement previous ICT sector studies[3]. The findings and conclusions of this report identify missing links, main gaps, and constraints along the selected value chain. The report also provides observations and considerations to be taken into account for the upcoming policy interventions.

3 Republic of Kosovo, 2014, Sector Profile of ICT – Business Process outsourcing and Customer Support Centres Sector,

1. Methodology

The value chain mapping explores the critical success factors of the respective value chains to gain insight into the related gaps and understand the primary drivers of value chain development. The research team has applied a structured methodology to provide an in-depth value chain analysis of the ICT sector. The analysis is conducted in stages elaborated below.

First, the research team has analysed secondary data by examining published reports/studies relevant to the sectors and the context, but also studies and reports covering global economies. This step has served the team a portrait of a respective map of each sector. The value chain map provides a graphical structure depicting how a product in an industry moves from raw material through production of goods/services, processing of goods/services, and other steps until the product/service eventually winds up with the final consumer. The map highlights the range of activities that occur within the value chain.

Second, the research team has analysed trade data of the respective sectors to understand better market dynamics, domestic demand and growth trends and competitiveness of domestic micro, small and medium enterprises (MSMEs) in the export markets. Data from KAS and Kosovo Custom represent the primary sources.

Third, the research team has developed a sample of ICT firms for the survey. The sample has been selected based on the structure of the sector MSMEs, as per official public data of the Kosovo Business Registration Agency (KBRA), in close coordination with the representatives of the MIET and GIZ. The sample provided a sufficient number of responses required for conducting empirical analysis. The online survey attracted 71 ICT companies to respond including software/IT (Information Technology) services (35%), software products (22%), hardware products (11%), services for hardware products (10%), digital marketing services (10%) and other activities (12%).

Fourth, the research team compiled the structured dataset, such as data cleaning, double-checking in case of errors, and value chain analysis based on data analysis has been conducted afterwards.

Finally, to triangulate information, the research team has conducted interviews with stakeholders representing relevant institutions, including sector associations, relevant national institutions, and other relevant actors involving around three interviews with stakeholders per sector. The value chain studies are based on qualitative and quantitative data analysis, so the methodology is robust for validating market trends and value chain analysis.

2. Global Trends in the ICT sector

Undoubtedly, digitalisation has received a boost from the COVID-19 pandemic and will continue at a similarly accelerated pace. The automation of industrial processes also accompanies this trend. It can be assumed that many companies will only be able to compete in the future if they rely on related ICT technologies and implement them in the company. On the other hand, it can be expected that they will become able to tap into further growth opportunities and, at the same time, sustainably improve their efficiency by further advancing digitalisation and automation. Many other topics also play an increasing role in the ICT sector. For example, it became evident that **Artificial Intelligence** (AI) can contribute to improving business processes and related efficiency. The question of how the **Internet of Things** (IoT) can be used profitably is also of increasing interest.

In MSMEs and large companies, for example, decentralised data processing through edge computing will play an even more critical role in the future. The aim of this is to be able to manage the increasing flood of information better. Moreover, it should be possible to generate additional added value.

Also, **cloud usage** has increased massively. This trend will continue in 2022, but with a slightly different focus. Among other things, the increasingly strong focus on data protection is the reason behind it. Industry experts assume that many companies will adopt the multi-cloud strategy, which will increasingly include data-sovereign cloud solutions[4]. The distributed cloud approach also plays a role here. It means that computer loads are distributed among small regional clouds that operate independently. The most significant advantage of this is the higher reliability. The distributed cloud also paves the way for edge computing. Data-intensive applications, such as machine learning will drive demand for distributed cloud and edge computing over the following years.

Machine learning is also related to the topic of **Big Data (BD)**. Here, experts expect BD to arrive in reality, like AI, 5G, and blockchain[5]. Accordingly, this new **IT trend** is favoured by two main factors. The first is systems and analysis tools that can be operated with no code or low code, i.e. that require little or no programming knowledge. Secondly, the so-called Fog level between the edge and the cloud is becoming increasingly important.

Furthermore, that, in turn, means that BD is not (any longer) collected entirely unfiltered, but only relevant data is processed further. The idea behind this is that a higher benefit can be derived from this data that has been filtered in advance. In technical terminology, this is referred to as data mining.

As far as call center applications are concerned, so called cloud contact centers improve call centers' efficiency significantly through round-the-clock availability, increased data security, flexibility, and adaptability. This is especially true of various platforms that integrate with cloud based Customer Relationship Management (CRM) platforms. Cloud CRM integration gives these call centers a new role by turning them into hotspots for strong communication and client collaboration. According to Research and Markets, the

4 P. Hummer; M. Braun; M. Tretter and P. Dabrock, 2021, Darta sovereignty: A review, DOI: 10.1177/2053951720982012

5 V. Kanade, 2022, What is Machine Learning? Definitions, Types and Trends for 2022, Spiceworks, https://www.spiceworks.com/tech/artificial-intelligence/articles/what-is-ml/

call center industry is expected to triple over the next years up to EUR 15.67 Bn[6]. Gartner - a technological research and consulting firm based in Stamford- recently predicted that over EUR1 trillion in IT investments will be directly or indirectly related to the rise of cloud services over the next five years[7]. More and more call centers are using AI applications to analyze BD and unify call center calls for customers and businesses. To do this, companies collect large amounts of customer data in advance, which is then analyzed by machines using AI systems. This machine evaluation becomes more intelligent as more data is fed in.

IT security was proclaimed as the top topic for 2021,which ultimately proved to be true. There are several studies on cyberattacks in 2021[8]. A reversal of this trend cannot be foreseen for the following years either. Instead, the opposite is the case because, once again, a growing number of ransomware attacks can be expected[9]. It is mainly because the attackers' techniques are becoming increasingly sophisticated.

Other reasons for the continued acceleration of cybercrime are, on the one hand, the ever shorter periods that attackers need for their attacks and, on the other hand, the numerous vulnerabilities that have been revealed in corporate networks in the course of the pandemic. Companies urgently need to make improvements here. In addition, investing in prevention technologies and early detection measures is essential. There are other sub-trends which is gaining momentum, e. g. the introduction of Metaverse or **Autonomous Systems**[10].

Generally speaking, the ICT sector is a crucial driving factor that can lead to growth, innovation and a more competitive economy. This sector has become an essential source of economic growth, export promotion and job creation, particularly for young people. The ICT sector has been growing in Kosovo due to the services that ICT companies provide to their clients.[11] To improve the ability to compete in international markets, ICT companies need to focus on global trends in this sector. The global trends in the last two years have been unprecedented in digital technologies.

2.1 Kosovo ICT Industry Snapshot

The definition of the ICT sector includes various characteristics and suppliers of hardware and basic IT, services to communications infrastructure, software development, e-commerce, retail and business process outsourcing[12]. There are two definitions of ICT provided by the European Information Technology Observatory (EITO)[13] classification and World Bank. EITO defines ICT based on three main pillars: IT equipment (servers, storage, workstations, PCs, media tablets, multifunction printers, and other IT equipment), software (system infrastructure software, application development and deployment, application), and IT services (project, outsourcing excluding Business Process Outsourcing (BPO)), support and deploy, BPO

6 Research and Markets, 2021, Call Centers – Global Markets Trajectory & Analytics,

7 Gartner, 2021, Contact Center Infrastructure (CCI), Worldwide Review

8 Growdstrike, 2022, Global Threat Report, https://go.crowdstrike.com/global-threat-report-2022.html?utm_campaign=globalthreatreport&utm_content=gtr22&utm_medium=sem&utm_source=goog&utm_term=cyber%20threats&gclid=CjwKCAjw9suYBhBIEiwA7iMhND-hYHvznqCps97aO6M530FS4fZ1bjQGnQjsU4T-2WQel-7kGnkNLRoCoCcQAvD_BwE

9 Steve Morgan, 2020, Cybervcrime to Cost the World $10.5 Trillion Annually By 2025, https://cybersecurityventures.com/cybercrime-damages-6-trillion-by-2021/

10 Misha Glenny, 2021, Pandemic accelerates growth in Cybercrime, Financial Times, April 28, 2021

11 IFME. (2020). Comprehensive analysis of the ICT sector in Kosovo: Changes in the ICT eco-system since the approval of the IT Strategy. Institute for Free Market Economy (IFME) / Kosovo Chamber of Commerce. Retrieved from https://ietl-oek.com/wp-content/uploads/2020/03/Report-Comprehensive-Analysis-of-ICT-Sector-in-Kosovo.pdf

12 IFME. (2020). Comprehensive analysis of the ICT sector in Kosovo: Changes in the ICT eco-system since the approval of the IT Strategy. Institute for Free Market Economy (IFME) / Kosovo Chamber of Commerce. Retrieved from https://ietl-oek.com/wp-content/uploads/2020/03/Report-Comprehensive-Analysis-of-ICT-Sector-in-Kosovo.pdf

13 European Commission, https://cordis.europa.eu/article/id/14493-european-it-observatory-report-now-available

services including business consulting). Similarly, World Bank defines ICT that is generally consists of hardware, software, networks, and media for collection, storage, processing, transmission, and presentation of information (voice, data, text, images).[14]

Table 1: Size of the ICT sector in Kosovo

Dimension	Figures
Number of firms [a]	More than 1.200
Size[b]	Micro (84,5%); Small (12,7%); Medium (2,4%); Large (0,4%)
Employment in ICT[c]	11.500
ICT service export / import[d]	€98,8 / €48,0 million
IT/ICT equipment export / import[e]	€9,8 / €114,8 million
Exporting companies[e]	91%
Target markets / Export potential[f]	Germany (46,9%) / (83,9%) USA and Canada (46,9%) / (64,5%)
Exporting modes[h]	Direct exports (73,5%) Subsidiary (20,6%) Distribution partner (20,6%) Joint venture (14,7%) Representative office (11,8%)

Source: a. KAS; b. MIET; c. KAS ; d. Central Bank of Kosovo; e. KAS; f.Kosovo Association of Information and Communication Technology- STIKK, h: KAS

According to the Kosovo Association of Information and Communication Technology- STIKK, 120 ICT businesses employ approximately 3.000 professional programmers, presenting the IT sector as an employer of importance. Different definitions and scope of the ICT sector led to disagreement about the employment statistics and the number of ICT companies in Kosovo. The KAS calculates around 1.200 ICT businesses. Whereas STIKK argues that the statistics reported by the KAS and the business registry of the MIET in terms of the number of ICT companies and the number of employees are much smaller than reported (around 20 ICT businesses). For example, the source of these contradictions might be connected to the definition that institutions employ when reporting these statistics. The MIET employs a broader definition of ICT and scope (see Table 2).

The number of employees in the ICT sector in 2020 varies between 11.500 and 14.000 depending on the sources of information used and informality.[15] Furthermore, the ICT sector covers 4% of the total employ-

14 For more information about the Information & Communication Technology Sector Strategy Paper of the ICT World Bank Group http://info.worldbank.org/ict/ICT_ssp.html

15 Note that the official statistics, usually underestimate the potential of the sector because it does not take into account the contribution of the companies and individuals that operate in informal sector.

ment rate. The number of ICT employees has doubled in the last four years[16], with a remarkable number of female employees in 2019.

The ICT industry sub-sectors have the potential to export and find niche market opportunities. These firms are focused on providing services/products such as software development, engineering services, network and system operations, e-procurement, business process outsourcing (BPO), mobile applications development, digital marketing, post-production enhancement (media), telemarketing and support centres (call centres), ICT consulting, and cyber security. In addition, services such as custom software development, web development/web design, mobile applications and software testing are capabilities of ICT companies in Kosovo. In particular, ICT companies have built capabilities in particular areas such as software testing and IT security (ISO 27000).

16 According to the Institute for Free Market Economy, 2020

Profile of Sector Companies

The ICT sector in Kosovo is organized into 13 main sub-sectors that stem from six main divisions in the NACE nomenclature ('Nomenclature statistique des Activités économiques dans la Communauté Européenne', Table 2).

Table 2: The industrial structure of firms in the ICT sector

Division (sector)	Group (Industry)	Class (Industrial sub-sector)
Publishing activities	Publishing of books, periodicals and other publishing activities	Book publishing
		Publishing of directories and mailing lists
		Publishing of newspapers
		Publishing of journals and periodicals
		Other publishing activities
	Software publishing	Publishing of computer games
		Other software publishing
Motion picture, video and television programme production, sound recording and music publishing activities	Motion picture, video and television programme activities	Motion picture, video and television programme production activities
		Motion picture, video and television programme post-production activities
		Motion picture, video and television programme distribution activities
		Motion picture projection activities
	Sound recording and music publishing activities	Sound recording and music publishing activities
Programming and broadcasting activities	Radio broadcasting	Radio broadcasting
	Television programming and broadcasting activities	Television programming and broadcasting activities

Telecommunications	Wired telecommunications activities	Wired telecommunications activities
	Wireless telecommunications activities	Wireless telecommunications activities
	Satellite telecommunications activities	Satellite telecommunications activities
	Other telecommunications activities	Other telecommunications activities
Computer programming, consultancy and related activities	Computer programming, consultancy and related activities	Computer programming activities
		Computer consultancy activities
		Computer facilities management activities
		Other information technology and computer service activities
Information service activities	Data processing, hosting and related activities; web portals	Data processing, hosting and related activities
		Web portals
	Other information service activities	News agency activities
		Other information service activities n.e.c.

Source: Kosovo Business Registration Agency (KBRA, 2022)

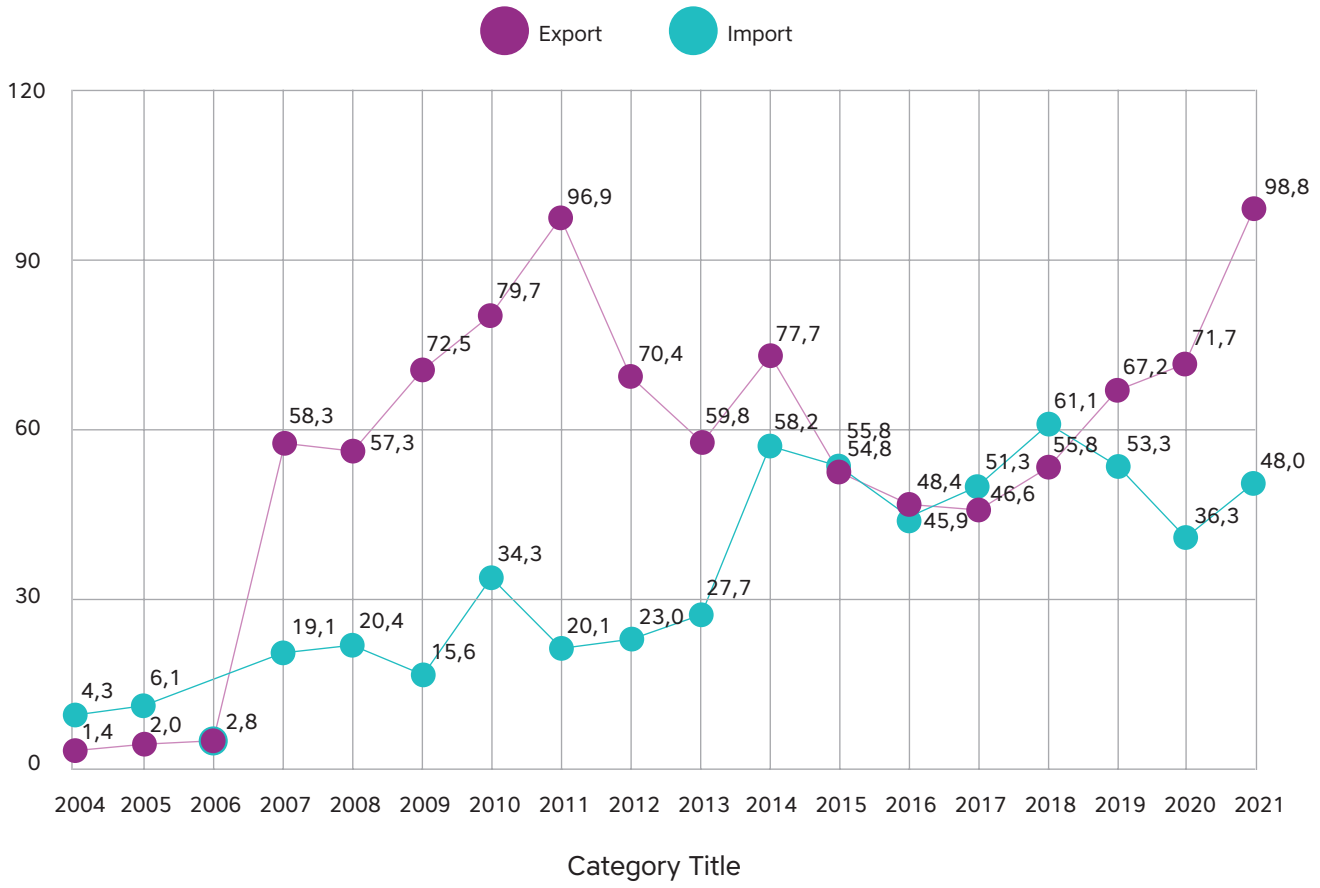
2.2 Kosovo ICT Industry Markets

According to estimates, approximately 91% of IT companies are export-oriented services and products in international markets (Kosovo IT Industry Barometer)[17]. The product and service export percentage of ICT businesses has increased for more than a quarter in the last three years to 74% (according to STIKK). These statistics show that the average ICT companies that export are 75%, indicating that 25% of their market share is local market or incomes of the services and products they provide (75%) 25% on average come from the local market. The Central Bank of Kosovo (CBK)[18] estimates that the export of ICT services in 2021 was €98,8 million, while imports were €48,0 million. These statistics show that the trade balance is positive at €50,8 million. These BoP estimates include the export and import transactions of telecommunications, computer and information services.

17 STIKK, the Kosovo IT Barometer, 2021, https://stikk.org/wp-content/uploads/2021/06/IT-Barometri-2020.pdf

18 https://bqk-kos.org/

Figure 1: ICT industry annual value of imports and Exports, 2004-2021



Source: Authors' calculation, Central Bank of Kosovo

3. Stakeholder Map

Various stakeholders play an essential role in the ICT sector value chain development. Such stakeholders can be divided into three groups according to their respective roles.

Primary stakeholders are directly and actively involved in the ICT value chain. Secondary stakeholders have an indirect relationship since most of them are responsible for the business environment in which the ICT value chains are embedded. This does not mean they are less important for the development of the metal manufacturing value chain. Tertiary stakeholders are external actors who neither make decisions nor benefit directly from the value chain operations.

On one side, stakeholders play different enabling roles in Kosovo's ICT and innovation ecosystem. On the other side, they sometimes might have different interests, whereas the dynamic between them is interesting to understand. Stakeholders, like Ministries or associations, have an indirect relationship with the main production entities since most of them are responsible for the business environment in which the ICT manufacturing value chains are embedded. This does not mean they are less critical for developing this value chain.

Table 3: Key stakeholders in the ICT value chain

No.	Stakeholder (groups)	Interest	Importance[19]	Influence[20]	Examples
1	MSMEs	MSMEs from the ICT sector cover the entire value chain. The value chain is short, with a limited number of buyers, especially suppliers. However, larger firms that operate internationally have the opportunity to expand and increase the potential of contracting and sub-contracting activities. The expansion of the ICT services can improve their competitiveness and lead to new job creation mainly focused on high-value-added services. There is a vast opportunity for horizontal cooperation of MSMEs in this sector. There are numerous individual programmers and coders, among others, in the ICT sector, which can be integrated to expand the contracting potential of the ICT sector in the international market.	4	3	

19 Importance to project success; to what extent does the project (development of cluster policy framework) place a priority on meeting their needs and interests 4 = very high importance, 3 = high importance, 2 = low importance, 1 = very low or not important at all

20 Influence to what extent the key stakeholders contribute to a project success or failure; 4 = very strong influence, can make project success or failure; 3 = strong influence, can substantially support or hamper project, 2 = medium influence: can facilitate or hamper the project success a bit; 1 = low or none influence

No.	Stakeholder (groups)	Interest	Importance	Influence	Examples
2	Universities and Research and Development (R&D) Institutions	Universities and Research and Development (R&D) institutions are supposed to provide well-trained graduates as well as to provide innovative solutions and new ICT-based products which can be introduced by local industry. The higher education institutions and R&D firms should strengthen cooperation with the commercial sector and private businesses. The close cooperation of these institutions with innovation centres can unlock potential for developers, innovative firms and start-ups that will compete internationally.	4	4	• University of Prishtina (Faculty of Electrical and Computer Engineering) • Private Higher Education Institutions
3	Cluster Initiatives, Technology Parks, and other BMOs	This stakeholder group is supposed to strengthen the innovation capacity and competitiveness of the ICT sector and high-value-added services. Innovation centres and venture hubs provide networking opportunities, experiences exchange, knowledge transfer, technology transfers, scaling -up and venture capital opportunities through community building or matchmaking.	5	4	• Innovation Centre of Kosovo (ICK), • Innovation and Training Park (ITP), • VentureUP (University of Prishtina) • Private companies and incubators (e.g. Gjirafa Lab, UNICEF (United Nations International Children's Emergency Fund) lab, J-coders)
4	Associations	Associations play a crucial role since they represent a collective voice of the ICT in Kosovo. Associations promote the converging interests of businesses and individuals in the field of ICT. Some examples include lobbying, advocacy to improve the regulatory framework, implementing research and industry-specific analysis, and facilitating the professional development of the sector's constituents.	4	3	Specilizsed Chambers in ICT - STIKK

No.	Stakeholder (groups)	Interest	Importance	Influence	Examples
5	Kosovo Chamber of Commerce (KCC)	The KCC serves the Kosovo economy and is an essential partner for many national institutions. It offers social dialogues and promotes economic development and good macroeconomic policies.	4	3	KCC and other business associations
6	Ministry of Economy (ME)	The key focus of the ME is to draft policies and strategies for the overall economic development of the Republic of Kosovo as well as to support the development of the market economy, market liberalisation in public services and the introduction of private capital in public endeavours. The ME focuses on supporting information technology, innovations, and electronic trade. It also aims to stimulate the development of information technology training systems.	4	4	Laws and regulations
7	Ministry of Industry, ntrepreneurship, and Trade (MIET)	The MIET is in charge of supporting the private sector by providing suitable framework conditions for growth and competitiveness. Scaling up strategies and related interventions provided by the MIET can help the ICT sector better compete on national and international levels and foster investments in this sector.	4	4	MIET, Kosovo Investment Enterprise Support Agency(KIESA)

No.	Stakeholder (groups)	Interest	Importance	Influence	Examples
8	Other Ministries	Other ministries might indirectly support the value chain development of the ICT sector in Kosovo. Examples include improved education and training programmes, support of R&D infrastructure including broadband connection or (tax) incentive programme, innovation vouchers and other grants opportunities.	3 - 4	3	• Ministry of Environment, Spatial Planing and Infrastructure (MESPI) • Ministry of Finance, Labour and Transfers (MFLT) • Ministry of Education, Science and Technology (MEST)
9	Agencies for investment support	Several entities, like KIESA, are mandated to promote and support investments and investors interested in becoming engaged in the Republic of Kosovo. KIESA within MIET designs instruments to support the ICT sector, conducts sectoral analysis, and organises events for matchmaking. These entities offer investors a wide set of services, ranging from pre-investment support to aftercare services.	3	2	• KIESA • Private consulting promotion agencies
10	International Partners and EU Institutions	Many international partners in Kosovo support various private and public sector entities. They aim to improve framework conditions for growth, sustainability, and job creation. International donors offer many funding opportunities to support start-ups in the ICT sector.	4	4	• GIZ • United States Agency for International Development (USAID) • EU Commission • Swedish International Development Cooperation Agency (SIDA)

4. Value Chain Analysis

4.1 Sector Value Chain Map

Figure 2 depicts the ICT sector value chain map. The critical functions of the core ICT value chain are ICT equipment producing industries that can be categorised into ICT producing manufacturing and ICT services[21]. ICT-producing hardware and software products are intended to fulfil the function of information processing and communication or must use electronic processing to detect, measure or record physical phenomena or control a physical process. ICT hardware production in Kosovo is minimal, while ICT-related services are very developed. ICT producing services includes content providers/software developers. These comprise the IT industry's software parts and relate to software development and content generation. Based on the required skills, it can be classified as IT-enabled services, content management/software development, and tech consulting. The content providers are also seen as ICT-producing services since they are meant to enable the function of information processing and communication by electronic means. ICT-related services are promising in Kosovo, especially considering the focus of the ICT sector on the global market.

Supply (mainly machinery and equipment), ICT production and services and retail represent the main functions of the core value chain. Because of the specific features, the ICT sector mainly concentrates on the ICT producing services and other business processing outsources. Consequently, most firms in this study perform all these functions or services. A closer look at the ICT sector reveals a relatively simple value chain, where imported raw material is very limited. The main inputs in the value chain include the labour force equipped with ICT-related skills. Also, importing machinery and ICT equipment is vital for developing the ICT sector in the value chain since most hardware and related components come from abroad. The value-added in the sector is increasing due to the concentration of firms in export markets in the EU and USA, which increases the need for scaling up in Kosovo to meet increased demand abroad. Kosovan ICT enterprises' interest in the local market is limited to servicing the private sector and government projects.

ICT supporting services are organised around the sector, mainly regarding finance, marketing information, skills and technology. Most of these support services are not specific to the ICT industry (except for the ICT and technological skills, which are highly specific) and thus frequently fail to fulfil the industry requirements to meet growing demand in global markets. Finally, the enabling environment is characterised mainly by laws and regulations as well as taxes and fare systems. Companies are only rarely organised in BMOs and quality standards are not very frequently applied. [22]

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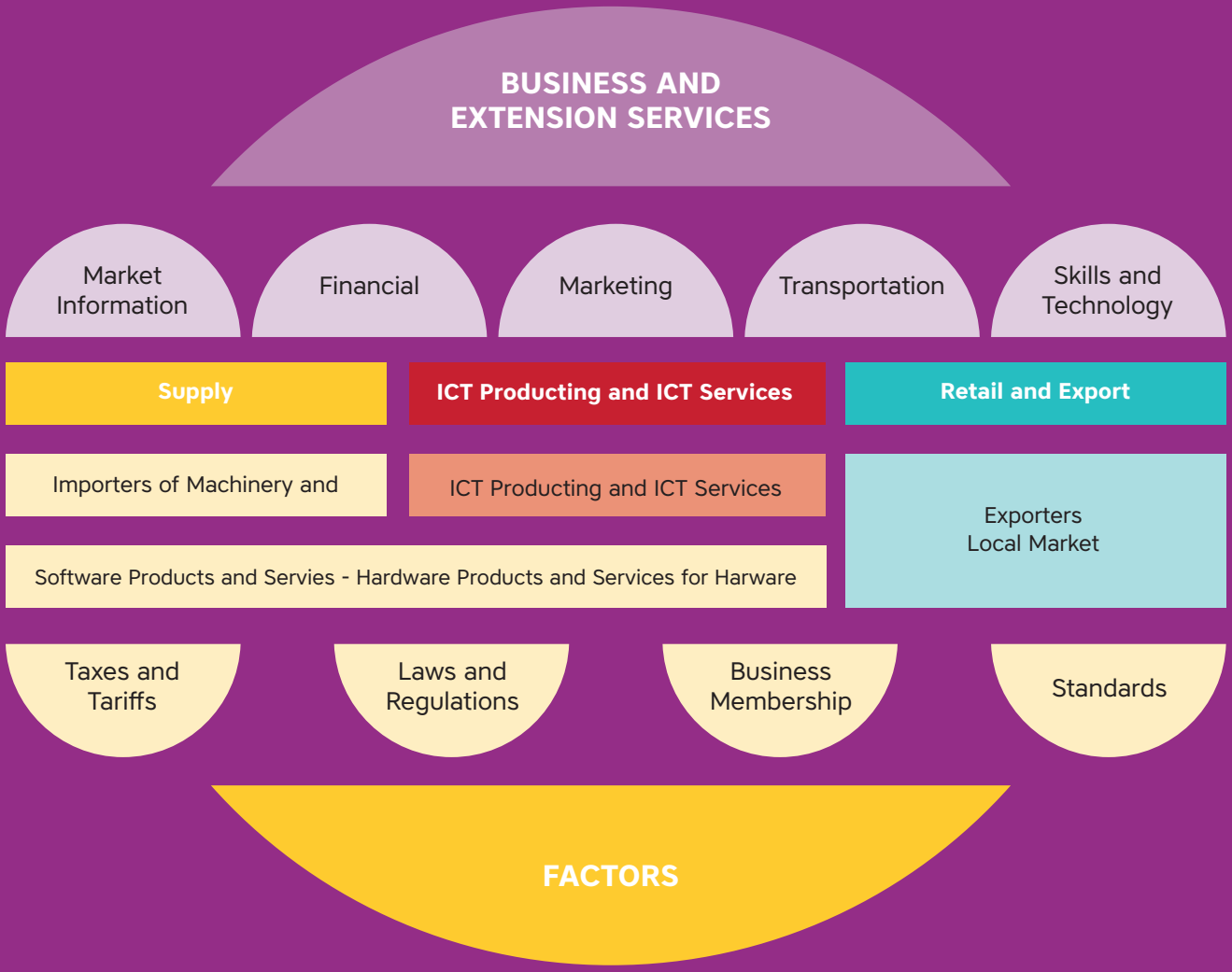
21 McCormick, D., & Onjala, J. (2007). Methodology for value chain analysis in ICT industry frameworks for the study of Africa.

22 Main roles of the chain include Hardware Producers, Software Producers, Independent Software Vendors, Hardware and Software Resellers, System Integrators and Consultants, represented in Hardware Producers build components like computers, servers, networking systems and other components necessary to build a data center · Software Producers develop Enterprise Applications, some of which based on customers' requests. These actors need to know very well the sectors of their target customers and to adapt their applications to the context. · Independent Software Vendors, starting from applications developed ad hoc for a company, later included such applications in packages in order to propose them to new customers. · Hardware and Software Resellers trade hardware and software products or simple software packages. Moreover, they provide configuration, installation, assistance and maintenance. Applications are developed by ISV, of which this category represents the selling channel. · System integrators take care of the integration of different systems with the goal to create a new functional structure which can used the potentiality of the starting system. The integration can be performed at an application level. https://www.politesi.polimi.it/bitstream/10589/131142/1/2016_12_Millefanti.pdf

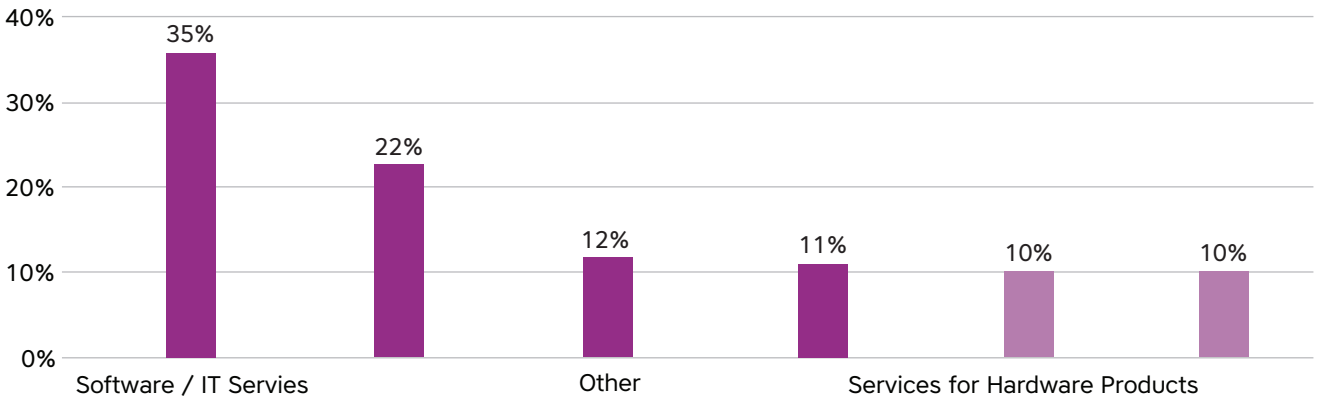
Figure 2: ICT value chain map



Source: Author's analysis based on the interview findings

Overall, the survey results show that ICT sector companies are most specialised in the ICT producing services (such as IT services and software production) in the value chain functions.

Figure 3: Value chain functions of interviewed MSMEs



Source: Survey data, authors' calculation

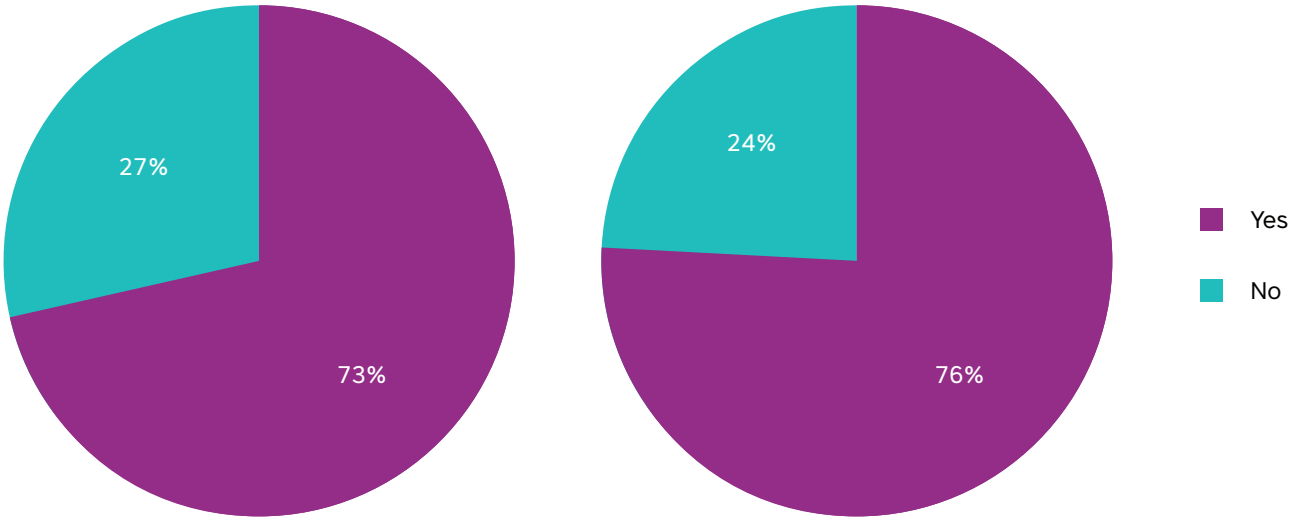
Survey results reveal that software/IT services are the most common activities provided by 35% of the ICT companies, followed by software production (22%), hardware products (11%), services for hardware products (10%), and digital marketing services (10%) and other (12%). Most MSMEs perform at least two activities of the core value chain functions.

4.2 Value Chain Analysis: Supply Side

Companies in the ICT sector significantly depend on importing ICT-related products/services, especially machinery and equipment (hardware). The ICT services and products derived from Kosovo with 59%, followed by 29% from Europe and worldwide, and 12% in the Balkan region.

Regarding upward and backward subcontracting activities within the value chain, the survey data shows a strong correlation between upward and backward subcontracting activities. 76% of ICT domestic companies have reported being sub-contracted by other companies, mainly from the EU and USA. Furthermore, at the same time, many declared that they have some sub-contracting activities as well (more than 70%). As most ICT companies operate globally, the interviews with the STIKK and other stakeholders demonstrated an increased need for business expansion, which also increased the need for sub-contracting of either company or individual ICT experts (mainly developers).

Figure 4: Backward and upward subcontracting activities in the ICT value chain

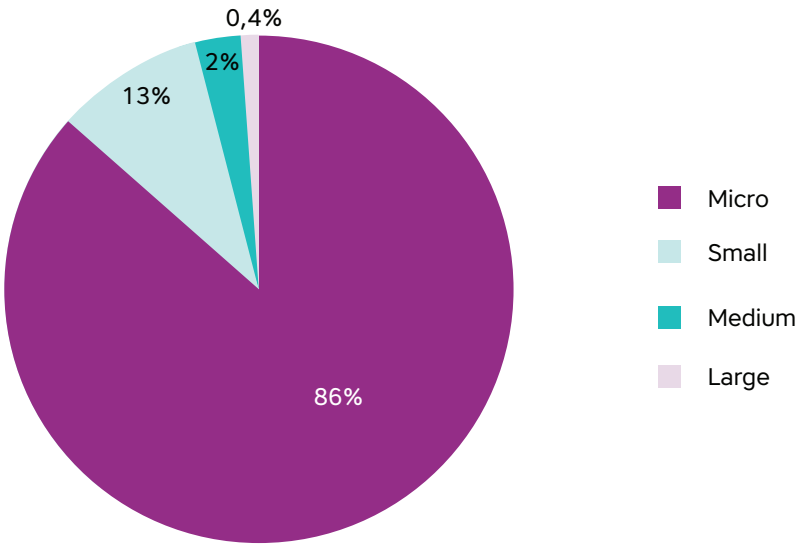


Source: Survey data, authors' calculation

4.3 Value Chain Analysis: Producer Side

The number of enterprises included in the survey was 71. Most companies surveyed were micro (86%), followed by small enterprises with 13%, and medium enterprises (2% respectively). The size distribution aligns well with the sector-specific disruption in Table 1. These findings also provided an overview of the characteristics of enterprises that operate in the ICT sector. In terms of activities, these enterprises operate in various activities such as software/IT services (35%), software products (22%), hardware products (11%), service for hardware products (10%), digital marketing (10%) and other (12%). Within, there are no call centres included in the sample.

Figure 5: Distribution of size of enterprises have participated in the survey

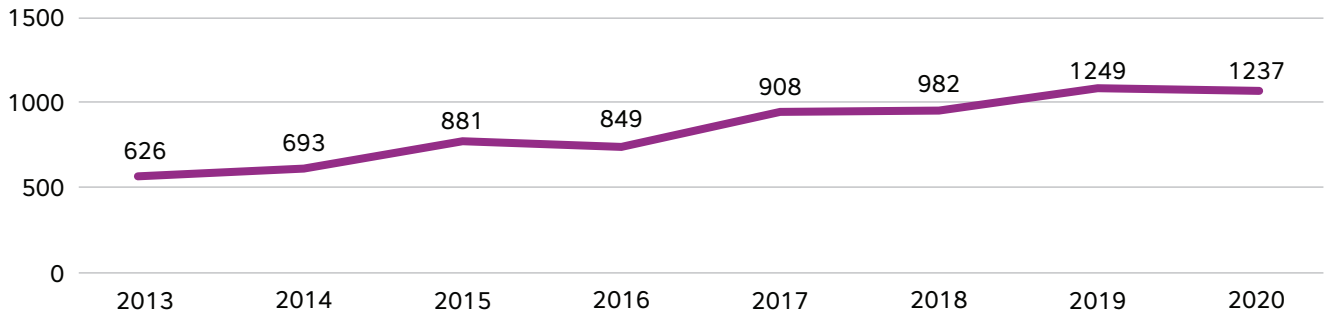


Source: Survey data, author's calculation

4.3.1 Business Activity and Operations

According to Figure 6, the number of enterprises in the ICT industry has significantly increased since 2013. In 2020 the number of enterprises was 1237, slightly lower compared to 2019 with 1249. However, the number almost doubled compared to the year 2013.

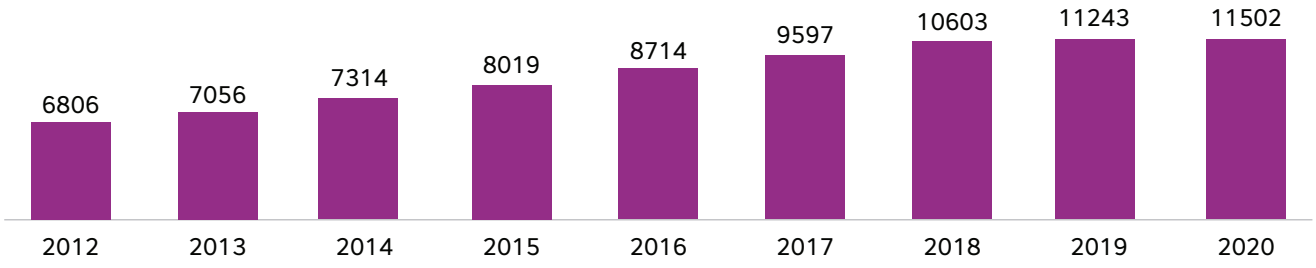
Figure 6: Number of active enterprises in ICT



Source: Authors calculations,KAS

Figure 7 shows the number of employees in the ICT sector over the years, which results in a similar pattern. According to the KAS, the number of employees has increased over the years. In 2020 the number of employees reached 11.502, which is much higher than in previous years.

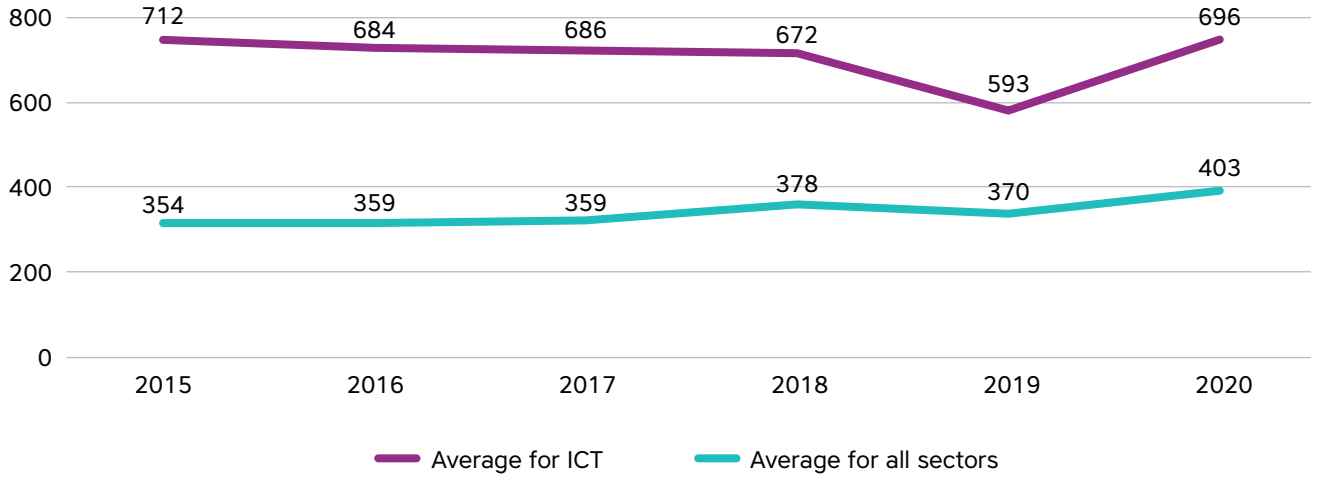
Figure 7: Number of Employees in the ICT industry in Kosovo



Source: Authors calculations, KAS

Figure 8 shows that the average wage of ICT in 2020 was EUR 696 per month, which is a significant increase compared to 2019. Compared to the average wage in other sectors, the wage average in the ICT sector is much higher than for all other sectors. Interestingly, the average wages in the ICT industry had slightly decreased in 2019, while in other sectors, the average wage remained constant with slight changes.

Figure 8: Average wage of the ICT sector



Source: Authors calculations, KAS

Figure 9 displays the products and services provided by ICT companies in Kosovo. The main products and services these companies provide are software/IT services (35%), followed by software products (22%) and products with a lower percentage. These companies provide Other (12%), hardware products (11%), services for hardware products (10%), and digital marketing services (10%).

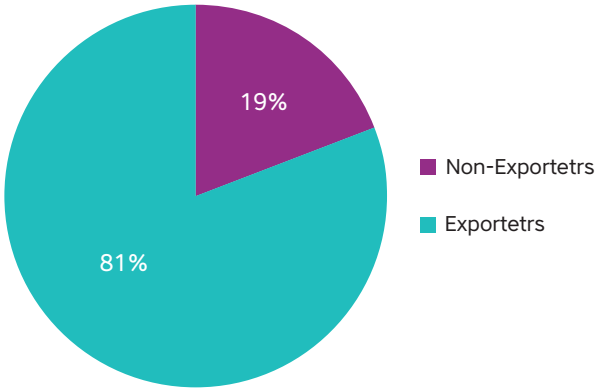
Figure 9: Products and services provided by ICT companies

Source: Authors calculations, survey results

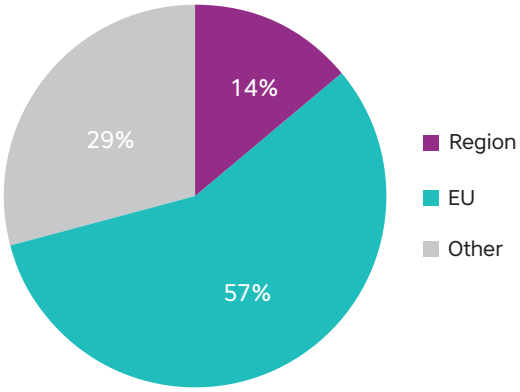
4.3.2 Local and Export Markets

Figure 10a shows the share of exporters and non-exporters. 81% of the Kosovan companies in the ICT sector are exporters compared to 19% of non-exporting companies. For exporting companies, Figure 10b shows that the main exports of companies in the ICT sector are from the European Market with 57%, followed by other with 29% (e.g., countries like America and Canada) and the lowest exports are in countries in the region. Furthermore, according to survey results, the average percentage of total sales created from exports is 60%.

Figure 10a: Share of exporters and non-exporters



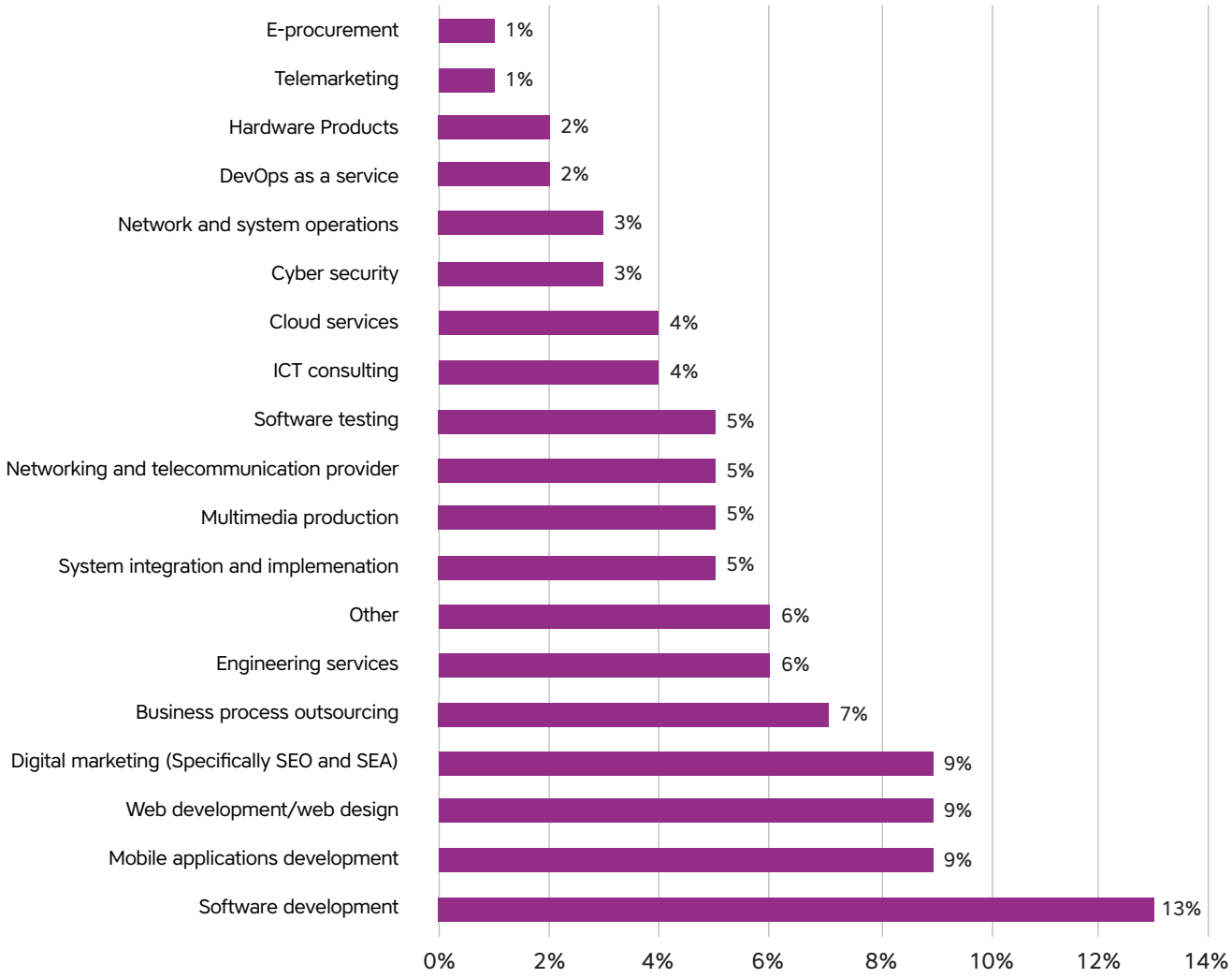
10b: Key Export market shares



Source: Survey data, author's calculations

In addition, according to survey results, the most current export by country of Kosovan ICT companies are Germany, Austria and Switzerland (DACH countries; 26%), followed by USA and Canada (17%), regional countries or Albania, North Macedonia, Bosnia and Herzegovina, Montenegro and Serbia (14%), UK (11%), and Belgium, The Netherlands, Luxembourg (BeNeLux countries; 10%). While, according to survey results on the market potential, companies rated that the countries with the highest export potential are the UK (11%), Middle East and Africa (11%), DACH (10%), USA and Canada (10%), France (10%), Asia (10%), Benelux (9%), Southern Europe or Italy, Spain, Portugal (9%), and Scandinavian countries (9%).

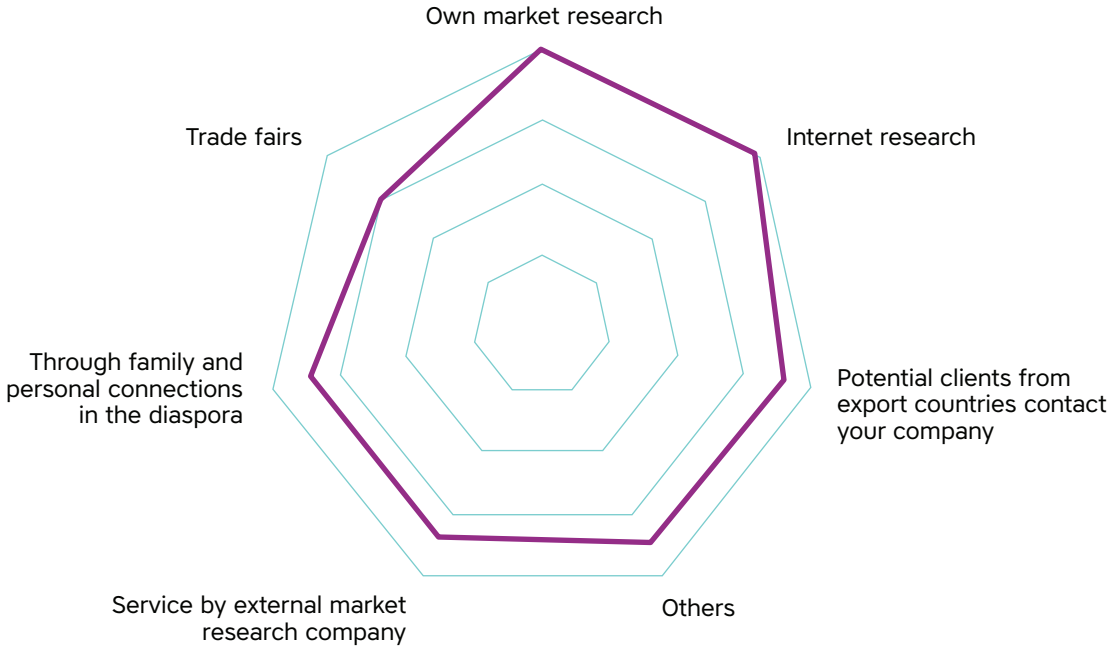
Figure 11: Services and products ICT companies export



Source: Survey data, author's calculations

Figure 11 shows that the highest percentage of services that domestic ICT companies export are software development (13%), web development and design, business process outsourcing and digital marketing (in particular Search Engine Optimisation (SEO) and Search Engine Advertising (SEA) 9%). ICT companies export the lowest percentage of services and products, E-procurement and hardware products at 1%. In general terms, Figure 11 displays a diversity of products and services that ICT companies export.

Figure 12: Market access and client identification means,



Source: Survey data, author's calculations

Figure 12 indicates what tools and approaches ICT firms in Kosovo use as a source of market access and client identification. ICT companies employ different ways to find clients, mainly through market research and the internet. According to survey data, individual efforts are an essential factor in finding markets and clients, in which company owners rely on their knowledge and experience to build networking with clients.

Figure 13: Assessment of business competitiveness in terms of local and export market

Source: Survey data, author's calculations

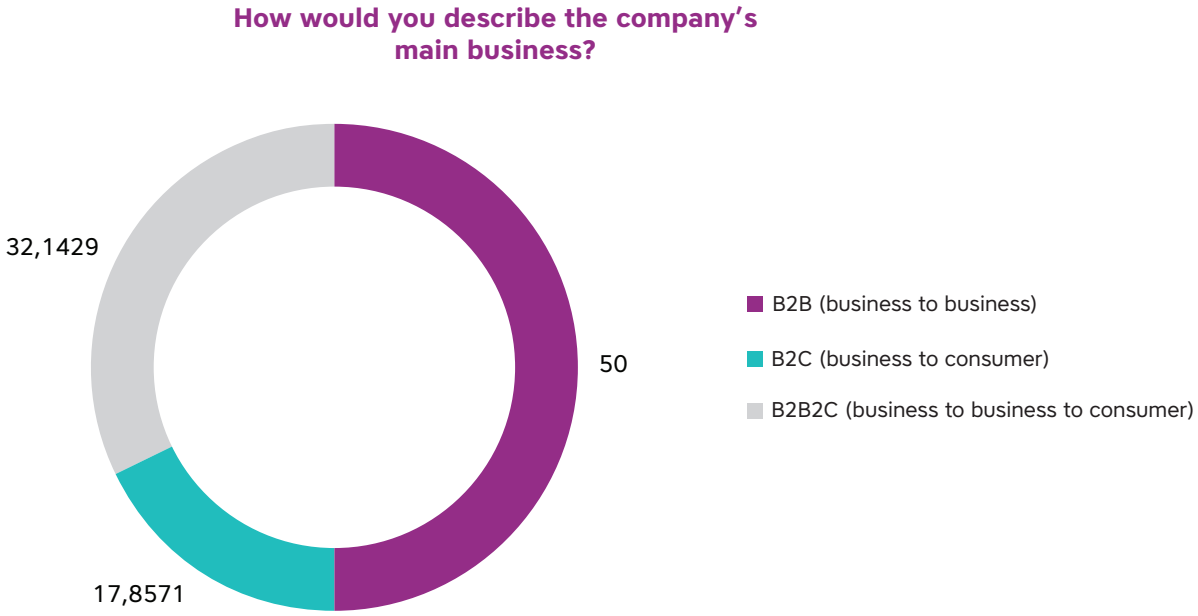
Figure 13 shows the sources of competitive advantages in local and international markets of ICT firms. Overall, Kosovo ICT enterprises assess their business competitiveness highly. The assessment of business competitiveness has been conducted through a Likert-scale like rating (from "0" up to "5", whereas "5" is the max. amount). Sources of competitive advantage in the local market are international market prices (4,2), followed by delivery time and punctuality (4,2) and quality of work (4,1). While sources of competitive advantage in international markets are quality of work and delivery time, and punctuality (4,7), followed by technical know-how (4,6), the knowledge of the language of human resources (4,5)

In terms of potential and future trends, the ICT sector survey demonstrates that most companies (85%) argue that their sector has high growth potential in the future. ICT companies expect that their turnover and the number of employees will significantly increase.

Range of Services in the ICT consumption chain

It is essential for value chain analysis to investigate the modes of cooperation of ICT businesses with other businesses and customers. Survey results show that most of the surveyed firms (50%) reported that they would describe their business as Business to Business (B2B) or e-commerce (Figure 15). The B2B means that these companies use online transactions among companies and government-related e-transactions. B2B e-commerce involves companies using the internet to transact with suppliers and service providers, suggesting that business transactions via the internet are on the rise. This finding also shows that most ICT firms sell their products and services to companies as end-user clients.

Figure 14: Range of services in the ICT consumption value chain

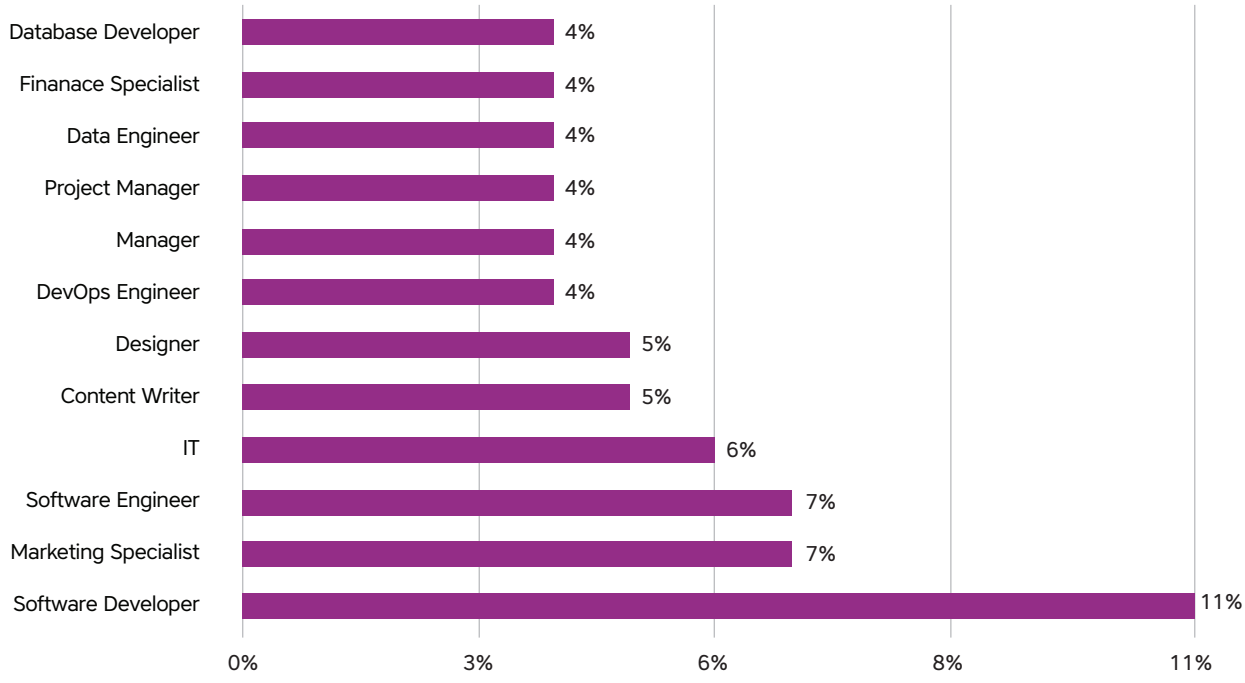


Source: Survey data, author's calculations

4.4 Human Resources

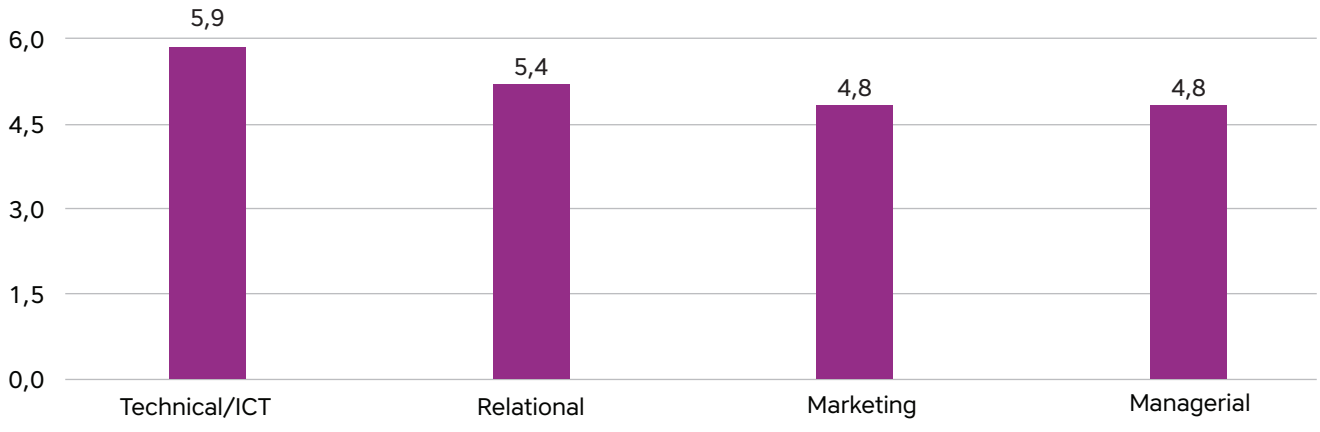
As shown in the previous section, employment in the ICT sector has increased significantly over the years. However, finding qualified employees of ICT companies has become challenging, according to the feedback received by the respondents. The STIKK and Index Kosova analysed IT companies' technical and managerial skills. In terms of skills, ICT firms listed CCNP, Java, C++, MySQL, OraclePHP, ASP, Perl, Python, HTML, and Linux, as the highest on the demand side, while managerial skills are marketing, sales, project management, contract management, business analysis (according to STIKK). The survey results from this report essentially confirmed this data. Figure 16 indicates that the skills required by ICT companies are mainly software developers (11%), followed by marketing specialists and software engineers (8%). Skills that ICT companies less require are; database developer, finance specialist, data engineer, project manager, manager, and DevOps engineer with 4%.

Figure 15: Skills required by ICT companies



Source: Survey data, author's calculations

Figure 16: Employee level of skills,



Source: Survey data, author's calculations

Figure 16 shows employee-level skills and that technical/ICT skills are listed as the most required, followed by relational, marketing, and managerial skills.

4.5 Innovation and Digitalisation

Survey results well suggest that 93% of companies that participated in the survey significantly invested in innovation and digitalisation compared to 7% that have not. The innovation and digitalisation-related activities are high compared to other sectors[23]. The high percentage of firms involved in some innovation indicates the sector's potential for growth and engaging companies from other sectors in the value chain.

Figure 17: Firm-level investments in innovation

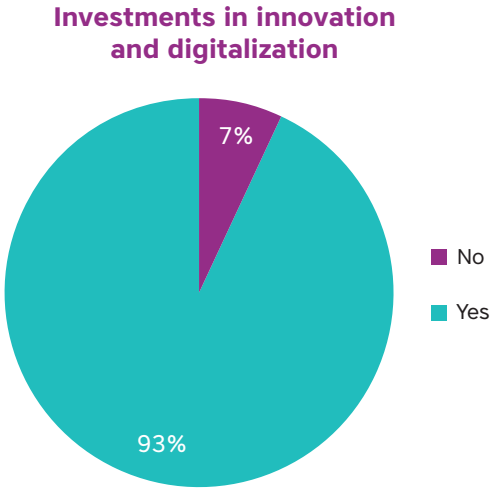
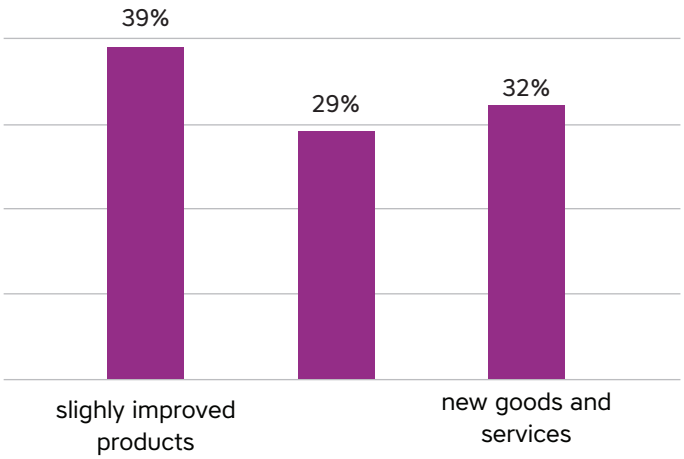


Figure 18: Rate of the introduction of new products



Source: Survey data, author's calculations

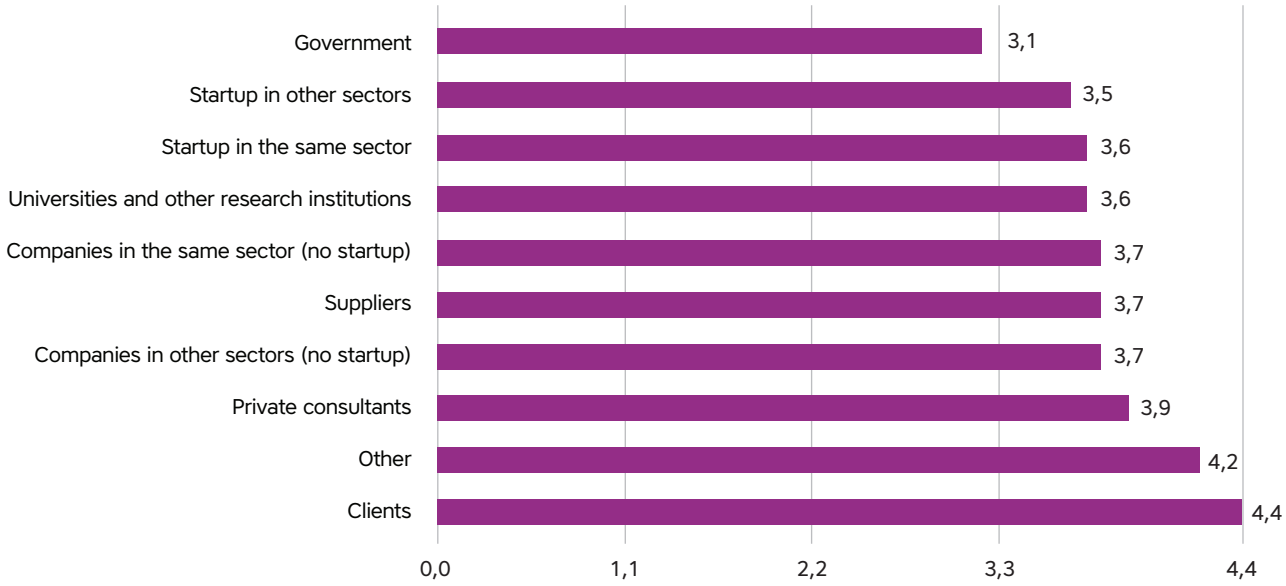
On the innovation and digitalisation intensity, figure 18 shows the rate of introducing new products, 39% of companies have entered an existing market, producing slightly improved goods and services, followed by 29% of companies that entered the market and provided products that are radically modified. In comparison, 32% launched one or more new goods and services to create a new market.

23 See other value chain mapping reports, like metal production value chain or plastic value chain mapping reports.

4.6 Value Chain Analysis: Networking and Supporting Services

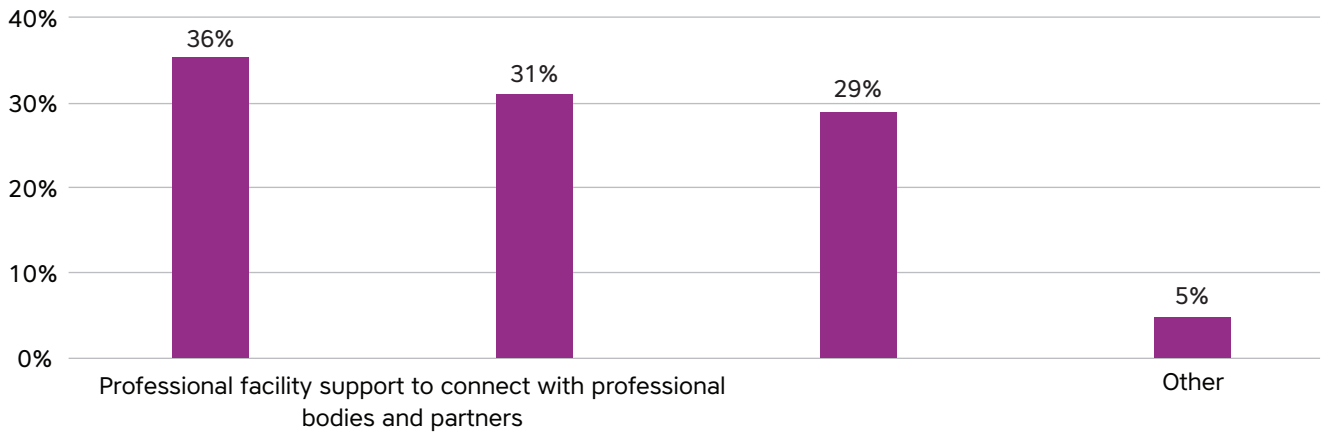
Survey results show that collaborations with partners are high on the agenda of the ICT firms surveyed (s. Figure 19). Cooperation with clients (4.5) is the most common, followed by others (4.2) and private consultants (3.9).

Figure 19: Collaborations with partners (1-no collaboration, 5-strong collaboration)



Source: Survey data, author's calculations

Figure 20: Factors related to the development of the company's Innovation and R&D



Source: Survey data, author's calculations

Survey results show that professional support to connect with professional bodies and partners (36%) is the leading source for companies to develop Innovation and R&D, followed by participating in actions, programs, instruments and grants by donors (31%), which are an essential source of support for companies in the ICT sector.

4.7 Value Chain Analysis: Enabling Environment

Several stakeholders help the ICT sector increase its capacities and become more competitive through financial and policy support. ICT sector's primary source of promotion was the private sector, particularly STIKK and the ME, in cooperation with other ministries and government agencies. These stakeholders focus on main policy instruments that aim to promote the ICT sector, such as the Electronic Communications Sector Policy or the Digital Agenda for Kosovo 2013-2020. Furthermore, Smart Specialisation Strategy for Kosovo, which has added the ICT sector as a priority, is at an early stage.[24] Currently, programs and activities aim to promote the ICT sector, technology start-ups, and ICT innovation companies. Relevant ministries, governmental agencies and STIKK aim to establish a digital Tech Park in Pristina, in order to provide a supportive environment for new businesses (will soon become functional). As an essential stakeholder, ICK under the Innovation Fund has been supporting entrepreneurship, innovation and commercially based business development with a focus on ICT start-ups, where 220 companies received financial support of a total of €1,8 million.

The ME is a vital stakeholder in drafting policies and strategies to support information technology, innovation and electronic trade, stimulate information training systems, and cooperate with the business community and associations to provide a stable business environment. ME acknowledged the importance of the ICT sector and its potential to become more competitive and internationalised. KIESA, which operates under MIET is responsible for promoting investments, supporting policies and programs to support MSMEs, and proposing policies to establish and develop economic zones. The MEST responsibility is to develop and implement education policies, including higher education and science policies. MFLT develops work and social welfare policies and legislations.

STIKK is a non-profit entity established in 2008 and represents the ICT sector association. It is an important stakeholder that protects and is a collective voice of ICT with a mission to create a better business environment for ICT through improving standards and education and attracting new businesses and investments.

STIKK is a business membership organisation (BMO) and member of the National Steering Committee for the Kosovo Digital Economy. STIKK publishes an annual IT barometer.

ICK aims to connect research and development in the scientific field with the private sector. In particular, it aims to create new job opportunities based on the knowledge economy and has supported 70 start-ups.

24 OECD/ETF/EU/EBRD (2019), MSME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, MSME Policy Index, OECD Publishing, Paris. https://doi.org/10.1787/g2g9fa9a-en

5. Supporting Policies and Institutional Setting

Kosovo has developed several national strategies and provided a legal framework regarding the ICT sector. The legislation adopted by regulatory institutions covers the ICT field and is aligned with EU legislation. Laws that cover the ICT sector, among others, are

- Law no. 04/L-109 on electronic communications,
- Law no. 04/L-094 on the information society services, and includes eCommerce law, eSignatures Law, ePayments Law, electronic contracts, etc.,
- Law on copyright and related rights, Law on amending and supplementing,
- Law no.04/L-065 on Copyright and Related Rights,
- Law on the Protection of Personal Data, and
- Law on Prevention and Fight of the Cyber Crime[25].

The Program of the Government of Kosovo (GoK) 2021 – 2025 has foreseen the development of the ICT infrastructure and related capacities, which are an essential source to increase the potential of economic development by focusing on the digital economy and building sufficient human capital. Within this plan, GoK will be focused on drafting a new Digital Agenda for Kosovo based on good international practices, including 5G infrastructure, electronic identification, and building human resources by training youth in the field of ICT. Likewise, GoK aims to promote public-private cooperation during this period by encouraging capital projects such as the Digital Technology Park in Bernica and the functioning of the Centre for Digital Excellence in the ITP[26].

Another strategy is the Digital Agenda for Kosovo 2013-2020, which is according to the objectives of various institutions, including the European Commission of 19 May 2010 to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions "A Digital Agenda for Europe" and the communication of EU commission of 2010 regards to strategy for smart, sustainable and inclusive growth. Kosovo's Economic Reform Program (ERP) acknowledges the potential of ICT and links it with economic development. The Kosovo National Development Strategy 2016-2021 focuses, among others, on encouraging the competitiveness of digital firms. Kosovo National IT Strategy is the core document of the national ICT sector. This strategy promotes digital transformation and the development of a knowledge-based economy by focusing on its primary goals: economic development, employment, innovation and increasing international competitiveness.[27]

25 European Commission (2018) INSTRUMENT FOR PRE-ACCESSION ASSISTANCE (IPA II) 2014-2020. EU Support for the Competitiveness of Kosovo's ICT sector

26 Government of Kosovo (2021), Program of the Government of the Republic of Kosovo 2021-2025 , https://kryeministri.rks-gov.net/wp-content/uploads/2021/05/11052021-OPM-Government-Programe-2021-2025.pdf

27 European Commission (2018) INSTRUMENT FOR PRE-ACCESSION ASSISTANCE (IPA II) 2014-2020. EU Support for the Competitiveness of Kosovo's ICT sector

The program of the GoK 2021 – 2025 also aims to take several steps to improve inter-institutional coordination concerning digitalization of inspectionprocesses[28]. Likewise, mechanisms to support enterprises are carried out through inter-institutional collaboration between the MIET and KIESA to conduct analysis and provide guidance on decision-making across ministries. For example, KIESA is part of the Innovation and Entrepreneurship Council Board. The Fund for Innovation and Technology Development (FITD) is an excellent example of how the training of MSMEs improves their investment readiness.[29] Other mechanisms to support young ICT enterprises through institutional services are the ICK and Gjirafa Lab. These institutions are donor based (for example, ICK is financed through Norwegian, Swedish and German donor programs and EU grants and Gjirafa Lab is supported by USAID). Another mechanism to support enterprises oriented towards innovation and digitalisation is the Jakova Innovation Center (JIC), established by the MIET with the support of the US Embassy in Kosovo.[30] The progress has been evident in supporting MSMEs in the digital economy. Relevant institutions such as the ICK have provided digital skills training, including online courses. This is also noted in the government's Economic Reform Programme 2022-2024 and its priorities on MSMEs and the digital economy. Ministries have been implementing projects to broaden access and use of ICT to enhance competition in the digital economy, and projects have been funded by Pre-accession Assistance.[31]

Some other instruments and programs aim to support the ICT sector. The main instrument of the EU to support the ICT sector in Kosovo is Technical Assistance and Information Exchange (TAIEX) instrument. This instrument assists Kosovo institutions in revising policy and legal framework and helps Regulatory Agency for Electronic Communications and Postal Services[32]. Kosovo Digital Economy (KODE) is developed by the World Bank, which aims to increase investments in rural areas and expand coverage, implement digital skills programs and increase the exports of digital businesses. This program is based on projects aiming to develop widespread infrastructure and encourage a digital economy. This project has two main components: Digital Infrastructure and Digital Jobs, which aim to reach the goals mentioned above and include other World Bank donors such as Kreditanstalt für Wiederaufbaum (KfW) and European Bank for Reconstruction and Development(EBRD).[33] The main focus is to improve digital economy skills and providing training programs for jobs required. This program includes several components/methods such as curriculum design, training delivery options, financing methods, and embedded matching services for students.[34]

28 Government of Kosovo (2022), Economic Reform Programme 2022-2024 Kosovo, https://mf.rks-gov.net/desk/inc/media/23D2D3B1-81C1-41FE-B6C0-2D5C739A6F69.pdf

29 OECD/ETF/EU/EBRD (2019), MSME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, MSME Policy Index, OECD Publishing, Paris. https://doi.org/10.1787/g2g9fa9a-en

30 OECD/ETF/EU/EBRD (2019), MSME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, MSME Policy Index, OECD Publishing, Paris. https://doi.org/10.1787/g2g9fa9a-en

31 OECD/ETF/EU/EBRD (2019), MSME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, MSME Policy Index, OECD Publishing, Paris. https://doi.org/10.1787/g2g9fa9a-en

32 European Commission (2018) INSTRUMENT FOR PRE-ACCESSION ASSISTANCE (IPA II) 2014-2020. EU Support for the Competitiveness of Kosovo's ICT sector

33 European Commission (2018) INSTRUMENT FOR PRE-ACCESSION ASSISTANCE (IPA II) 2014-2020. EU Support for the Competitiveness of Kosovo's ICT sector

34 European Commission (2018) INSTRUMENT FOR PRE-ACCESSION ASSISTANCE (IPA II) 2014-2020. EU Support for the Competitiveness of Kosovo's ICT sector

5.1 Export promotion programs and activities

The export promotion covered under the Private Sector Development Strategy 2013-2017 included measures such as actions, investment promotion, and support of sectors with the potential to export[35]. Currently, the export promotion program is under the Private Sector Development Strategy 2018-2022, linked with the National Development Strategy to identify strategic interventions and develop capacities for MSMEs to achieve sustainable competitive advantage and higher value of exports.[36] Private Sector Development Strategy aims to support MSMEs in developing products and production capacity, support MSMEs to moderate plants and technology to integrate into global value chains as well as according to the EU and global market technical standards. Similarly, National Development Strategy 2016-2022 objectives are to improve the quality of standards for productive activities, transition into higher value-added activities and facilitate connection to value chains across industries. This strategy also aims to promote networks and cluster associations based on several components[37].

Similarly, the GoK program 2021-2025 aims to improve industrial policies by encouraging public-private dialogue and analysis value chain for main strategic sectors. The structured communication with the private sector community and analysis of industrial sectors aims to provide evidence-based policy implications for sectors with potential development, creation of jobs, and exports. In terms of boosting exports, the government program aims to improve the legal framework and integrate the Kosovo market with the market in the region. Likewise, the government plan foresees reviewing agreements and liberalising the service market[38]. Furthermore, in terms of policies, Kosovo has adapted e-commerce and digitally-enabled services in line with EU standards. In 2020, Kosovo adopted the draft of Law on Electronic Identification on Trusted Services in Electronic Transaction, intending to stimulate e-commerce.[39]

35 Office of the Prime Minister (2016), National Development Strategy 2016-2021 (NDS), Office of the Prime Minister, Republic of Kosovo, http://www.kryeministriks.net/repository/docs/National_Development_Strategy_2016-2021_ENG.pdf.

36 OECD/ETF/EU/EBRD (2019), MSME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, MSME Policy Index, OECD Publishing, Paris. https://doi.org/10.1787/g2g9fa9a-en

37 OECD/ETF/EU/EBRD (2019), MSME Policy Index: Western Balkans and Turkey 2019: Assessing the Implementation of the Small Business Act for Europe, MSME Policy Index, OECD Publishing, Paris. https://doi.org/10.1787/g2g9fa9a-en

38 Government of Kosovo (2021), Program of the Government of the Republic of Kosovo 2021-2025 , https://kryeministri.rks-gov.net/wp-content/uploads/2021/05/11052021-OPM-Government-Programe-2021-2025.pdf

39 OECD (2021), "Kosovo profile", in Competitiveness in South East Europe 2021: A Policy Outlook, OECD Publishing, Paris. DOI: https://doi.org/10.1787/573f3543-en

6. Opportunities and Barriers

The opportunities and barriers derive from surveys with enterprises, in-depth interviews with STIKK and ICT companies and other stakeholder analyses, which have identified several opportunities and barriers.

6.1 Opportunities and Competitive Potential

Kosovo has a high competitive potential in the ICT sector, and because the sector has experienced rapid growth in past years, it has become a top priority on the government's agenda[40]. Considering both the structure and the competitive advantage of Kosovo in the ICT industry, it has the potential to follow the examples of developing countries to use the ICT industry as a source of economic growth. To ensure the competitive advantage, the ICT industry could improve the position in international markets and build a strong position as a source of digital excellence, IT entrepreneurship and innovation by taking other countries known for innovation and competition in the ICT sector, such as Estonia, Lithuania, and Singapore[41]. However, the potential of Kosovo in terms of competitive advantage and other factors affecting it is similar to other neighbouring countries such as Serbia and Northern Macedonia[42].

Findings from our survey show that the quality of the services followed by technical expertise, delivery time, and punctuality are the primary sources of competitive advantage in the international and local market. Furthermore, other factors such as sector knowledge, cultural knowledge, the price in the international market and the knowledge of the language of human resources are essential sources of competitive advantage. From the holistic view of the sector, these factors are the source of competitive advantage. These factors are also interconnected to the ability of institutions to follow up on progressive policies to encourage enterprise and sector growth. Findings from our survey align with other study reports, which maintain that Kosovo has a strong competitive advantage in providing opportunities and building a service-based economy. Factors that may lead to such competitive advantage are a young workforce, highly skilled workers, and ICT workers, where the majority are bilingual and has access to Central European Free Trade Agreement (CEFTA), EU, and European Free Trade Association (EFTA) markets[43]. Furthermore, the high level of the ICT sector's productivity shows that this sector has a competitive advantage and the potential to expand its share in Kosovo's economy[44].

40 Patricolo, Claudia (2018) ICT in Kosovo: Great Potential, Obstacles Remain. (Available at: https://emerging-europe.com/news/ict-kosovo-great-potential-obstacles-remain/)

41 Patricolo, Claudia (2018) ICT in Kosovo: Great Potential, Obstacles Remain. (Available at: https://emerging-europe.com/news/ict-kosovo-great-potential-obstacles-remain/)

42 World Bank (2017) WESTERN BALKANS: Regional Economic Integration Issues Notes (Link: https://openknowledge.worldbank.org/bitstream/handle/10986/28316/117236-REVISED-x-WB-Regional-Economic-Integration-Issues-Notes-5-July-2017.pdf?sequence=1&isAllowed=y

43 MTI (2019). Further support to the development of trade in Kosovo. Report on Non-Tariff Barriers affecting Exports from Kosovo Draft document for discussion April 2019 (Link: https://mti.rks-gov.net/desk/inc/media/F280502A-D0BD-4ED4-ACA3-AAD-0042AB950.pdf

44 World Bank (2017) WESTERN BALKANS: Regional Economic Integration Issues Notes (Link: https://openknowledge.worldbank.org/bitstream/handle/10986/28316/117236-REVISED-x-WB-Regional-Economic-Integration-Issues-Notes-5-July-2017.pdf?sequence=1&isAllowed=y

The advantages of the domestic ICT sector are supported by existing incubators and accelerations and the low cost of workspace. The ICT ecosystem in Kosovo has several labs, innovation centres and workspaces that offer support for start-ups, such as mentoring, financing, incubation, training and co-working spaces. The competitive advantage that Kosovo offers is based on the young population. The age of entrepreneurs and their willingness of them to take risks, provide solutions to complex problems, and the ability not only to focus on bringing new innovative ideas but also to maximise the advantages of other's innovations. Hence, the number of creative individuals may be the source of sustainable competitive advantage as they always are willing to focus on innovation[45].

Kosovo's future competitive advantage depends on several factors related to different levels. Firstly, R&D transformation into innovation may lead to products and services that positively reflect business investments and technological sophistication. Having an efficient national innovation system in place is related to the capability of various actors such as science, the private sector, policy and financial institutions, market intermediaries and society to cooperate and build a strong relationship between these stakeholders. Thus, activating different stakeholders at different stages is critical for innovation[46]. Well-functioning innovation system depends on internal technological improvement by the firms, which depends on several factors such as highly qualified science and technology human resources, collaboration with researchers, increasing the intensity of training, broadening services such as R&D and the ability of enterprises to access and maximise from global technology development[47].

Based on the findings, a set of opportunities can be identified and considered as future drivers of the ICT sector.

- The domestic ICT industry's significant potential to grow thanks to strong demand from foreign markets. It can be expected that this trend will further increase over the coming years
- Most ICT enterprises have already met clients' expectations in international markets, which has led to an outstanding international reputation. Based on this reputation, international clients can be well served in the future as well.
- The ongoing digitalisation of various industries in Kosovo and abroad will increase the demand for ICT-related products and services. There is a strong cross-sectoral cooperation potential with other sectors, like metal manufacturing or food and beverage.
- The focus of ICT enterprises in international markets has increased the diversification of services and products the firms can offer. This diversification can help Kosovan ICT firms to respond to future demands satisfactorily.
- Due to the excellent reputation and international experiences of many domestic ICT firms, there is a shift towards more long-term and higher value-added projects from which the firms can significantly benefit.

6.2 Barriers

The ICT sector in Kosovo faces several constraints. The heterogeneity of stakeholders and the challenge to align current and future interventions, build a conducive legal framework, and implement policies to encourage the private sector to grow are to be seen as key barriers. Furthermore, overcoming the cultural

45 https://www.forbes.com/sites/forbesbusinesscouncil/2022/04/18/kosovo-an-example-of-how-young-professionals-can-transform-the-tech-industry/?sh=8f3925f53097

46 World Bank (2013). Country Paper Series Kosovo. Western Balkans Regional R&D Strategy for Innovation (Available at: https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-R&D-Kosovo.pdf)

47 World Bank (2013). Country Paper Series Kosovo. Western Balkans Regional R&D Strategy for Innovation (Availableat: https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-R&D-Kosovo.pdf)

differences, encouraging trust between entrepreneurs and researchers, lowering the red tape, and stimulating the private sector to be more proactive in R&D to gain a competitive advantage are some constraints and challenges the sector faces[48]. The ICT sector is a comparable new sector in Kosovo. Some stakeholders do not have in-depth knowledge and resources combined with the lack of a robust institutional framework, including the relationship with markets and trends in the industry[49]. Obstacles also remain in software and IT services related to the growing demand for outsourcing. The number of ICT graduates at the university level remains a concern[50].

The capability of the ICT sector to innovate is limited. Connecting education and research institutions to improve and stimulate innovation capabilities through knowledge transfer is limited. Incentives that encourage the private sector to get engaged in R&D are missing. R&D in Kosovo is underdevelopment, mainly due to the lack of ICT infrastructure and insufficient human capacity in R&D institutions.[51] Despite the actions undertaken by the education system towards globalisation and international qualifications by offering various degrees, the participation of higher education institutions in technological platforms remains low. Therefore, it led to a gap between underdeveloped relations with global network research and innovation institutions, including the diaspora scientific community[52].

Survey results show several obstacles the ICT sector faces that negatively affect the sector's development.

- Shortage of employees' skills and capacities in relation to specific skills required by the domestic ICT enterprises. The shortage of skilled workforce is, by far, among the most critical barrier to further growth of the domestic ICT sector.
- The vast majority of Kosovan ICT companies are micro and small firms with limited workforce and financial capacities. Small firms always have issues gaining access to the necessary financial means or taking over bigger assignments for national or international clients. The limited firm size can be considered a barrier to future growth opportunities.
- Like in other sectors in Kosovo, there is a lack of cooperation and coordination between different stakeholders. Especially with regards to education and skills development. This hampers the national system from moving and adapting to industrial needs. Private training providers are still an exception in Kosovo that might contribute to reducing this shortage.
- Weak legal framework and the lack of implementation of dedicated interventions to support sector development. Although the ICT sector developed comparably well over the recent past, the current legal framework conditions are not entirely conducive for the ICT sector.
- The government lacks advanced export support programs, incl. support in finding the right business partners or tailor-made market information, provision of export-oriented training and business development activities or availability of financial instruments for export activities (e.g., export financing schemes). National branding and promotion activities would raise international visibility of the competitiveness and attractiveness of the national ICT sector.

These are other obstacles, which lay outside the scope of the ME, like current visa requirements, lack of big e-payments and e-commerce platforms, or the missing internationally recognised conformity assessment system (incl. standardisation, testing, certification, and accreditation).

48 World Bank (2013). Country Paper Series Kosovo. Western Balkans Regional R&D Strategy for Innovation (Available at: https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-R&D-Kosovo.pdf)

49 https://emerging-europe.com/business/kosovos-it-sector-the-hidden-diamond/

50 Patricolo, Claudia (2018) ICT in Kosovo: Great Potential, Obstacles Remain. (Available at: https://emerging-europe.com/news/ict-kosovo-great-potential-obstacles-remain/)

51 World Bank (2013). Country Paper Series Kosovo. Western Balkans Regional R&D Strategy for Innovation (Available at: https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-R&D-Kosovo.pdf)

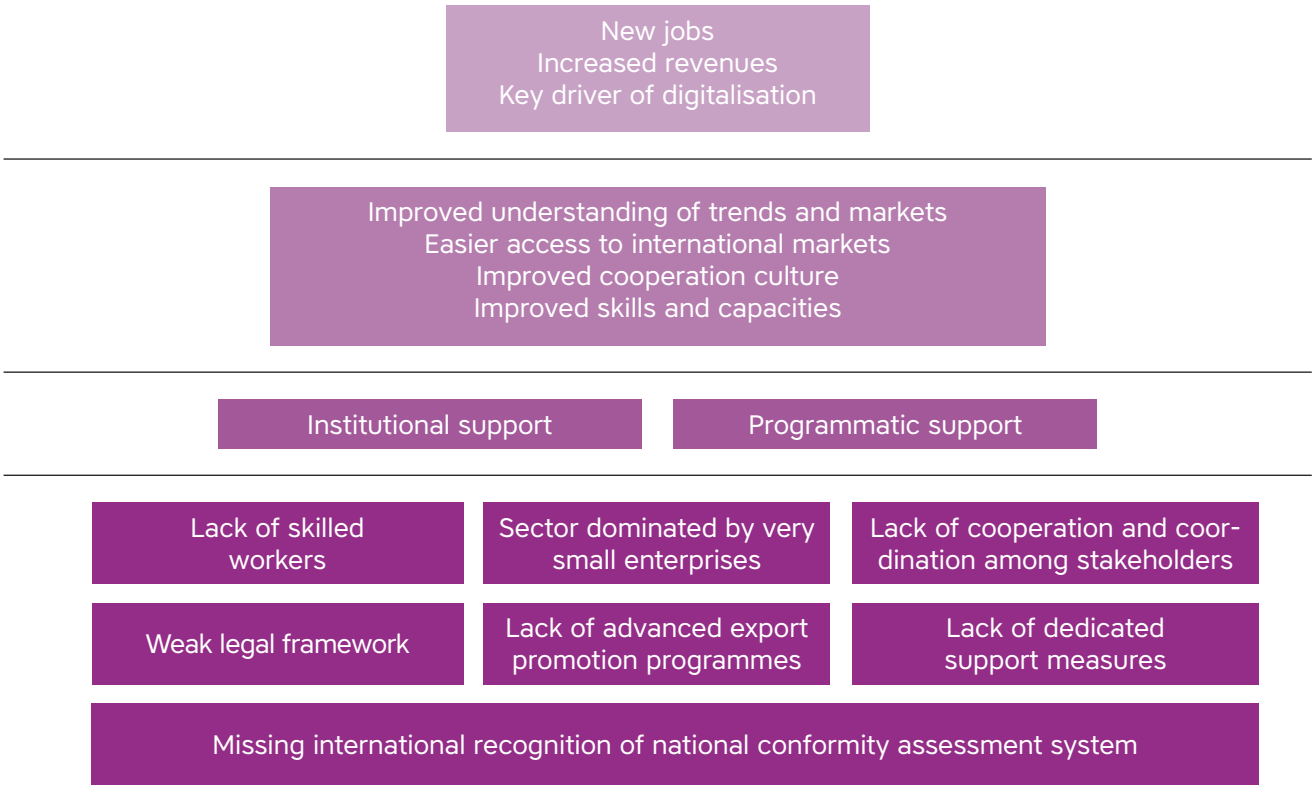
52 World Bank (2013). Country Paper Series Kosovo. Western Balkans Regional R&D Strategy for Innovation (Available at:https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-R&D-Kosovo.pdf)

7. Main Recommendations/ Interventions

The Kosovan ICT sector has developed into a sector with strategic importance and relevance. The high relevance is not only given because of the high growth and job creation potential but also because of the relevance for other domestic sectors in Kosovo. For a successful digitalisation of other key sectors in Kosovo, there is a need for a strong and competitive national ICT sector. Over recent years, several stakeholders consistently supported the ICT sector in various ways to help this sector to grow and become internationally competitive.

However, to remain internationally competitive, it appears to be advisable that some interventions related to the legal and institutional frameworks are implemented to contribute of the long-term competitiveness of the entire sector. In the following several interventions and activities are proposed that shall be considered by the Government, donor organisations and business associations. If implemented, they can serve to form the basis for policy set-up and improved framework conditions conducive to strengthen Kosovo's ICT sector. Drawing on qualitative (interviews with key stakeholders) and quantitative (survey with ICT companies) evidence, it can be concluded that the ICT sector has improved exponentially in Kosovo in recent years, and its performance is promising. Especially in the last two years, during the COVID-19 pandemic, the demand for ICT-related services provided by domestic firms has tripled or quadrupled. However, the ICT sector faces several barriers related to institutional set-up, financing, information sources, and a lack of skilled labour.

Figure 21: Theory of Change of the proposed interventions, Source: Anteja ECG



The main objectives of the proposed interventions aim to improve the competitiveness of the entire ICT sector by specifically addressing the identified barriers and constraints (s. Figure 21). The overall goal can be achieved through a series of interventions on the institutional and programmatic levels. These interventions shall be embedded in a long-term strategic approach and the commitment of the government to improve the framework conditions of the ICT sector in Kosovo. The set of interventions proposed is composed of institutional as well as programmatic support that tackles one or several barriers/constraints identified within this study (s. chapter 6). Focus is given to such interventions / recommendation, which are in the scope of the ME.

Recommendation 1: Support workforce development

Rationale: The lack of a skilled workforce acts as a key barrier. In designing future support programmes for workforce development, particular attention should be paid to provide demand-oriented and practical trainings according to the ICT sector's needs. The national educational system is not prepared for the future demand of the ICT sector. Even in case efforts are spent on upgrading the curricula and infrastructure of national vocational training education centres, this will take time, and it is unclear to what extent it will be possible for such institutions to provide the support which is really needed. Furthermore, training of workers is time consuming and often expensive.

Many ICT companies are ready to prepare the new or existing personnel through on-job training but are reluctant because of the costs of such efforts. This is especially relevant for micro and small ICT companies. Here, the Kosovo government can provide new possibilities to support the formation of human capital development that subsidies training costs of the personnel and workers. Such governmental interventions may include a voucher programme to develop a company-based training strategy to train current and potential employees. Through such vouchers, companies will get reimbursed for their investments in training employees. Such vouchers can also be applied to encourage women and girls to increase ICT and digitalisation knowledge on the job.

The main beneficiaries of the grant scheme can be ICT companies who can receive advice in formulating skills strategies and financial support for skills development through training vouchers.

- Enterprises can receive support in training needs assessment of their workers, e. g. part of a skills strategy, which can be understood as a precondition for future training activities.
- Enterprises can receive vouchers for training programs relevant to developing mandatory skills.
- Education and training providers, scientific organisations, associations or BMOs can receive support to develop and implement new training programmes, and additional support for forming international partnerships with training providers from abroad.

The scope of such a voucher scheme shall be comparable open and flexible. It can cover expenditures like

- Trainers' personnel costs for the hours/days during which the trainers participate in the training;
- Trainers' and trainees' operating costs directly relating to the training project, such as travel expenses, accommodation costs, materials and supplies directly related to the project, depreciation of tools and equipment, to the extent that they are used exclusively for the training project;
- Costs of advisory services linked to the training project, and

- Trainees' personnel costs and general indirect costs (administrative costs, rent, overheads) for the hours during which the trainees participate in the training.

If successfully implemented, the voucher scheme can improve the skills needed by ICT personnel to meet the future requirement of national and international clients.

Good Practice Example

Several European countries successfully implemented similar training voucher schemes, like Croatia and Slovenia. The Slovenian approach is very successful, where such vouchers for (digital) skills development are an incentive for micro, small and medium-sized enterprises with the possibility of 60% co-financing. As far as the implementation is concerned, there are regular public calls for such vouchers to be published as part of the Slovenian Enterprise Fund (SPS). There are different kinds of voucher schemes, but this one is intended to raise competencies in enterprises. There is good evidence that the voucher scheme encourages enterprises to provide adequate skills to employees and management staff for the key areas of their business and co-financing eligible training costs (group, individual) for raising competencies (outsourcing costs). The maximum amount per voucher is limited to €10,00053.

Recommendation 2: Addressing the 'brain drain effect'

Rationale: The ICT sector is characterised by high levels of brain drain. The reasons for such an effect are very different. ICT talents and high potentials are moving to different countries because they have professional goals such as becoming partners, getting a better education, a better health system or even better salaries.

The government and business associations such as STIKK should take a leading role in lobbying and advocating the issues surrounding ICT professionals and consider introducing brain gain incentives for this sector. This will become a long-term engagement and shall consist of various measures, which also may partly layout the scope of the ME. The stakeholders of the ICT sector should address fundamental issues with measures aiming at improving governance, strengthening institutions, and improving the delivery of public services. Increasing productivity in high-skilled occupations, many of which are in the public sector, and making wages more competitive, would entice workers to remain. At the same time, private sector development and job creation need to be complemented with public sector reforms – without which, high-skilled ICT professionals will continue to emigrate. Expanding and improving tertiary and post-graduate education is another key policy option, despite concerns that this approach might spark even more emigration, leading to further losses. Several countries, including Romania and Croatia, have already followed this path to keep more students from going abroad in search of higher-quality education[54].

High-skilled female migrants currently represent the fastest growing group among all migrants in Europe. Ensuring more opportunities for women would naturally lead to less emigration of high-skilled women and help countries slow down the brain drain.

A large diaspora can generate economic benefits for origin countries. Emigrants who stay actively engaged with their countries of origin can positively impact their home communities through remittances, investment, and

53 https://www.podjetniskisklad.si/en/

54 Demirgüc, S.; Muller, C. 2019, Is there a policy remedy for brain drain in Europe, World Bank, https://blogs.worldbank.org/europeandcentralasia/there-policy-remedy-brain-drain-europe

knowledge transfer. There is also some promising evidence that suggests that governments can successfully encourage the return of their high-skilled diaspora by providing tax incentives to returning emigrants. The return of migrants can support economic development, especially when they bring capital and knowledge and when their home countries provide the right conditions for them to fully use their skills and experience.

Good Practice Example

In 2016, in an attempt to attract back some of its ICT citizens that left the country, the Romanian government launched a scheme offering €50.000 grants, along with business guidance, to each person who wants to repatriate and start their own business. This initiative was combined with other government initiatives trying to counter the brain drain including setting low tax rates for its IT workers to help retain its large numbers of skilled developers and to attract investment. Despite the fact that the long-term impact of such measures is still unknown, the initiative succeeded to motivate some IT workers to return to Romania already.

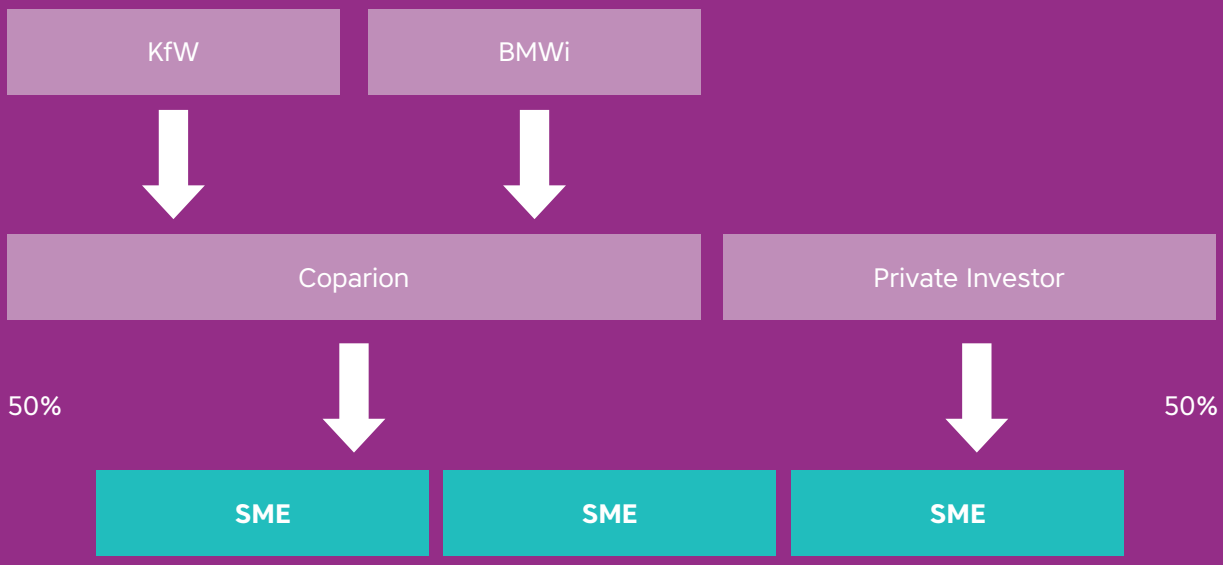
Recommendation 3: Implementation of new financial mechanisms to allow ICT firms to grow

Rationale: Most ICT companies in Kosovo are micro or small firms. In order to remain competitive on the international level, the size (and capacity) of ICT companies are critical for success. So far, there are no financial mechanisms or schemes in place that facilitate ICT companies' growth.

In order to support and facilitate companies to grow, a set of regulatory and financial interventions seems to be the most promising way. Firstly, the Law on Accelerators and Business Angles (as part of the Law on Entrepreneurship and Innovation) is not in place and needs to be implemented as soon as possible. The Law will help regulate venture capitalists, business angels, investment houses or other support for start-ups crucial for incubation and early-stage support and growth. Owing to the importance of these financing forms, the government should immediately consider formulating and passing this Law and design incentive schemes to motivate and facilitate more start-ups, established businesses and entrepreneurs to grow.

Good Practice Example

In the past, it remained a challenge also for German ICT companies to get proper access to finance to grow or invest. One key reason was that private investors were reluctant to take the entire risk of investing in such firms, especially between the start-ups and the growth phase. Thus, the German government set-up a €225 million investment fund (COPARION). COPARION invested as a co-investment fund with private lead investors on economically equal terms (pari passu approach) in young, technology-oriented companies (incl. ICT companies, up to €10 million per investment). The objective was to stimulate private investment in young companies, especially in small and medium sized technology companies in Germany, which were not older than 10 years and which developed new (ICT) products, processes or services or which or services or introduced them to the market. Due to the equal investments, the risks for private investors were significantly reduced. COPARION was managed by the Kreditanstalt für Wiederaufbaum (KfW), a German state-owned investment and developmen bank. The financial means were provided by the Federal Ministry for Economy55



Source: KfW, https://www.kfw.de/%C3%9Cber-die-KfW/Newsroom/Themen-kompakt/Beteiligungsfinanzierung/

Recommendation 4: Improving the national patenting and IP system

Rationale: The fast-growing ICT sector sets new and high requirements for patenting and IP regulations. The current national system is not well developed and cannot satisfy the ICT companies' needs. Especially since patenting and IP regulations for the ICT sector are, in general, very complicated. Furthermore, new topics like Patenting of AI solutions; put more pressure on the national system to develop. Also, the current Law on Patenting has shortcomings in terms of software development products and should be modified to reflect the needs of software development products.

Consequently, the government should support a different scheme for the companies to patent their products/services internationally and ensure IP protection. Alternatively, a cost-sharing mechanism for patents

55 Nowdays called Fderal Ministry for Economy and Climate Action

should be provided to support the protection of Intellectual Property Rights (IPR) of Kosovo's ICT businesses (incl. start-ups) and their internationalisation.

To this end, the government should increase the capacities of the Industrial Property Agency as a central administrative body of the MIET, which is responsible for the legal protection of innovation, trade mark, industrial design, and other issues arising from international agreements the signatory of which is the Republic of Kosovo.

Finally, awareness raising about the importance as well as information about how to apply for patents are interventions that might raise the attention of Kosovan ICT companies.

Good Practice Example

Entrepreneurs seeking information about patenting and IP regulations can use the INNOACCESS portal to learn more about how to apply in their home country. The portal has been in 2015 – 2019, managed by the project Value Intellectual Property for MSMEs56, Programme H2020 Innovation action, with guidance provided by the European Commission. The aim and purpose of the INNOVACCESS portal website is to serve the needs of MSMEs on a national and European basis whilst continuing to improve and intensify cooperation amongst each other and with general business support organisations. The INNOVACCESS website was initially presented by the Network of National Patenting Office Europe in 2006. The main goal of the portal is to sustainably enhance Intellectual Property support services to MSMEs in order to allow them to understand the value of the intellectual capital they create and own and to define strategies and management practices allowing them to better turn this capital into commercial values and competitiveness.

Recommendation 5: Support BMOs in introducing new services

Rationale: Collaboration and networking among the ICT companies in Kosovo is still an exception. This becomes challenging for domestic ICT companies because cooperation and networking become increasingly important to remain competitive and satisfy the demands of (large international) clients.

Although well-established BMOs exist in the ICT field in Kosovo (like STIKK), such associations should be strengthened and work with other stakeholders to bring together different sectors to benefit from synergies and member-to-member services. For example:

- Foster collaboration between ICT and other manufacturing sectors such as the metal and wood processing sector because the ICT sector can help other sectors to initiate a digital transformation.
- A company is professional in scrum masters or any other managerial tool and can freely share the knowledge and experience with other companies.
- Companies with more expertise offer pro bono training in General Data Protection Regulation (GDPR) for new companies will soon be a requirement.

56 https://innovaccess.eu/about-us/

Increased interactions among ICT companies through BMOs (incl. B2B networking events and other activities are options) to proceed accordingly. The exchange of ideas or expertise helps build more comprehensive market intelligence and increase export. ICT companies that are associate members of STIKK need support by consulting services from law companies in ares of patent registration an doter intellectual property registration. This may increase the demand for law companies' services to work for ICT sector as subcontractors, which presents considerable potential for growth of consulting companies. These examples show how BMOs and other associations can support their members through new, demand-driven services. For example, GoK and donors can receive support or advice from STIKK when implementing proposed voucher schemes.

Good Practice Example

Germany has a well-established BMO landscape with various associations, regional networks and cluster initiatives. They all serve different purposes. Bitkom is the biggest ICT association in Germany (comparable with STIKK), but there are many other BMOs, more acting on a regional level. E. g. CyberForum e.V. is one of the largest ICT cluster initiative in Europe and located in Karlsruhe (regiona of Baden Württemberg). It has more than 1.200 members, most of them coming from the region itself. From start-ups support to international corporations: the CyberForum e.V. brings the private sector, academia and public sector representatives from the region together.

CyberForum is a non-profit business member organization and follows its guiding principles "From the network, for the network". The exchange of experience, knowledge, contacts and ideas takes centre stage. Exciting business ideas are actively supported, entrepreneurs meet like-minded people, scientists and technology enthusiasts make contact with economists, creative minds and business angels. The members come from various branches such as software development, e-commerce, IT consulting, social media, gaming, IT security, software architecture and media agencies and the creative industry. CyberForum supports businesses from the IT and high-tech industry in all stages of their development: from start-up consulting to professional staffing and even location marketing campaigns.

Cyberforum is also actively engaged in implementing public support programmes related to ICT, like regional start-up support schemes or similar.

Source: Cyberforum e. V., https://www.cyberforum.de/en/about-us/

Recommendation 6: Stimulate Smart Procurement and introduce incentives for ICT companies in public procurement

Rationale: The findings have revealed that only a few domestic ICT companies are interested in competing for local government open tenders or bids. This might be attributed to the high bureaucratic application procedures imposed by governmental organisations. Also, the legislation favours the lowest price for bidders, which is often unsuitable for ICT companies. Other challenges include the limited capacities of governmental officials to design the ToRs of tenders properly or evaluate the technical offers of the ICT bidding companies.

Consequently, procurement procedures should be eased and reconsidered to make them more user-friendly to foster higher interest from ICT companies. For example, the ICT companies highly appreciated the Kosovo Credit Guarantee Fund (KCGF) as it presented a window for credit without high collateral requirements. Otherwise, ICT companies hesitate to participate in direct support programs deriving from the governments mainly due to trust issues. In this context, the government should seriously reconsider restructuring its current approach toward this sector by providing professional and tailor-made support for ICT companies to become reliable partners. Modifying the current Law on Procurement and training officials to design the ToR and evaluate the project proposals is essential for increasing the quality of ICT services ordered by the government.

Good Practice Example

The Organisation for Economic Co-operation and Development (OECD) has developed a framework to support interested actors in their use of public procurement for innovative services and products. The challenges of implementing "smart" public procurement strategies for innovative services and products are many, such as reducing risk aversion, setting up new forms of co-ordination between potential bidders and purchasers, improving skills and capacities of the tenderers, encouraging public purchasers to dialogue with suppliers, and enhancing data collection and the monitoring of results. The key actions/recommendations on how to improve public procurement processes are

Set up a legal framework, including understandable definitions, guidelines and templates to facilitate the process of public procurements.

Assure sufficient budgets, funds, and other financial incentives to attract competitive suppliers

Promote professionalisation by providing specific training to build staff capabilities and skills, setting up multidisciplinary teams, and competence centres focused on public procurement for innovation.

Raise awareness by publishing good practice cases, creating a dedicated knowledge-sharing platform and/or hosting workshops and seminars to share and build success.

Undertake risk management and measure impact to reduce possible loss and damage and increase trust.

Define test standards, methods and quality certificates, using standardisation as a catalyst.

Use appropriate e-procurement and ICT tools to carry out a proper risk assessment to measure impact.

Source: OECD and World Bank, 2017, https://ppp.worldbank.org/public-private-partnership/library/public-procurement-innovation-good-practices-and-strategies

Recommendation 7: Implementation of Digitalisation Voucher Scheme

Rationale: The COVID-19 pandemic was a turning point, especially for the domestic market. Many companies realise the necessity and benefits of purchasing or adopting digital solutions. Findings from other sectors demonstrate that many companies are reluctant to deal with digitalisation-related topics. The low investment rate of companies in such issues is apparent. There are many reasons for such a reluctance.

Enterprises in Kosovo are not able to invest in digitalisation.

Designing and implementing a so call Voucher Programme is recommended to respond appropriately to the constraints mentioned above. Voucher programmes are well established in Europe and beyond. They have proven to be an effective tool to support MSMEs in various areas (e. g. Voucher for Digital Transformation, Belgium), and transformation (e. g., Transformation Voucher Baden-Württemberg[57]). A voucher programme usually consists of economic incentives granted by local, regional and national governments to enterprises to address pre-defined goals. In this context, the voucher programmes are meant to address MSMEs and focus on support in digitalisation matters. The amount of the vouchers shall be limited, e. g. €10,000 per voucher and applicant (within 24 months).

Digitalisation vouchers can cover

- Diagnostics and innovation auditing
- Innovation-related services (contract research, proof of concept, prototyping, testing and validation, demonstration activities, scale up), technology transfer, and commercialisation services (such as patent drafting and protection)
- Testing, certification, and standards services
- Business advisory services, including market research, design, and branding; business strategies and planning; operation and management improvement projects

The amount of the vouchers shall be limited, e. g. €10,000 per voucher and applicant (within 24 months)

Good Practice Example

The Walloon regional government of Belgium issues vouchers for digital transformation and cyber security for local MSMEs to stimulate investment in transformation and digitalisation. The vouchers support the implementation of various measures and cover costs up to €60,000. This also includes the support for risk analysis and cybersecurity policy setting (up to €20,000). The region of Wallonia issues the vouchers. In 2017 and 2018, vouchers worth €1.5 million were issued each year. The voucher scheme was part of the package for Research, Technology and Innovation (RTI) support measures specifically tailored to MSMEs and leveraged an additional €800,000 in private investments of the benefitting MSMEs. Between March 2017 and November 2018, more than 350 MSMEs received funding. The Walloon voucher system represents a fast and flexible support scheme requested by the local industry58.

57 https://www.transformationswissen-bw.de/beratung/beratungsgutschein
58 https://portail-wallonie.valid.wallonie.be/en/demarches?recherche=voucher

8. The Way Forward

The ICT sector in Kosovo has developed very well in recent years. It has grown successfully and can be seen as a driver of jobs and economic growth. However, the value chain mapping results also show emerging challenges despite all the positive developments. Even in good times, these challenges should be consistently addressed by all stakeholders in order to position the ICT sector well for the future.

But the challenges are not only about the development of the ICT sector itself but also about the fact that this sector is a pacesetter for digitising other domestic sectors that are important for the country. For example, the metal manufacturing and food & beverage sector are significantly under digital transformation. These sectors can only succeed if cross-sector cooperation can be initiated. However, this can be a significant challenge for the future, especially since the ICT sector continues to be as export-oriented as it has been to date. There is an increasing lack of capacity or incentives for Kosovan ICT companies to engage with domestic customers, whether from the public or private sector. When orders from abroad are more lucrative and less bureaucratic than domestic clients, ICT companies understandably turn their attention to foreign customers. However, precisely this lack of capacity could prevent domestic companies from other key sectors that want to devote more in-depth attention to the topic of "digitization" and possibly even invest in finding suitable partners and service providers locally. This is precisely where some of the proposed recommendations start in order to be able to counteract these concerns.

In addition, it is of utmost importance that the recommended interventions are consequently implemented. Some of them are comparatively easy to implement; others are quite complex. Nevertheless, the interventions must be delivered in a demand-oriented, fast and comparatively unbureaucratic way. Companies need quick decisions and not months of waiting. The study lays the foundation for a public-private dialogue about the findings and proposed interventions. In the end, it should lead to targeted use of the limited public funds where they could have the greatest impact on the ICT sector.