



ODA EKONOMIKE | KOSOVA CHAMBER  
E KOSOVËS | OF COMMERCE



Implemented by

**giz** Deutsche Gesellschaft  
für Internationale  
Zusammenarbeit (GIZ) GmbH

# Digitalization of Businesses in Kosovo

## -Status quo, -Challenges and Opportunities



December, 2019



This report was produced within the framework of the efforts of the Kosovo Chamber of Commerce (KCC) to support its members to better cope with digital transformation in Kosovo. It was co-financed by the Gesellschaft für Internationale Zusammenarbeit Creating employment through export promotion (GiZ CETEP). We also would like to thank the team of international and local expert, and the team of the Chamber for all its effort to make this study happening in such a short period of time.

**Disclaimer**

The information and perspectives set out in this Report are those of the authors and do not necessarily reflect the official opinion of the Kosovo Chamber of Commerce or GiZ. Neither the Kosovo Chamber of Commerce nor any person acting on their behalf may be held responsible for the use that may be made of the information contained therein. Reproduction is authorized, provided the source is acknowledged, unless otherwise stated. For use/reproduction of third party material specified as such, permission must be obtained from the copyright.

<b>Table of Content</b>	<b>Page</b>
<b>1 Preface</b> .....	<b>5</b>
<b>2 Summary</b> .....	<b>6</b>
• Improved efficiency and productivity .....	6
• New sales channels with customers .....	6
• Better services for customer at the heart of the Universe .....	6
• Facilitation of innovation .....	6
<b>3 Introduction</b> .....	<b>7</b>
<b>4 Objectives, Scope and Methodology</b> .....	<b>9</b>
<b>5 European Single Digital Market</b> .....	<b>11</b>
5.1 Support Schemes in Kosovo .....	12
<b>6 Sectors Considered as a Glance</b> .....	<b>13</b>
6.1 Manufacturing .....	14
6.2 Agribusiness .....	16
6.3 Tourism .....	18
6.4 Retail .....	19
<b>7 Findings</b> .....	<b>20</b>
7.1 Digitalisation in Manufacturing SME .....	20
7.1.1 Current status.....	21
7.1.2 Challenges and opportunities .....	24
7.1.3 Digitalisation trends.....	26
7.2 Digitalisation in the Agribusiness SME .....	30
7.2.1 Current status.....	31
7.2.2 Challenges and opportunities .....	32
7.2.3 Digitalisation trends .....	35
7.3 Digitalisation in the Tourism SME.....	37
7.3.1 Current status.....	38
7.3.2 Challenges and opportunities .....	39
7.3.3 Digitalisation trends .....	42
7.4 Digitalisation in the Retail SME .....	44
7.4.1 Current status.....	45
7.4.2 Challenges and opportunities .....	46
7.4.3 Digitalisation trends.....	48

---

7.5 Summary of cross-sectoral key issues .....	50
<b>8 Conclusion.....</b>	<b>53</b>
<b>9 Recommendations and Call for Actions.....</b>	<b>55</b>
Appendices .....	57
Case study “ARCHTIME “ N.P.T.....	58
Case study “INOVA” - Plastic Pipe Industry .....	59
Appendix A: Questionnaire for Manufacturing Sector .....	60

## 1 Preface

Dear all,

Kosovo Chamber of Commerce has always been committed to strengthening the role of the private sector in the function of sustainable economic development.

To enable this, along with the services it provides, it constantly informs the business community on the economic developments in the country, and addresses issues of importance to relevant institutions.

In support of the private sector under the new objective of Private Sector Digitization, an in-depth analysis of the existing situation and status of SMEs in Kosovo considering the role of digitization in enhancing competitiveness of the private sector is among the key initiatives. This objective is being met through this published study, the first of its kind in Kosovo that addresses in detail the level of digital transformation of SMEs in Kosovo, reveals the challenges businesses face in the digitization process, and the importance and potential offered by digital transformation.

Kosovo Chamber of Commerce, after researching various private sector companies, namely SMEs from manufacturing (metal and wood and plastic processing), services and agriculture, managed to summarize and analyze sufficient information proving the necessity of digital transformation for businesses, which in order to stay relevant to the market, must orient their strategies towards innovation and digitization. What is disturbing from the findings of the study is the fact that most firms have neither a concrete plan nor a defined digitization strategy.

Business growth and development is hampered by an unfavorable environment for doing business, therefore through such studies the Kosovo Chamber of Commerce aims to make its contribution by paving the way towards addressing the identified barriers.

I hope that all together, including businesses, state institutions, donors and other relevant stakeholders, will help in this challenge of digital transformation for businesses, in order to create a better business environment and strengthen the private sector as a pillar of socio-economic development in the country.

Sincerely,  
Berat Rukiqi

## 2 Summary

Digital transformation is a big challenge for SMEs today. Especially traditional firms are facing digital transformation risk by losing their competitiveness. Thus, there is no alternative to follow this path, or to be kicked out of business. But, instead of always talking about the challenges or concerns, the public debate should also focus more on the potentials of digital transformation. A fully digital firm is a powerful combination of people, technology and organizational skills that is well adapted to today's economic and social environment. Consequently, digitalisation provides significant advantageous and potentials

- Improved efficiency and productivity
- New sales channels with customers
- Better services for customer at the heart of the Universe
- Facilitation of innovation
- Ease of communication and cooperation
- Better working conditions
- New growth potential

For the future development of the Kosovan economy, the key questions today are: Are businesses ready for the digital transformation in Kosovo? How many of them use digital tools for their business operations? What are the key barriers faced by businesses when thinking about digitalisation? What is the main impact they expect from digitalisation process? How much do they plan to invest regarding digitalisation development within their business? How many of them do know how to use cloud infrastructure?

In this context, KCC with the support of GIZ, conducted a research in order to learn more to what level SMEs in Kosovo are digitalized while trying to find clues about the overall questions to be addressed in the future. The baseline study shed light on all these questions and led to the following key findings:

- There is a high awareness that digitalisation matters for future business
- Kosovan Industry is digitally divided
- Skilled workforces, Knowledge and Financial Means are Key Barriers for Digital Transformation in Kosovo
- Many firms are struggling to meet customer expectation, but believe digitalisation can help them to do better in the future
- The responsibility for digitalisation lies with the management Kosovan Firms already investments in digital solutions, but not in IT security

The recommendations, deducted from these key findings, tackle two levels. On one side, the digital support infrastructure shall be improved in order to provide need-based and tailor-made support for SMEs, which are interested in digital transformation. On the other side, support programmes are needed to stimulate future investments urgently needed by many SMEs in Kosovo.

### 3 Introduction

Digital technologies transform the global economy, change business rules, introduce new business models and redefine the category of business success. They change the way organizations work: companies recognize that digital technologies allow them to perform their business at higher speeds and lower costs and, in many cases, offer their customers the opportunity to participate in the design and creation of products and services; from the inside, digitization provides the opportunity for a different task design and enables a whole new portfolio of coordination mechanisms based on a modern information and communication technology.

Digital technologies include “computer hardware, software, transmission networks, protocols, programming languages, very large-scale integrated circuits, algorithms, and all the components and practices that belong to these various technologies”. Digital technology allows you to integrate, store, and transmit enormous amounts of information, and data show that it rapidly changes the way the job is done and how people behave at work.

Digitization is certainly launched and supported by the development of information and communication technologies; technology enables it and improves its application. But digitization is far more than the use of technology novelties because digital technology does not only change the way in which organizations operate, but also the way we think about organizing. With digitization, everything that has been said and spoken of for decades has come to its full extent - that information is the key resource of the organization, while the key organizational ability becomes the ability to collect, organize, manipulate and productively use available information. Digital technologies lead to new ways of organizing work - *digital organizing* - and to the development of a novel organizational form - *digital organization*. Digital organization includes cooperation with multiple entities and less reliance on the hierarchy for the purpose of control and coordination. It also includes empowering employees, partners and users of digital tools to create products and / or services, as well as providing digital platforms for self-organized collaboration.

A fully digital enterprise is a powerful combination of people, technology and organizational skills that is well adapted to today's economic and social environment<sup>2</sup>.

However, preparing for a digital future is not an easy task for the several reasons:

- Organizations will find themselves faced with the question if they have capacity to meet the challenges of the digitalisation requirements and ability to value, assimilate and commercialize the knowledge generated by its potentials.
- IT business is sophisticated, dynamic and complex for the organizations that are not in it to develop independent IT systems that will be competitive enough.
- And, unfortunately, most companies are constrained by a lack of resources, a lack of talent, and the pull of other priorities, and unable to focus their resources on the digital transformation, while hoping that it will eventually happen somehow spontaneously and luckily help the company to rocket the market. The reality is that it will not. Either companies and their interorganizational networks will consciously and dedicatedly work on digital transformation of their business and industry, or they will be run down by their own delays.
- And, unfortunately, most companies are constrained by a lack of resources, a lack of talent, and the pull of other priorities, and unable to focus their resources on the digital transformation, while hoping that it will eventually happen somehow spontaneously and luckily help the company to rocket the market. The reality is that it will not. Either companies and their interorganizational networks will consciously and dedicatedly work on digital transformation of their business and industry, or they will be run down by their own delays.

In this context, KCC with the support of GIZ, conducted a research in order to learn more to what level SMEs in Kosovo are digitalized while trying to find clues about the overall questions to be addressed in the future:



Are businesses ready for the digital transformation in Kosovo? How many of them use digital tools for their business operations? How important do businesses find the digitalisation for the successful operation within the industry they operate? What are the key barriers faced by businesses when thinking about digitalisation? What is the main impact they expect from digitalisation process? How much do they plan to invest regarding digitalisation development within their business? How many of them do know how to use cloud infrastructure?

In a nutshell, this baseline study aims to provide more information about current state of digitalisation of over 200 SMEs and provide a base for future interventions aiming to update the level of digitalisation in related businesses.

## 4 Objectives, Scope and Methodology

KCC conducted a Baseline Study on digitalisation with the main objective to diagnose the current trends of using digital in the respective sectors and identifying the needs for related support to companies. Key findings from the Baseline Study are expected to lead to dedicated activities such as: training and education of digitalisation consultants, as well as direct interventions within sectors/companies to enhance further digitalisation of business operations.

Given that the ultimate interest of the Government of Kosovo to stimulate domestic industry in the field of digitalisation, it is useful to understand the current and potential demands of related industries in this regard. The methodology applied includes the primary sources through face-to-face computer assisted personal interviews with semi-structured questionnaire conducted with businesses from selected sectors: manufacturing, agribusiness, tourism, and retail. The target values are 204 businesses per sector (table xx). Valuable information was extracted too from the secondary analysis based on various sources available.

This research study also presents two case studies of real companies that operate in Kosovo. These case studies are presented in separate boxes in the document. The elaborated case studies have been compiled after in-depth interviews with the business owners, directors or head of departments/employees in charge for digitalisation process. The aim of these case studies is to offer insights how businesses from Kosovo can benefit from digitalisation.

All four sectors have similarities, but also differences in terms of digitalisation. In order to properly take this into account, the questionnaire contained identical parts, but also parts, which are characteristic for the different sub-sectors.

### Methodology

The sample framework for the study was developed by KCC in cooperation with international and local experts. The sample framework consists of 204 companies that operate in one of the three sectors in Kosovo (manufacturing, agriculture, and tourism/retail). To account for the representative sample for each of the four sectors, the sample was stratified based on the distribution of companies per sub-sectors and region. In addition, the sample was designed to include companies from different nodes of the respective value chains.

The sample is a randomly chosen sample in order to avoid bias and other unwanted effects. Also, the list of surveyed businesses is selected in a systematic random approach. The database of active businesses during 2018 is taken from the Tax Administration of Kosovo, for the specific sectors interviewed for the study.

The tourism sector was interviewed on the following segments of this sector: hotels and similar accommodation, short-term vacations and other accommodations, entertainment and recreational activities, restaurants and mobile food service activities, beverage service activities, transportation, and activities of travel agencies. Whereas, the agribusiness sector was interviewed on the following segments: manufacturing of prepared feeds for farm animals, manufacturing of tea and coffee, manufacturing of grain products, manufacturing of other food products, manufacturing of food and ready-to-eat meals, cultivation of fruit with core and fruit with seed, growing of other tree and bush fruits and nuts, fruit and vegetable juice processing, processing and preserving of fruit and vegetables, cultivation of vegetables, melons and watermelons, herbs and tubers, and manufacturing of dairy products.

The sub-sectors analyzed within the manufacturing sector were metal, wood, and plastic. Metal subsector was interviewed on the following segments: metal blacksmithing, pressing, stamping and folding; metallurgical dust, extraction of other non-metallic ores, manufacturing of metal structures and their parts, manufacturing of non-metallic mineral products, manufacturing of other metal products, wholesale of metals and minerals, treatment and coating of metals, and manufacturing of machinery for metallurgy.

Wood subsector was interviewed on the following segments: production of items from cork, straw, and other weaving materials, fitting work from wood and other materials, wood sawing and carpentry, and wholesale of wood, building materials, and sanitary equipment.

The plastic subsector was interviewed on the following segments: manufacturing of plastic products for construction, manufacturing of plastic products for packaging, production of plastic in primary form, manufacturing of plastic tiles, sheets, tubes and profiles, and manufacturing of other plastic products.

Companies are categorized as small and medium based on the number of employees. Companies categorized as small have 10 – 49 employees and medium companies have 50 – 249 employees.

The table below presents the number of active SMEs in Kosovo during 2018 that operate in respective sectors analyzed in the study.

Sectors	The population size (number of active businesses)	Sample size	Percentage of the population surveyed
Tourism sector	208	53	25%
Retail sector	208	52	25%
Manufacturing sector	147	63	43%
Agribusiness sector	74	36	49%
Total	637	204	32%

Table 1: sample size per sectors

The sample was stratified in seven (7) regions of Kosovo such as Ferizaj, Gjakova, Gjilan, Mitrovica, Peja, Pristina, and Prizren.

Altogether, 204 companies were interviewed with a Face to Face Computer Assisted Personal Interview methodology. The questionnaire was developed by the research team in cooperation with KCC and international and local experts. There were four different surveys and related questionnaires developed (s. appendices), one for each sector or sub sector, in order to be able and understand better the needs of each sector specifically.

## 5 European Single Digital Market

Digital technologies are changing the way in which firms do business and interact with their customers and suppliers. Advancing digitalisation in SMEs is a promising approach to enhance their international and national competitiveness: As shown in the OECD roadmap for digitalisation, businesses which are frontier firms in digitalisation see higher revenue and productivity compared to less digitally inclined firms in the long run<sup>1</sup>. Generally, access to information and communication technologies reduces search and distribution costs. E-commerce in particular helps firms to connect with distant customers.

In the coming years, digitalisation and the ongoing industrial transformation will also profoundly affect the Kosovan industry and the entire Western Balkan region. Either the societies, economies, and governments will be unprepared, which will result in job losses, brain drain, and increasing economic divergence from the EU or if they are to be prepared, digital transformation will serve as a tool for catching up economically and socially and preparing the economies for a membership in the EU.

The Single Digital Market Strategy for Europe<sup>2</sup> takes these challenges into account and provides the key directions for digitalisation transformation of Europe's economy by unlocking the full potential of a single European market, and by supporting the free movement of goods and services across Europe's internal borders. Historically, variations in policy frameworks and regulation in member states have contributed to uneven challenges and opportunities for business development.

The Single Digital Market Strategy addresses this fragmentation and associated barriers to the development of Europe's digital economy through:

- Creating better opportunities for consumers and businesses to access online goods and services across Europe,
- Encouraging the right conditions for digital networks and services to flourish,
- Maximising the growth potential of the European Digital Economy.

The challenge of creating a common European policy environment that facilitates the Single Digital Market is underscored by the OECD's finding that the European digital market is made up of 54% US-based online services, 42% of national online services, and 4% European Union cross-border services<sup>3</sup>. The European Commission's role is to address barriers to the single digital market, and to streamline its development. The task of creating and maintaining a supportive policy and regulatory environment that facilitates digitalisation falls to tourism organisations and public administrations in member states. According to an OECD survey<sup>3</sup> of the top 10 challenges to digitalisation across 31 countries, the three most prominent challenges for governments were:

- Lack of awareness, implementation and enforcement.
- Insufficient skills, training and education.
- Multi-actor, multi-stakeholder and multi-level governance coordination.

Taking the current and upcoming challenges for European SMEs into account, the European Commission has set a goal to make the EU's single market fit for the digital age, which is aimed at bringing down regulatory barriers between the European national markets and unlock online opportunities in Europe<sup>4</sup>. According to the European Commission, a true Digital Single Market (DSM) can be achieved by taking the following actions:

- Digitalising industry to a smart industrial system so that all industrial sectors should be able to integrate new technologies.

<sup>1</sup> Towards the Implementation of the G20 Roadmap for Digitalisation: Skills, Business Dynamics and Competition, Report prepared at the request of the 2017 G20 German Presidency.

<sup>2</sup> European Commission. A Digital Single Market Strategy for Europe (SWD(2015) 100 final) March 2015. Brussels

<sup>3</sup> OECD Digital Economy Outlook (2017). (p.35) <http://dx.doi.org/10.1787/9789264276284-en>

<sup>4</sup> "A Digital Single Market Strategy"(COM (2015)195, 6 May 2015

- Developing standards and interoperability with a European push in areas such as the "Internet of Things", cybersecurity, big data, and "cloud computing".
- Launching initiatives on the "free flow of data" and a European Cloud as a catalyst for growth, innovation and digitisation.
- Unlocking the benefits of high-quality e-services and advancing digital skills

## 5.1 Support Schemes in Kosovo

The biggest up to date initiative on policy level to digitalize Kosovo's economy is driven by the European Union's initiative: The Digital Agenda for the Western Balkans<sup>5</sup>. This initiative is part of a larger enlargement package offered to six western Balkans states for faster integration into EU.

Kosovo's Digital Agenda puts emphasis on preparing the youngest state in Europe for a digital transformation in order gain sufficiently from today's digital economy and society.

Hereby, Kosovo with the support of EU through its IPA programs, is expected to work on 5 specific actions / deliverables until 2020 (and currently being implemented from 2018):

- the lowering the cost of roaming;
- the deployment of broadband;
- the development of eGovernment, eProcurement, eHealth, & digital skills;
- capacity building in digital trust and security, in parallel to efforts to enhance digitalisation of industries;
- the adoption, implementation and enforcement of the acquis.

Government of Kosovo also provides a grant scheme, including a voucher scheme, to SME's through Kosovo Investment and Enterprise Support Agency (KIESA) which is mandated to promote investment opportunities/sectors in Kosovo to local and foreign investors, facilitating exports, as well as managing/promoting special economic zones in the Republic of Kosovo. Some of beneficiaries used this support specifically for digitalisation.<sup>6</sup>

Meanwhile World Bank too is also active in the market with support schemes/grants through its Kosovo Digital Economy (KODE) project focusing mainly in „bridging digital connectivity gaps, in areas with no access to commercial broadband“ (12 Million Euros)<sup>7</sup>. Part of the project was also to connect local universities with important R&D institutions on broadband and connectivity in EU. Small grant schemes was also provided to enhance inclusion of women in IT sector via Women in Online Work Project which is already completed.

<sup>5</sup> <https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/20180817-revised-indicative-strategy-paper-2014-2020-for-kosovo.pdf> (assessed 10 December 2019)

<sup>6</sup> <https://kiesa.rks-gov.net/> (assessed 10 December 2019)

<sup>7</sup> <http://blogs.worldbank.org/europeandcentralasia/development-kosovo-s-digital-economy> (assessed 10 December 2019)

## 6 Sectors Considered as a Glance

Kosovo is a lower-middle-income country which has experienced solid economic growth and is one of only four countries in Europe to experience growth in every year since the onset of the global financial crisis in 2008 (World Bank, 2018). In 2017 the Kosovo's economy grew about 4.4% compared to the 4.1% from 2016. The World Bank estimates for 2018 is expected for Kosovo's economy to grow by 4.8%, 0.6 p.p. higher than the projection it made in June 2017. The positive economic trends in terms of economic growth are expected for 2019 too. According to WB, Kosovo's 2019 GDP growth forecast to 4.8%, with slightly slow to 4.7% in 2020 (2018 Global Economic Prospects report). KAS reports that GDP at current prices in 2017 was 6,413.8 million euros, with real GDP growth in 2017 4.23% compared to 2016. Kosovo has GDP per capita for 2017 was 3,566 euros.

The growth of economic activity in Kosovo in 2017 was supported by investments increase and the increase of goods and services export<sup>8</sup>. According to the Central Bank of Kosovo (2018) the main contribution to the real GDP growth was given by construction, trade, financial and insurance activities along with the processing industry. This is in line with World Bank (2018)<sup>9</sup> report suggesting that recently there was a notable shift towards toward more investment- and export-driven growth.

Although Kosovo's economic growth has outperformed its neighbours and been largely inclusive, it has not been sufficient to significantly reduce the high rates of unemployment; provide formal jobs, particularly for women and youth; or reverse the trend of large-scale outmigration. Although there was significant decrease in unemployment, still it remains high. Unemployment rate in 2014 was 35,3% and in 2017 was 30,5%. The average wage in public sector is higher comparable to the private sector. The average net wage in the public sector in 2016 was € 449 while in private sector was €359. The private sector in Kosovo generated 145,736 jobs in 2014 (ASK, 2017). The growth model relies heavily on remittances to fuel domestic consumption.

The dominance of non-tradable sectors in output and employment has increased over time. Services is the largest sector with value added at 56 % of GDP, and it contributed heavily to growth over the period, driven by construction, real estate, and retail. Agriculture and manufacturing account for 11 and 11.2 % of GDP respectively. Construction services and real estate are large within the services sector with about 15.5 % of GDP followed by wholesale and retail with a 12.1 %. The contribution to growth of industry, including agro-processing, peaked in 2012 when imports declined, a possible indication of some degree of import substitution. Agriculture had slow growth and was affected by weather conditions and climate change. Recent reforms and government subsidies have helped to increase agricultural productivity and output<sup>10</sup>.

On the international trade, data from Kosovo Foreign Trade show a lower trade deficit of (3.1%) in 2017, compared with the same period of 2016. According to the data available, the main export sectors are:

On the international trade, data from Kosovo Foreign Trade show a lower trade deficit of (3.1%) in 2017, compared with the same period of 2016. According to the data available, the main export sectors are:

- Exports consists of base metals and articles thereof (37,5 %),
- Mineral products (21,7 %),
- Plastics, rubber and articles thereof (9,2 %),
- Prepared foods, beverages and tobacco (8,4 %),
- Vegetable products (4,4%) and
- Leather and articles thereof (3,2%).

<sup>8</sup> [https://www.bqk-kos.org/repository/docs/2017/CBK\\_Q4\\_2017.pdf](https://www.bqk-kos.org/repository/docs/2017/CBK_Q4_2017.pdf) (accessed 26 November 2018)

<sup>9</sup> <https://www.worldbank.org/en/country/kosovo/overview> (accessed 25 November 2018)

<sup>10</sup> World bank 2017, Job Diagnostic Kosovo

This well represents the industrial structure of the Republic of Kosovo. In particular there is an increase of export of services category as a share to GDP, from 10.1% in 2008 to 23,9% in 2017<sup>11</sup>. These figures may suggest a high potential for competitiveness of the private sector.

In terms of the business activity, there is, generally speaking, a significant increase in the number of enterprises. The number of registered businesses considered active in 2015 was 142.299 businesses, in 2017 was 161.946 businesses (Kosovo Business Registration Agency). However, the number of active businesses that were active taxpayers is much lower. The number of active businesses in 2017 was 62.567 businesses. These businesses have declared any of the forms of statements in the Tax Administration of Kosovo even zero values (Tax Administration of Kosovo, 2018). This shows a high informal activity of firms in Kosovo, around 38%.

According to the current industrial landscape of Kosovo there are several prevailing sectors, which meet two requirements, which are of high relevance for the Baseline Study:

- High relevance for the economy of Kosovo
- High impact expected by digital transformation

In the following chapter, several sub-sectors are described, which meet these two requirements and, thus, subject of further considerations within the Baseline study. With the manufacturing, agribusiness, tourism and retail sector, the most relevant sectors and related sub-sectors are covered in this study.

Providing appropriate support in digitalisation will increase efficiency of production / service provision as well as assure long-term competitiveness.

## **6.1 Manufacturing**

Without a doubt, the manufacturing sector is one of the most relevant in Kosovo in terms on economic input. It can be divided in manufacturing of wood, metal, plastics and others. The Annual report of industrial development on Kosovo for 2017 lists the following number of firms related to the manufacturing sector (2017)

- Wood production 472 firms, 1.223 employees
- Plastics manufacturing 466 firms, 2.349 employees
- Non-metallic manufacturing 468 firms, 3.521 employees
- Metal manufacturing 103 firms, 1.050 employees
- Fabricated metal products manufacturing 567 firms, 2.297 employees

The manufacturing sector employs 12% of all workforces in the formal sector in Kosovo<sup>12</sup>.

As far as metal manufacturing firms are concerned, the sector's exported goods (base metals and metal products, excluding scrap) captured 36.5% of the total value of all exports from Kosovo<sup>13</sup>. 17% of all metal processing firms are currently engaged in some degree of exporting. Nonetheless, only the medium and large firms are primarily export oriented and sell most of their goods abroad. The structure of metal exports is overwhelmingly dominated by ferronickel, which captured 90.8% of the total value of metal exports between the years of 2010 - 2012. The largest remaining share of exports (6.6%) is captured by iron and steel products – mostly line pipes, tubes and hollow profile. Micro and small metal processing firms sell almost all of their goods in the domestic market – about 90% of their output value is sold domestically.

Recent investigation of the plastic manufacturing sector indicated that around 500 firms are manufacturing plastics products. More than 350 out of them are involved in the builder's ware sector, contributing to the

<sup>11</sup> KAS 2018

<sup>12</sup> Study of the challenges that hinder MSME development, British Council, 2018

<sup>13</sup> Sector profile metal processing, 2015

steady growth in terms of export and jobs. The exports marked a significant growth, from around 11 Mil EUR in 2015 to around 29 Mil EUR in 2018. Despite this, imports have remained high, over six times the exports. The study further revealed that EU and CEFTA region are the key export markets. However, these markets behave quite different. Plastic builder's ware accounts for the largest share of exports in the EU market, with Switzerland and Germany as main exporting destinations. Plastic products for packaging had constant growth of exports to CEFTA countries. Plastic films, sheets and plates are the most exported products in this category, mainly to North Macedonia. In the EU market, exports to Croatia and Romania have contributed to a significant export growth in 2018, but on a much lower level.

The Kosovan plastics manufacturers operate mainly in the following five sub-sectors:

1. Manufacture of plastics in primary forms (NACE 2016)
2. Manufacture of plastic plates, sheets, tubes and profiles (NACE 2221)
3. Manufacture of builders' ware of plastic (NACE 2223)
4. Manufacture of plastic packing goods (NACE 2222)
5. Manufacture of other plastic products (NACE 2229)

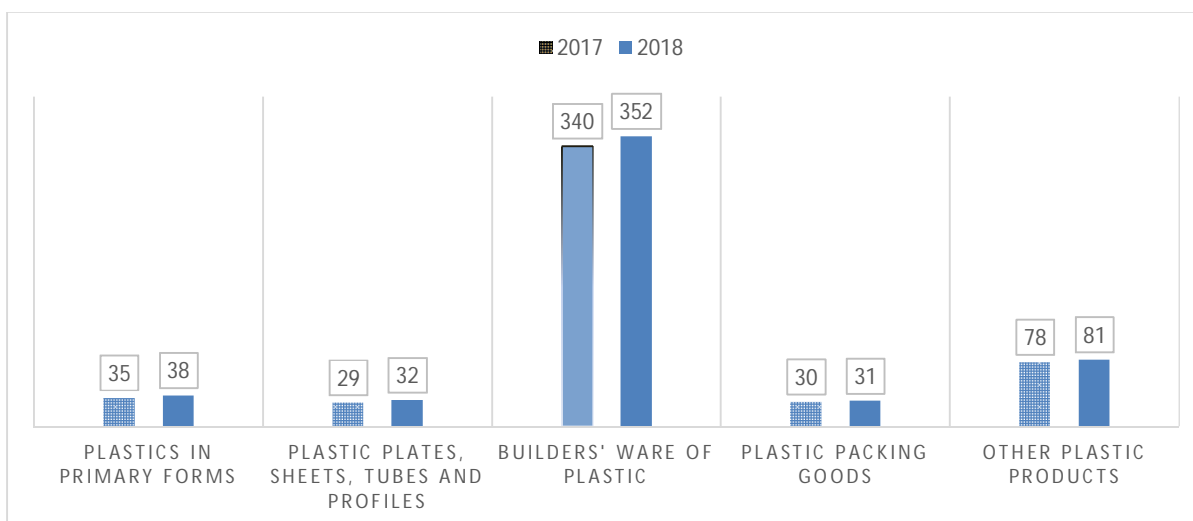


Figure 1. Distribution of plastics manufacturing companies per sub-sector, Source: MTI and KAS Data, Author's own calculation<sup>14</sup>

It is no surprise that the majority of the employment in the plastics manufacturing sector is created in the builders'-ware of plastic as indicated in Figure 2.

<sup>14</sup> Recica, F, Meier zu Köcker, G.: 2019: The authors have extrapolated the data regarding the number of companies for the sub-sector Plastics in primary forms based on Kosovo Tax Administration data on the number of companies in this sub-sector from 2014-2016 – assuming a constant growth level of companies. For the rest of four sub-sectors, the authors have collected and utilized data from the MTI which are based on the KAS sources.



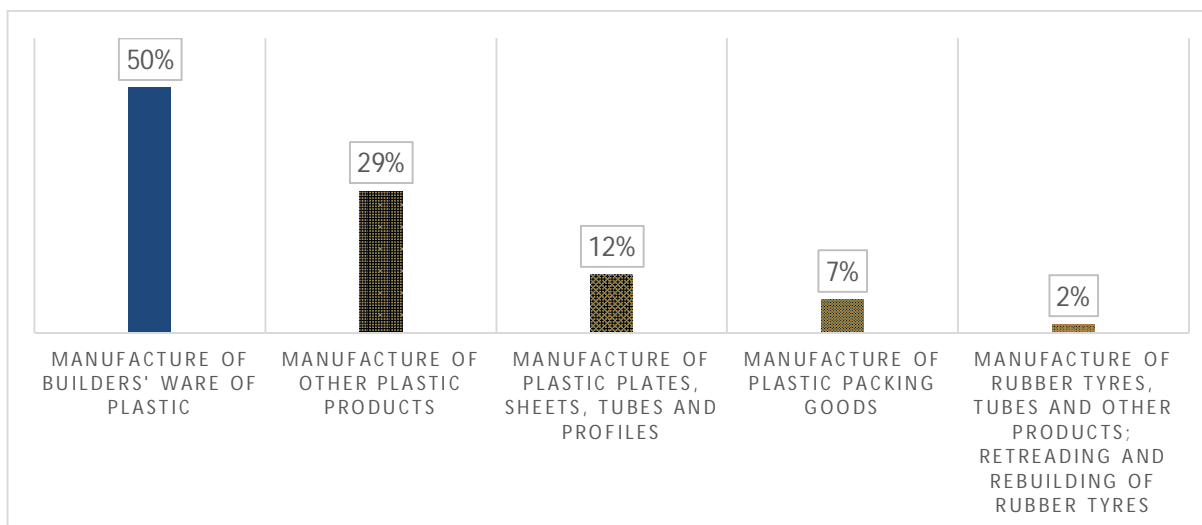


Figure 2. Distribution of employment by main activity (source: TAK 2015)<sup>14</sup>

As mentioned earlier, in Kosovo there are around 500 businesses registered, whereas the figures varies between different sources. Nevertheless, also the wood manufacturing sector is high relevant for Kosovar economy. The share of micro businesses (below 9 employees) is with 91 % even higher than for the other manufacturing sectors<sup>15</sup>.

## 6.2 Agribusiness

Agriculture, which accounted for 25% of Kosovo's GDP in the 1980s and early 1990s, reduced its share recently to 11%. Kosovo has a rich agricultural history, but currently imports agricultural goods to support most of its domestic consumption. The country has abundant, productive land that is not optimally used, with economies of scale hampered by small parcels and poor, inconsistently-applied property rights regimes. Given the relative absence of valued-added food processing in Kosovo, largely due to a lack of investment over the past two decades, great potential exists for increased domestic agricultural production and expanded food processing.

The food processing skill sector is a fast growing sector on Kosovo and contributes significantly to total job creation, particularly in industry. It has small scope of only 4.4% of total employment but significant job growth of 46% over a 5 year period from 2008 - 2013 according to the Labour Force Survey. Total demand for these occupations is very much concentrated in jobs which require secondary school qualifications while demand for highly educated occupations in food processing is still not exceptionally high and is mostly concentrated in education and not industry<sup>16</sup>.

Domestic demand has been growing in recent years as consumer purchasing power increases, particularly in urban areas. Over the past decade, demand for fruits and vegetables surged more than for any other food category, and is expected to continue growing. Demand for milk and dairy products in the domestic market grew over the past. The livestock and meat processing sector is still a potentially lucrative business opportunity as domestic production does not yet meet market demand. Purchasing power relies heavily on remittances, which comprises about 11 percent of GDP. Following the April 2016 implementation of the Stabilization and Association Agreement with the EU, Kosovo benefits from duty-free exports of 2,560 different agricultural products to EU countries. The agricultural sector contributes up to 10 % of GDP, and 62 % of Kosovo's population lives in the rural areas. Kosovo does not offer crop insurance, but some financial help is available farmers impacted by extreme weather events.

<sup>16</sup> Food processing – Aligning Education with Labour Market Needs, 2016

The leading Sub-Sectors are

- Fruits and vegetables sector
- Livestock and dairy sector
- Value-added food processing
- According to Agriculture Census 2014, used area for agriculture land makes around 413,635 ha. Non agriculture land accounts around 14,665ha. The same census states that there are around 130,775 agricultural holdings within the sector (including agriculture household, individual businesses and legal entities).

Use of agricultural land	Number of agricultural holdings	Area in (ha)
Land area - total	130.662	512
Used area of agricultural land	129.884	413.635
Arable land - Fields	113.231	180.381
Gardens	46.458	1.055
Meadows and permanent pastures (including common land)	79.761	224.411
Multiracial crops	24.909	7.788
Fruits	19.619	4.390
Vineyards	6.242	3.215
Seedling	698	183
Not used agricultural land	18.317	17.142
Forest land	58.874	66.558
Non-agricultural land	125.515	14.665

Tables 2: Total land used and agricultural land use in agricultural households, 2014

Legal status of Agricultural Holdings			
	Agricultural household and individual businesses	Legal entities	Total
Agricultural holdings	130.436	339	130.775
Used area of agricultural land (ha)	405.429	8.206	413.635
Livestock unit	270.668	11.078	281.747
Annual work unit	84.221	2.399	86.62

Source: Agricultural census, 2014

Tables 3: Number of agricultural households, used agricultural land, livestock units and annual labour unit by legal status of agricultural household

### 6.3 Tourism

Digital technologies have already brought significant transformation to parts of the tourism industry in Kosovo, e. g. online booking systems for hotel, travelling or tour providers. The rise of digital platforms will further increase the variety and volume of tourism products, services and experiences, with on-demand functionality accelerating the speed of economic transactions, market awareness and feedback. However, this trend makes travelling destinations and related products more transparent and comparable, resulting in an increased competition.

Tourism has without a doubt gained more importance in Kosovo over the last years, not only as an enormous driving force for jobs, but also as an opportunity to build an image of Europe's youngest country that is different from the one which is mostly conveyed in the media and that corresponds much more to the specific features and unique assets of Kosovo. Considering Kosovo's natural and cultural assets, the following segments represent the main pillars of Kosovo's tourism product<sup>17</sup>:

The total value of the sector according to the latest assessment by Swiss-funded project, Promoting Private Sector Employment (PPSE), is €42.3 million.<sup>18</sup>

- Cultural tourism
- Mountain & alpine tourism
- Rural, alternative and eco-tourism
- Cross-border & regional tours, round trips
- Meetings and conferences
- Active Tourism (Biking, Hiking, Trekking, Climbing, Adventure...)

Tourism can be divided in different sub-sectors, whereas the approach varies from the definition of three up to eight subsectors. For this purpose, the following six sub-sector well characterise the tourism sector in Kosovo:

- Accommodation
- Adventure and recreation
- Attractions, incl. events and conferences
- Food and beverages
- Tourism services
- Transportation
- Travel trade.

According to the studies and statistics available, most businesses in Kosovo operate in the accommodation and food and beverage sectors, followed by travel agencies.

Despite bottlenecks and problems, major progress has been achieved in the tourism sector. Cross-border projects, and cooperation's with other countries contributed accordingly. Hence, since 2005 continuous tourism strategies were developed and implemented. The number of registered businesses in the industry in 2012 was in total 2.089, of which 1.938 were micro and 141 small businesses. Only 10 can be considered medium or even large firms. Thus, the share of micro business is comparable high like in the manufacturing sector.<sup>19</sup>

<sup>17</sup> Sogojeva, H.; Mecheski, S., 2012, Analytical assessment of the Tourism sector in Kosovo

<sup>18</sup> Kosovo Tourism Supply Side Survey 2018, [https://ppse-kosovo.org/file/repository/SWI\\_Publikimi\\_PR\\_ENG\\_FINAL\\_02.pdf](https://ppse-kosovo.org/file/repository/SWI_Publikimi_PR_ENG_FINAL_02.pdf)

<sup>19</sup> Sector Profile of Tourism, 2014

## 6.4 Retail

The retail and wholesale sector represents 56% of total business volume in Kosovo, whereas the retail sector itself is the largest employer (36% of all employees<sup>20</sup>). Recent studies count around 16.557 firms in the sector “wholesale, retail, repair of vehicles, motorcycles with around 54.600 employees<sup>10</sup>. As the other sector micro and small firms are dominating this sector.

The retail sector itself in Kosovo can be divided in the follow sub-sectors

- Trade of cultural and entertainment goods,
- Trade of IT and communication equipment
- Trade of fuel for vehicles
- Trade of food products, beverages and tobacco
- Trade of other household appliances
- Trade of other products, not specified.

Retail trade (distribution) of energy supply is not considered here.

Over the last years Kosovo has experienced a rise in the number of foreign-owned retail stores. One example of this is ERA - the largest trade complex - housed in a two-storey building in downtown Pristina or REWE International Group. Other popular supermarket chains include Albi Commerce, Interex, Viva. Albi Commerce runs four stores in Pristina, while acting as a representative of over 30 different food and cosmetics brands. VIVA also boasts four supermarkets, while Interex has two.

In the frame of this study, no preference to a certain sub-sector will be given.

---

<sup>20</sup> Study of the challenges that hinder MSME development, British Council, 2018

## 7 Findings

In the following, the results of the interviews will first be described and discussed in sector-specific order. This is important in order to understand the sector-specific characteristics of the state of the art and digitalisation challenges for the Kosovan SMEs concerned. The respective chapters are divided into three parts. First, a brief overview of the *status quo* is given with regard to the digitalisation of the companies. This can be understood as a "baseline" from which future changes should proceed. In the following chapter, the sector-specific challenges by SME perspectives are described. From this, concrete conclusions can be drawn later for future interventions to improve the competitiveness of the SMEs concerned. The third part describes more concretely where companies consider investments and activities to be necessary and where they intend to be in 2022 in order to be able to adequately meet the future requirements of markets and customers. These requirements are described along the sector-specific value chain. At the end of the entire chapter, a brief cross-sectoral comparison is made to identify similar challenges and differences between the different sectors. In addition, good practices from selected SMEs are presented in this chapter in order to demonstrate how, in those cases, digitalisation efforts paid off for these firms

A total of 204 companies with semi-structured interview guidelines were surveyed (see chapter 4). Semi-structured interview guidelines were used to have sufficient flexibility to deal with relevant aspects arising during the interview.

### 7.1 Digitalisation in Manufacturing SME

As described in the previous chapters, the manufacturing sector is certainly one of the most important in Kosovo; not only in terms of the number of enterprises and jobs, but also in terms of the value added achieved in this sector. This has been confirmed by various studies which have analysed this sector more closely<sup>21</sup>. A total of 63 companies from the manufacturing sector were interviewed as a sample of Kosovo's industrial landscape (with a focus on SMEs). Most firms were located in Pristina, Prizren, Peje and Gjakove (20 % each), whereas a smaller number originated from other regions like Gijan, Ferizaj and Mitrovice.

An even distribution of firms from different manufacturing sub-sectors participated. About a quarter of respondents came from the metalworking, plastics processing and woodworking sectors. The remaining quarter was distributed among other production-relevant sectors.

Figure 3 shows the size distribution of the companies in relation to the number of employees. This distribution also reflects the industrial structure in the relevant sector (see chapter 6.1). The majority of firms (over 80 %) have 10 – 49 employees. As far as the financial capacity is concerned, most firms interviewed have a turnover of between EUR 250.000 – EUR 2.500.000 p. a.

<sup>21</sup> Recirca, F.; Meier zu Köcker, G. (2019): Kosovo Plastics Industry Value Chain, Republic of Kosovo / GiZ, [https://www.researchgate.net/publication/337671970\\_KOSOVO\\_PLASTICS\\_INDUSTRY\\_VALUE\\_CHAIN\\_2019](https://www.researchgate.net/publication/337671970_KOSOVO_PLASTICS_INDUSTRY_VALUE_CHAIN_2019)

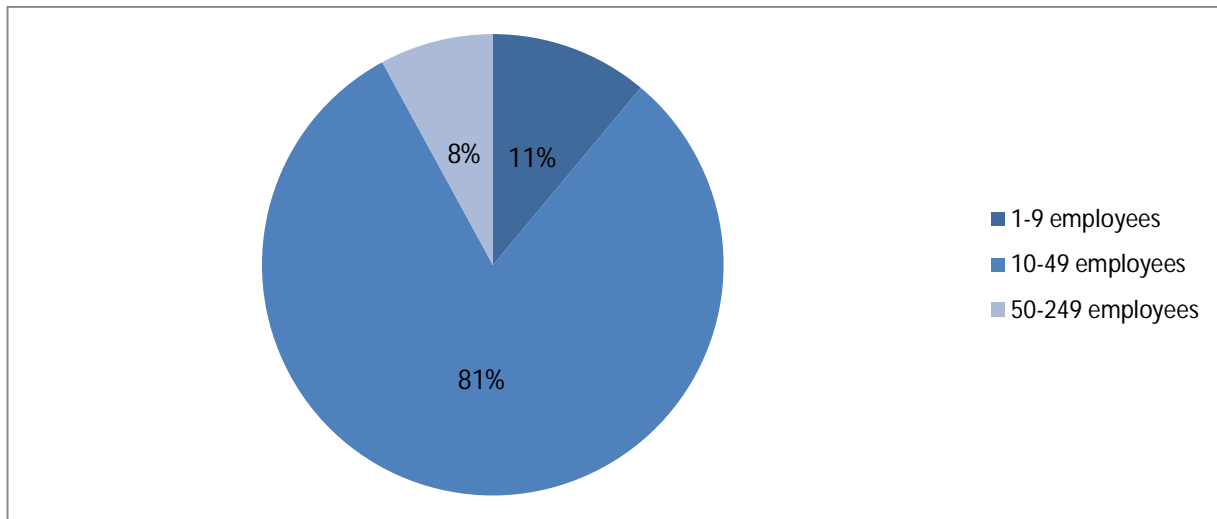


Fig. 3: Distribution of size of firms involved in the survey (manufacturing sector)

### 7.1.1 Current status

An important prerequisite for dealing extensively and sustainably with digitalisation is to have an appropriate ICT infrastructure in place. As shown in Figure 4, only 10% of the firms surveyed have their own IT department. In particular, companies with more than 50 employees belong to this group. As many as 30% of firms work together with external service providers and outsource this component. In other words, around 40% of companies have their own in-house expertise or outsource it.

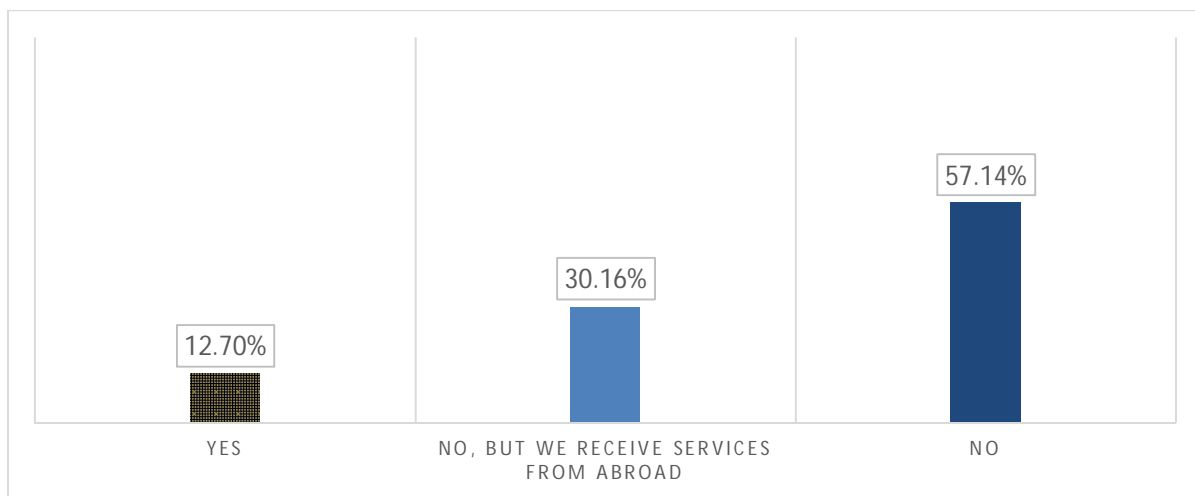


Figure. 4: Existence of IT department in SMEs (manufacturing sector)

These results correlate well with the results presented in Chapter 7.4, which show that in only 10% of all cases the responsibility for a company's digitalisation strategy lies with the IT administration. In the vast majority (> 55%) of the cases, it is the management who feels responsible or nobody (30%).

These results correlate well with the results presented in Chapter 7.4 which show that in only 10% of all cases the responsibility for a company's digitalisation strategy lies with the IT administration. In the vast majority of the cases (> 55%), it is the management who is responsible. In the rest of the cases, no one department is specifically in charge of digitalisation.

It is interesting to see where companies have primarily invested in recent years to upgrade their level of digitalisation (Fig. 5). By far, most investments were made in new software and hardware (> 60% of all compa-

nies surveyed). But also, steps were taken to achieve a stronger presence on the Internet, including e-marketing and website development. On the other hand, the topic of IT security and corresponding investments are at the bottom of the company's priorities. From the companies' point of view, this should not change much in the future, as Figure 11 in Section 7.1.2 shows. There is no doubt that considerable clarification is necessary here. Although it is of crucial importance, IT security is an extremely underestimated topic. In the future, customers who want to exchange confidential information on production processes or product design electronically will also expect appropriate security precautions from their Kosovan suppliers. The manufacturing companies in Kosovo must not lose touch in this respect.

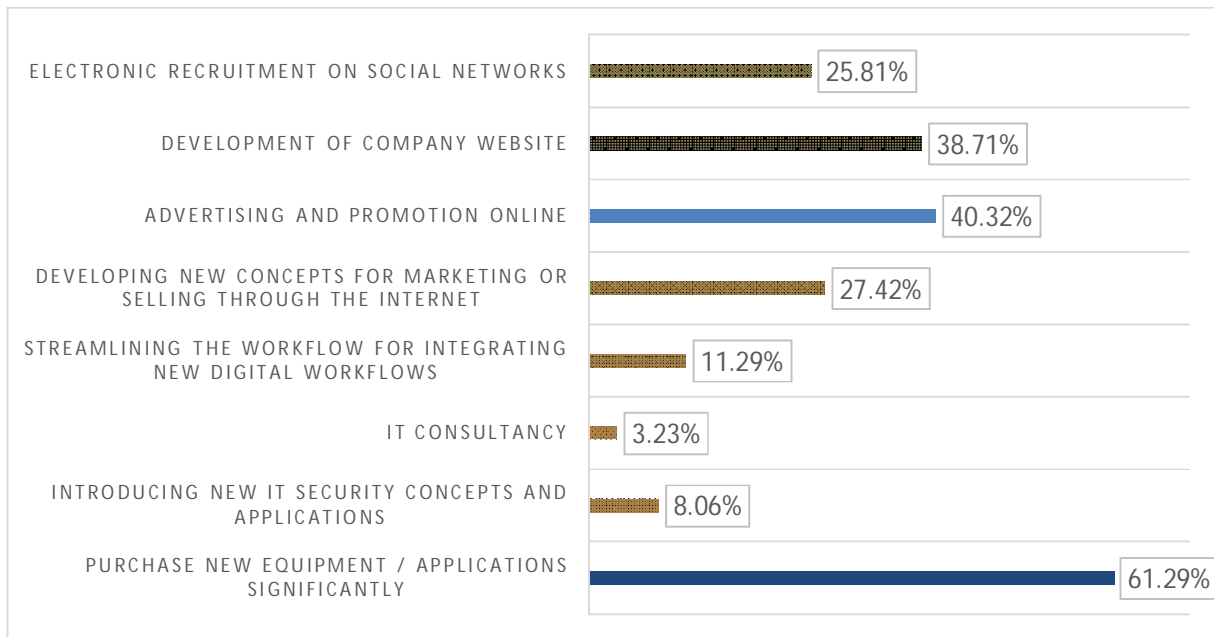


Figure 5: Where Kosovan firms invested in the field of digitalisation over the last few years

It is also interesting to see that, so far, only comparatively few investments have been made in the production and automation processes themselves. Accordingly, the next figure (Fig. 6) illustrates that production and manufacturing technologies in companies are only rudimentarily digitalised. One third of the respondents confirms a very low degree of automation in their firms, whereas only 10% indicates a comparatively high degree of automation.

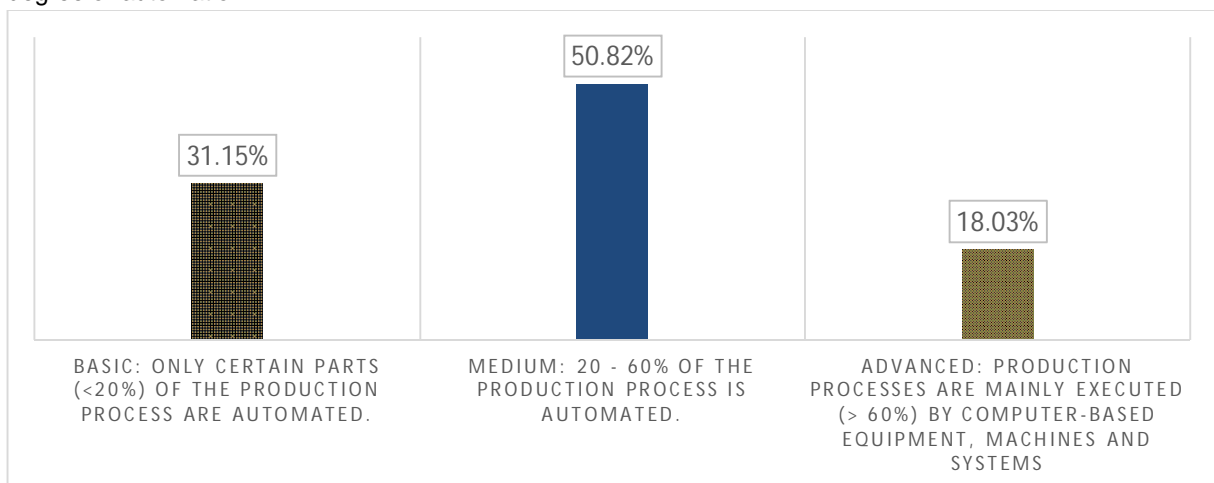


Figure 6: Degree of automatization in Kosovan manufacturing firms

A similar picture emerges when looking at the state of digitisation of human resource planning (s. Fig. 7). Here too, around 30% of companies consider themselves to be only slightly digitalised (less than 20% of processes are digitised) and only 15% to be quite far digitalised (more than 60% of processes are digitised). The majority (55%) see themselves somewhere in between.

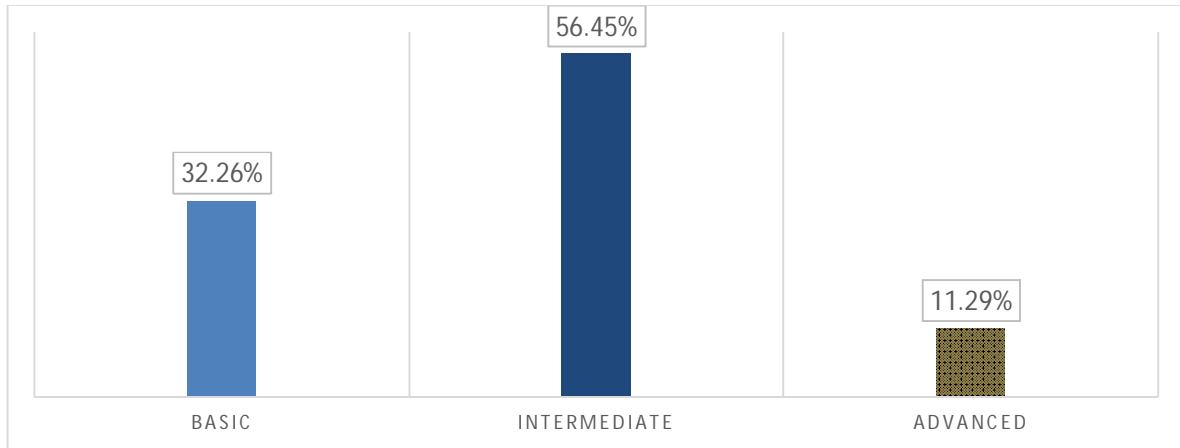


Figure 7: Degree to which the human resource development and capacity planning process is digitalized (sector: manufacturing)

Overall, it can be stated that around 20% of the SMEs surveyed consider themselves to be thoroughly digitalised. However, these were not the only companies with more than 50 employees. There are also some smaller companies that have been successfully advancing the in-house digitalisation process for some time. The success stories described illustrate this result.

As expected, the majority of the companies surveyed, approx. 50 - 60 % (s. Fig. 8), consider themselves to be somewhat digitalised. In recent years, investments have been made in hardware and software in order to digitalize processes and improve visibility on the Internet. However, we also know that there is still a lot to do here, especially in the area of process automation.

One third of the companies is concerned. Based on the surveys, many firms are clearly lagging behind in terms of digitalisation. These are not only the companies with very small numbers of employees. The reasons for this are very different and will be analysed in more detail in the following chapters.



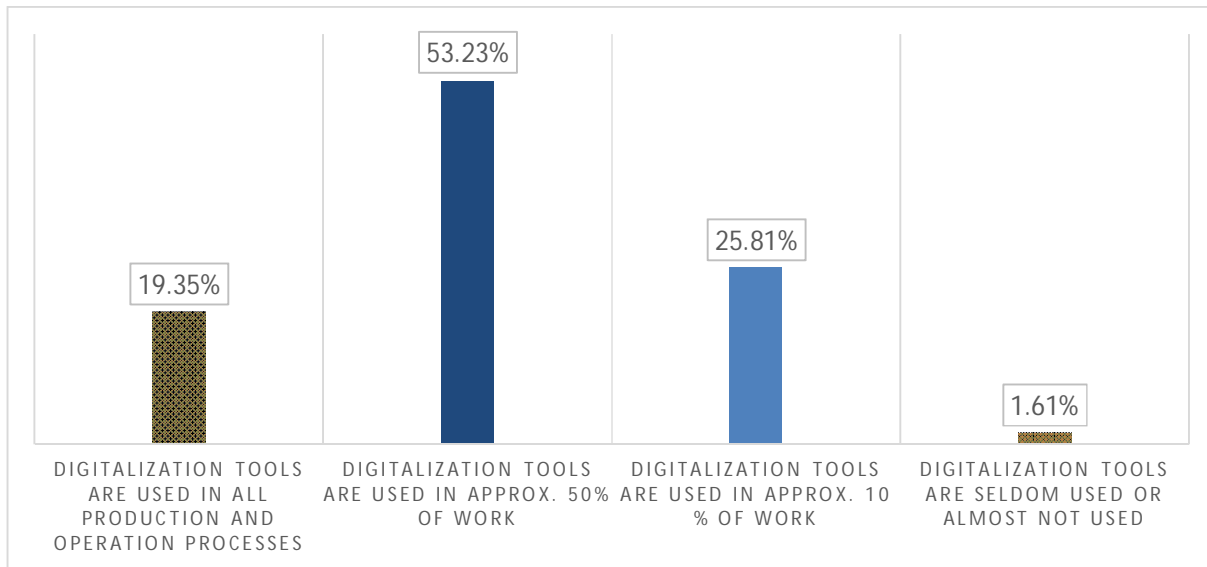


Figure 8: Degree the respondents consider their firms to be digitalized (sector: manufacturing)

### 7.1.2 Challenges and opportunities

Digitalisation is not only a threat or a challenge for companies, it also offers a variety of opportunities. Praxis has shown that it is important that companies have a clear idea of what they want to achieve with digitization. In this context, digitalisation cannot be understood as a goal but as an instrument for successfully achieving it.

As can be seen in Figure 9 the main objectives that Kosovan manufacturing companies (must) pursue with digitalisation are

- increased productivity and
- the need to meet the demand of customer expectations.

The latter is mainly due to the fact that most of the companies surveyed are integrated into global value chains that are increasingly being digitized. As a result, companies cannot escape this trend. Higher productivity is necessary for a variety of reasons. Many competitors in neighbouring countries already have comparable or even higher productivity, which is why Kosovar companies also need to make progress here in order to remain competitive in the long term.

Most companies do not see digitization as a vehicle for generating product and process innovations, and do not see it as the focus of their considerations. This plays a relevant role for less than 50% of the companies surveyed.

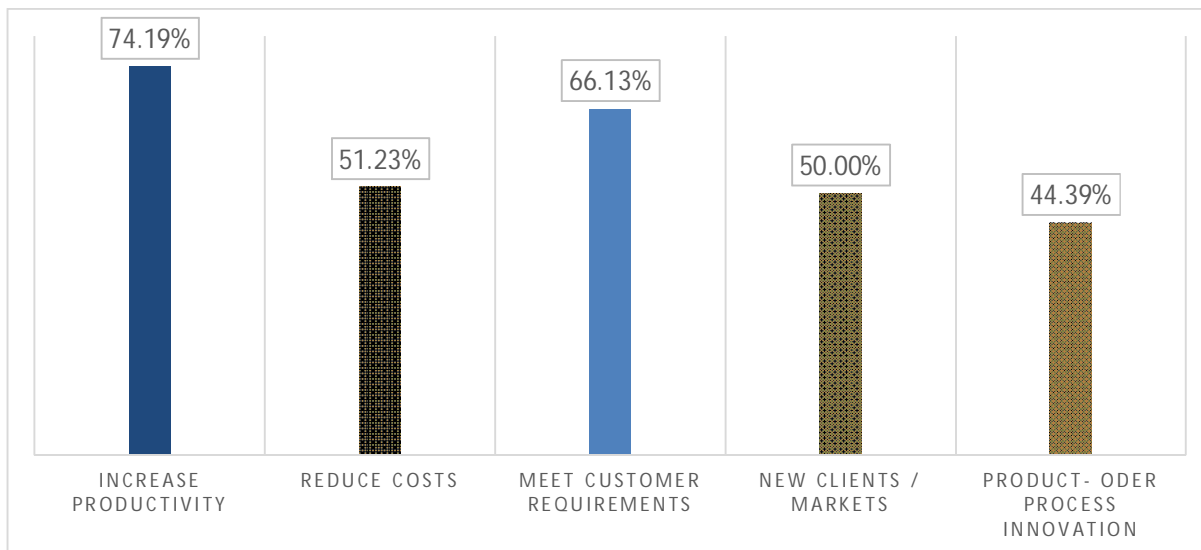


Figure 9: Goals and objectives targeted by digitalisation efforts

Against the background of the objectives pursued with digitalisation, the next interesting aspect was to find out where the companies see the main hurdles and obstacles. Figure 10 illustrates that a lack of qualified staff is by far the most important obstacle (46%). This is followed by financial difficulties (34%) to invest sufficiently in digitalisation and lack of knowledge about where to start (31%). Around 20% of those surveyed do not see any problems on the way to further digitalisation. It is interesting to note that as many as 30% regard the topic of "data security" as an important hurdle. On the other hand, very few have invested in this area in recent years (see Figure 10). Difficulties with internal processes are also seen as an important obstacle.

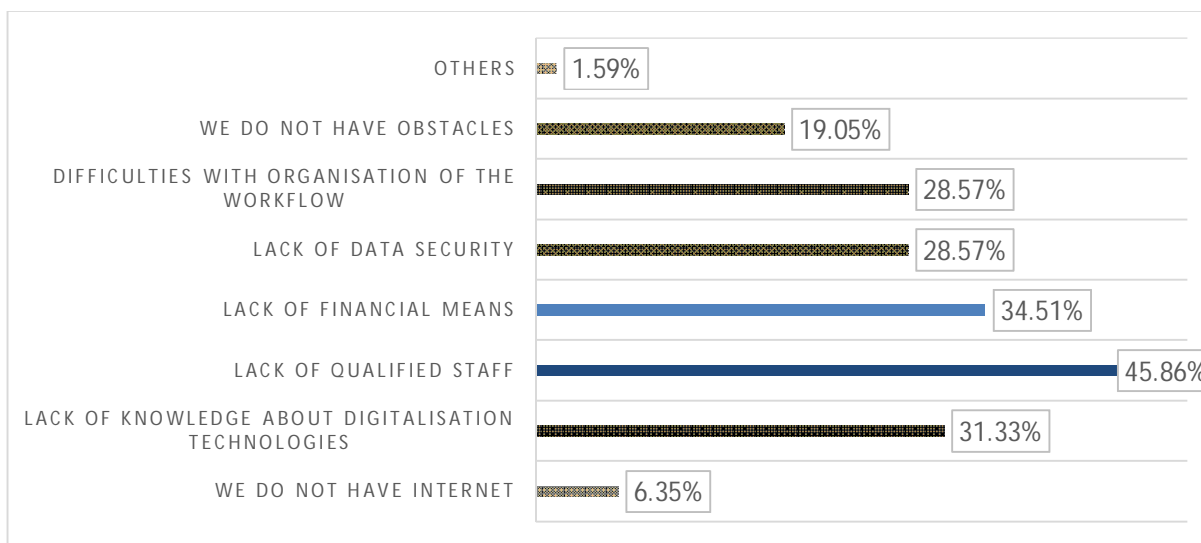


Figure 10: Key obstacles firms face when it comes to digitalisation (sector: manufacturing)

Figure 11 reveals where future investments in companies should be made against the background of the goals achieved with digitalisation efforts and the existing obstacles. Further investments in software and hardware have the highest priority. About 80% of the companies see the necessity to invest also in the future. The integration of digital workflows in companies will also receive more significant investment than in

the past (+25% of firms intend to significantly invest here). At the same time, further investments in "marketing and customer loyalty through digital tools" will also play an important role in the future. Over 50% of the firms surveyed see an important need for investment in this area. On the contrary, the readiness to invest in IT consulting and cyber security is comparably low also it is considered as an important obstacle on the road to digitalization.

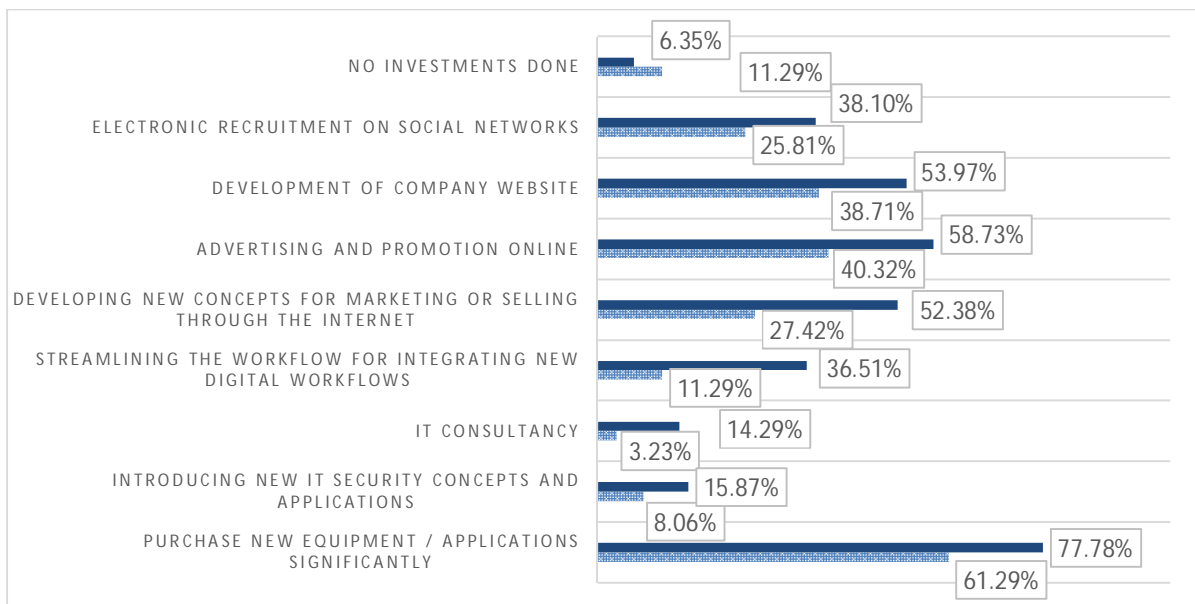


Figure 11: Where firms invested in the recent past and see needs for future investments

The need, but also the intention, to significantly improve employees' access to computers and digital devices in the next few years is obvious. Today, about two-thirds of the workers in Kosovan manufacturing plants have no access to computers. This proportion should decrease to 30% by 2022 by the respondents' perspectives. At the same time, 30% of the companies also want to make computers or digital tools available to over 75% of their employees.

### 7.1.3 Digitalisation trends

Kosovan manufacturing firms are typically integrated in various value chains often stretched along various countries. Thus, they are working with their own suppliers, but also act as suppliers for other businesses (mainly from EU28 and Switzerland). Since these value chains are going more and more digital, Kosovan firms must follow this trend and be well prepared. Fig. 12 displays how the respondents assess the current status and where they intend to stay in three years' time. They majority (around 60 %) consider themselves medium well integrated; meaning some elements of their manufacturing and automatization process are more or less digitalised. What is more important is that most of the respondents see a clear need to become more digitally integrated in relevant value chains. The amount of highly digitalised firms is expected to rise from 15 % to 50 % over the next three years. On the other hand, only a small share of firms intend to become fully digitalised (less than 20 %); mainly because they do not see any need to do so.

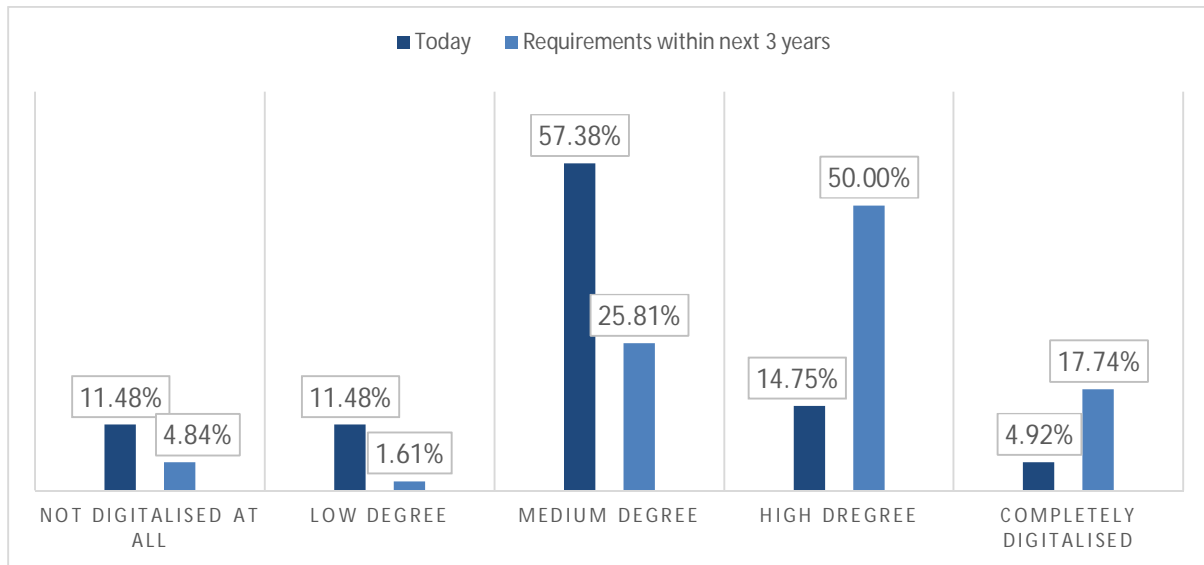


Figure 12: Degree of digital vertical value chain integration today and in 2022 (sector: manufacturing)

A similar finding related to the question of to what extent the products manufactured can be customized according to customers' needs. Digitalised manufacturing processes offer the opportunity to adapt and customize products according the market and customer needs much better than in an analog world. One batch production is, in reality, not a buzzword anymore. Also, the respondents see a strong need to invest in digital tools and processes to be able to better and more quickly customize their product portfolio (Fig. 13).

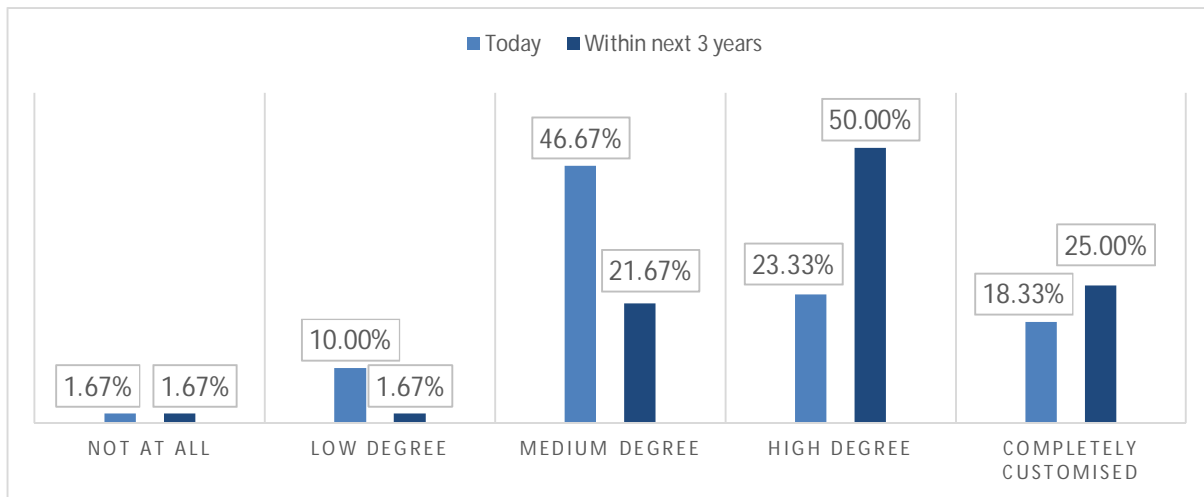


Figure 13: Degree to which firms are able to customize e products and processes according to customer needs today and by 2022 (sector: manufacturing)

In order to reach the status in 2022 as revealed in Fig. 12 and 13, investments are needed in tools, processes and equipment. As illustrated in Fig. 14, significant investment are needed in sensor technology, Internet of Things, digital maintenance and automatization technologies is needed to meet the future requirements of the markets. However, only a few intend to turn their firms into a fully digitalized factory. This finding is well in line with the previous once.

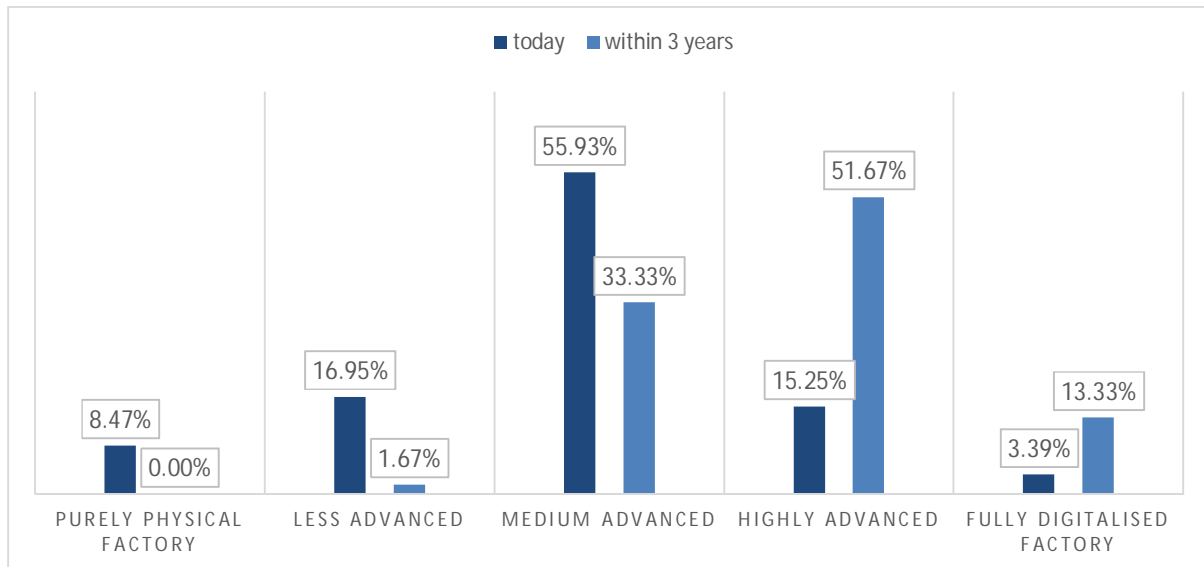


Figure 14: Degree of status of digitalisation of production equipment today and by 2022 (sector: manufacturing)

From the point of view of the respondents, investments must be made not only in hardware but also software. As Figure 15 shows, investments were made primarily in CRM and ERP software, followed by general software.

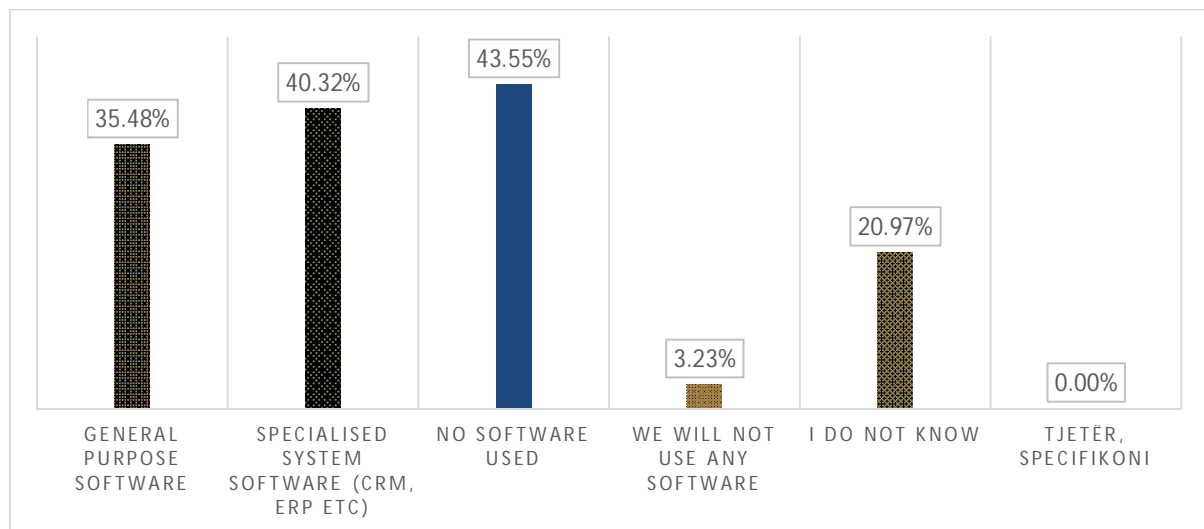


Figure 15: What software firms invested in the recent past

A different picture emerges when it comes to the importance of use of data (customer data, product and manufacturing related data). Already today, there is a high awareness of digitalization needs on the part of the majority of the respondents (around 90 %). Nevertheless, the importance is expected to further increase by 2022.

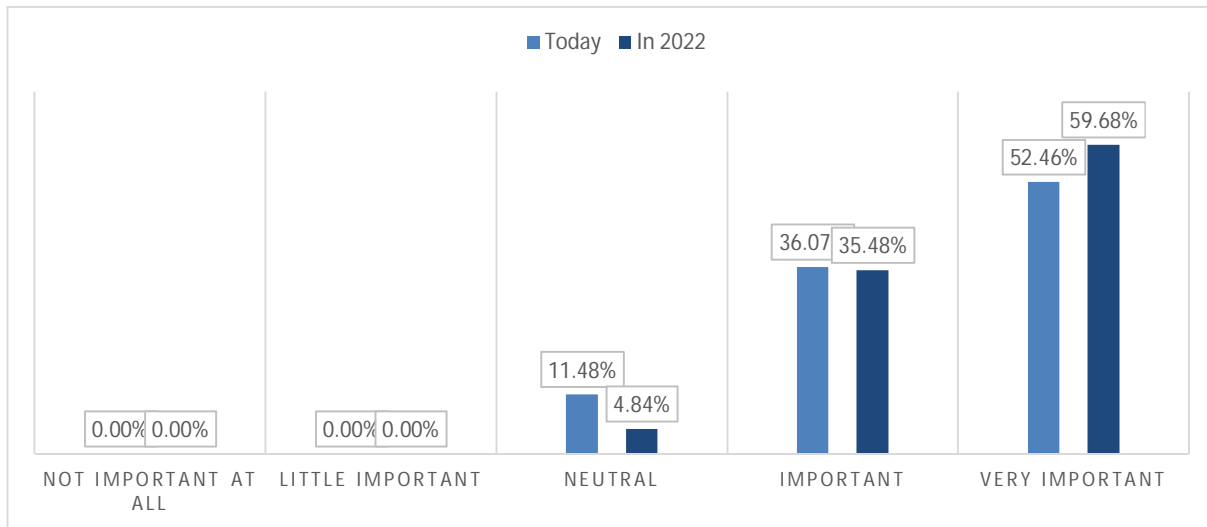


Figure 16: Importance of using and analysing data today and by 2022 (sector: manufacturing)

Intensity of collaboration and communication with their clients is mostly considered to be of medium intensity (s. Fig. 17). Often located at the very beginning of the related value chains, communication of Kosovan manufacturers is mainly directed to their intermediate customers and seldom with end-users or final consumers. However, a digitalized world allows such firms to interact with customers at the end of the value chains, directly with end-users. Consequently, the majority of Kosovan firms plan to increase their engagement with such clients by 2022. This step is needed to jointly develop more complex products with clients or when shifting from pure manufacturing to a more service-oriented spectrum.

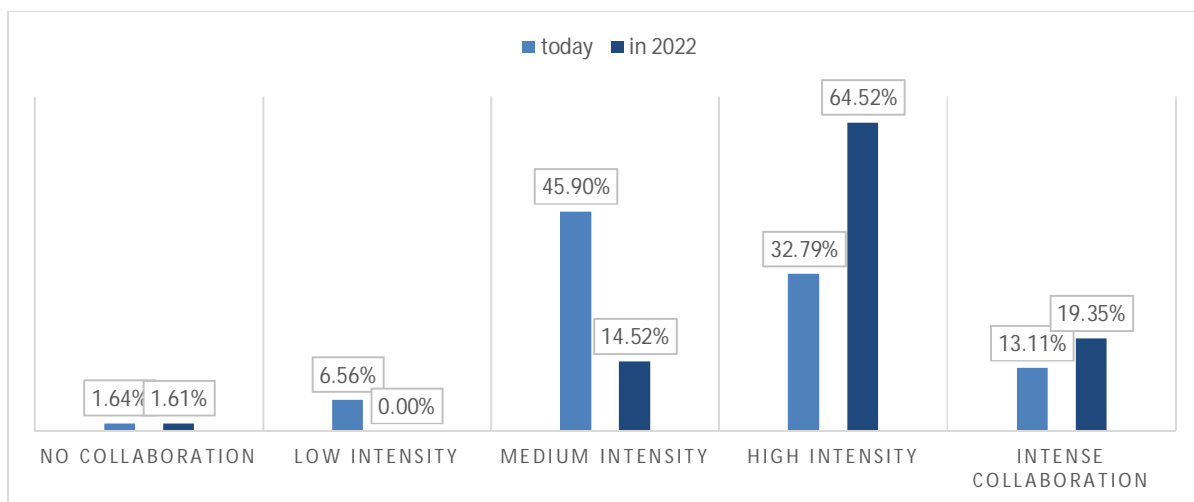


Figure 17: Degree of intensity of collaboration with partners and clients today and by 2022 (sector manufacturing)

Summarizing the findings above, one can clearly point out that Kosovan manufacturers see a dedicated need to go digital. They mainly intend to shift from the current medium digitalised status to a higher degree of digitalisation. However, they do not see a need to become fully digital. Key barriers include lack of knowledge, how and where to start, lack of skilled workforce and low readiness for investments in mandatory infrastructure, equipment and skills.

## 7.2 Digitalisation in the Agribusiness SME

Most firms interviewed were located in Pristina (42%), Prizren (14%), Gjakove (14%), and Gjiilan (11%). A minor share originated from other regions like Ferizaj and Mitrovice. The sub-sectors represented in the study fit well into the specific Agribusiness landscape in Kosovo. The majority of the respondents belong to the farming sector (45 %), whereas collectors and agri-processors were well represented with over 20 %. At the end of the food production chain are the food producers with direct contact to distributors and consumers. Slightly less than half of the sample belonged to this group (45%, Fig. 18).

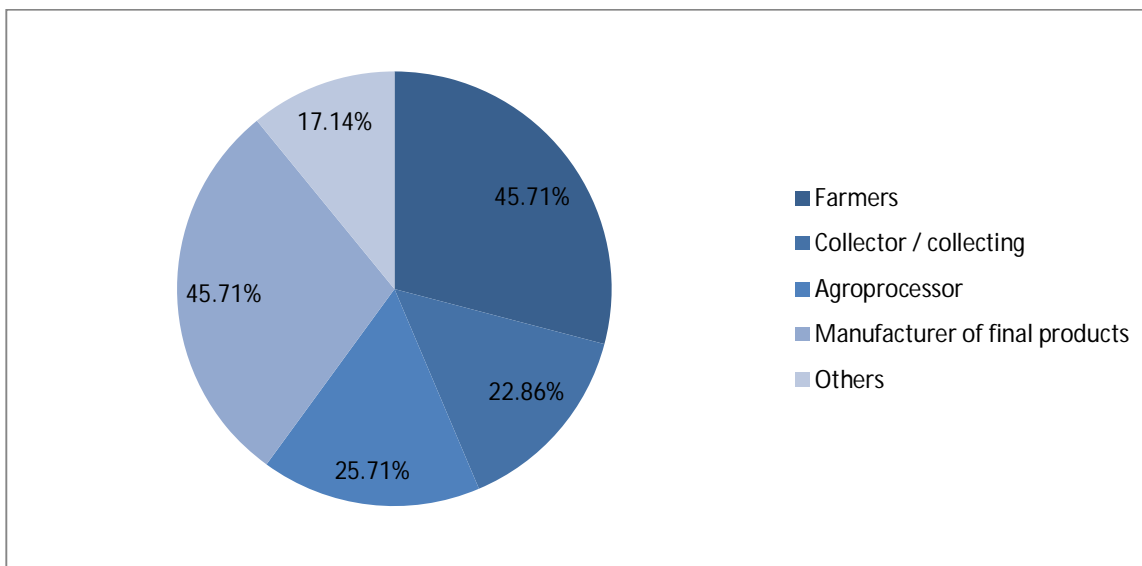


Figure 18: Sub-sectors covered by the baseline study (agribusiness sector)

Figure 19 shows the size distribution of the companies in relation to the number of employees. This distribution differs from that of the manufacturing sector. Here, just 55% had 10-49 employees, whereas almost one third of the firms interviewed have more than 50 employees.

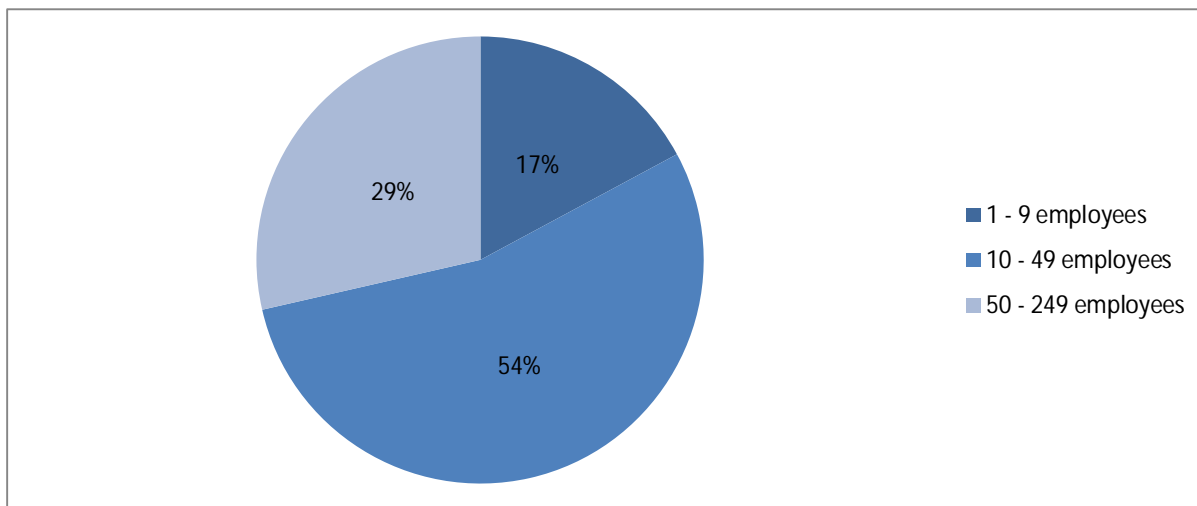


Figure 19: Distribution of sizes of firms involved in the survey (agribusiness sector)

7.2.1 Current status

An important prerequisite for dealing extensively and sustainably with digitalisation is to have an appropriate ICT infrastructure in place. As shown in Figure 20, 25 % of the firms surveyed have their own IT department and 15 % are working together with external service providers to outsource this component. It is interesting that the share of agribusiness firms with their own IT department is much larger than that of the manufacturing sectors. The reasons for this are not obvious and further consideration is warranted.

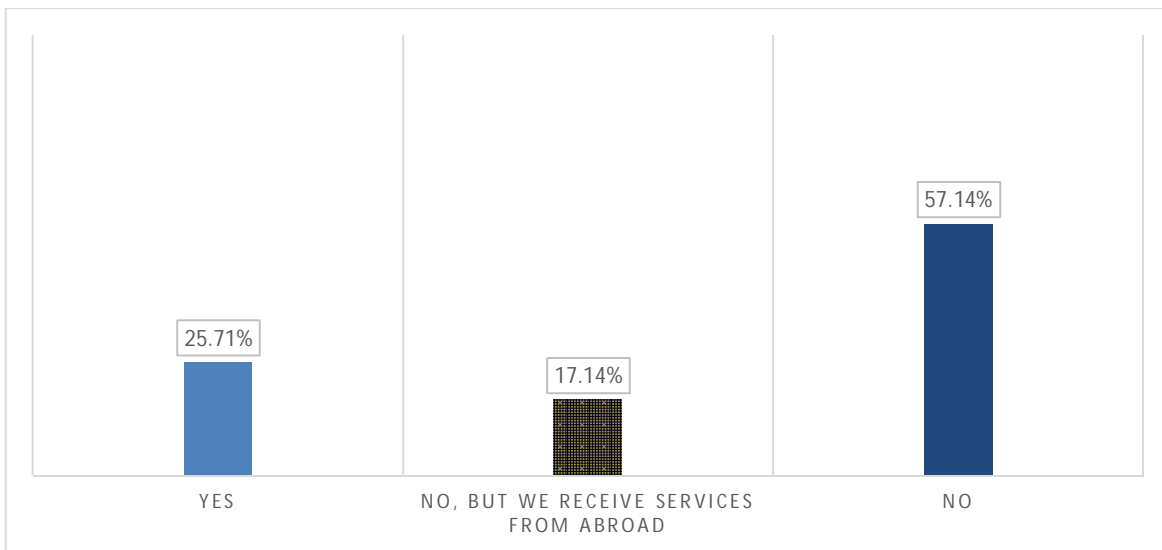


Figure 20: Existence of IT departments in agribusinesses interviewed (agribusiness sector)

Automation became, even in the agribusiness, more and more important over the last years. Not only for the food manufacturing firm themselves, rather than for the entire food supply chain. Thus, important information for the baseline study is to know the current overall level of automatization of related firms. Accordingly, Figure 21 illustrates that the degree of automation within related firms significantly vary. Whereas 20 % consider themselves quite well advanced in this regards, one quarter admits to be just at the beginning. However, the majority of the respondents assesses itself to be “medium” digitalised with room for improvements. In general, the firms in the agribusiness seem to be a bit more digitalised compared to the peers from the manufacturing sectors.

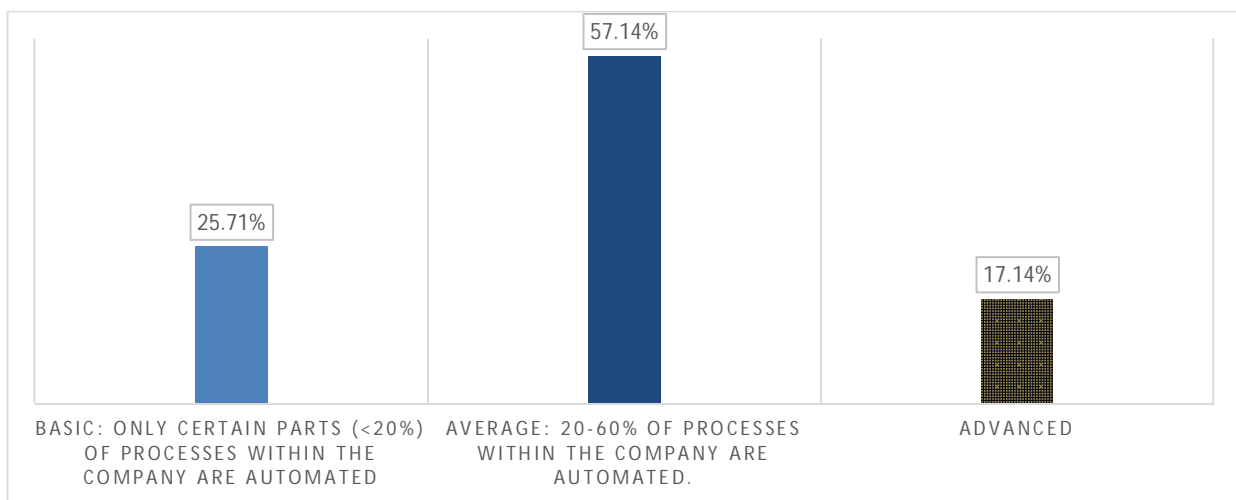


Figure 21: Degree of automatization (agribusiness sector)



### 7.2.2 Challenges and opportunities

For agribusiness firms, the prevailing issue to be solved or improved by digitalisation is the core food production process itself. The second most relevant reason is to be better able to interact with clients. Here, the feedback from most firms from the sub-sector “food manufacturing” is that this topic is of high relevance. This is not a surprise since this group of firms is directly exposed to consumers and end-users for whom a high level of engagement is very beneficial. Consequently, productivity improvements, reduction of costs, a better compliance with customer expectation and improved traceability are key objectives to be reached (Fig. 22). The latter one is of increasing importance, since end-users and buyers in the EU put more and more attention to better traceability of the entire food supply chain from farm to fork. An increased digitalisation of the entire production process helps Kosovan firms to provide evidence be in line with European regulations or other voluntary standards (e.g. organic production etc.).

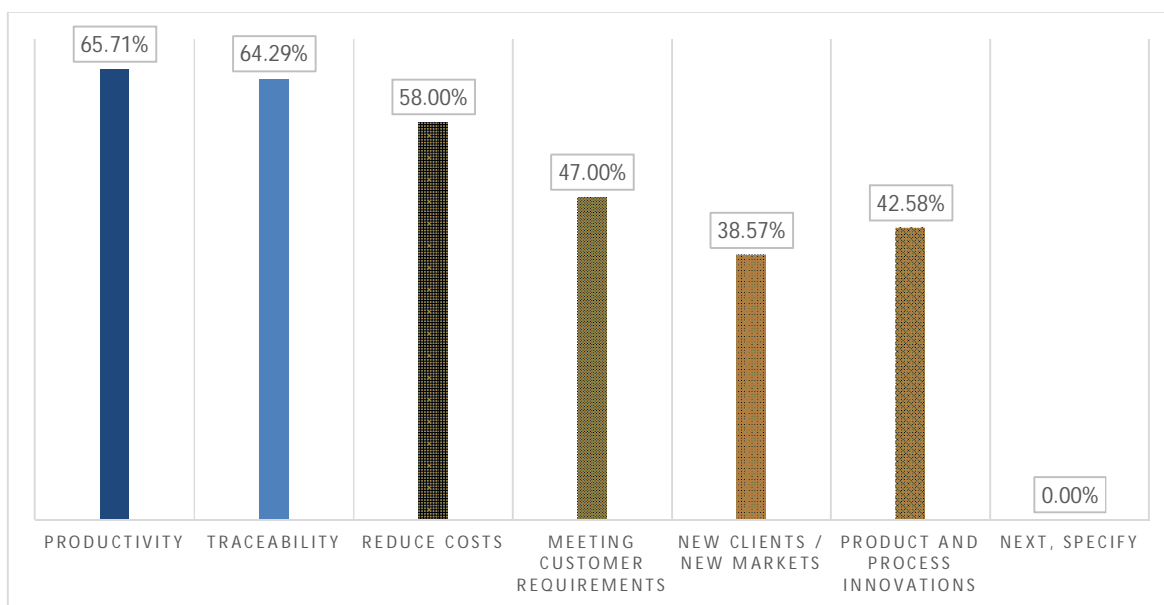


Figure 22: Prevailing objectives associated with the development of digitalisation processes (agribusiness sector)

Against the background of the objectives pursued with digitalisation, it is important to point out where the agribusiness firms see the main hurdles and obstacles (s. Fig. 23). Here, the findings are very similar to those for the manufacturing sectors (compare Figure 9). Lack of qualified staff is by far the main prevailing obstacle (48%), followed by a lack of financial resource (42%) to invest sufficiently in digitalisation and lack of knowledge where to start (31 %). It is interesting to see that agribusiness firms have many fewer concerns related to data security. This, compared to the manufacturing sector, is quite reasonable.

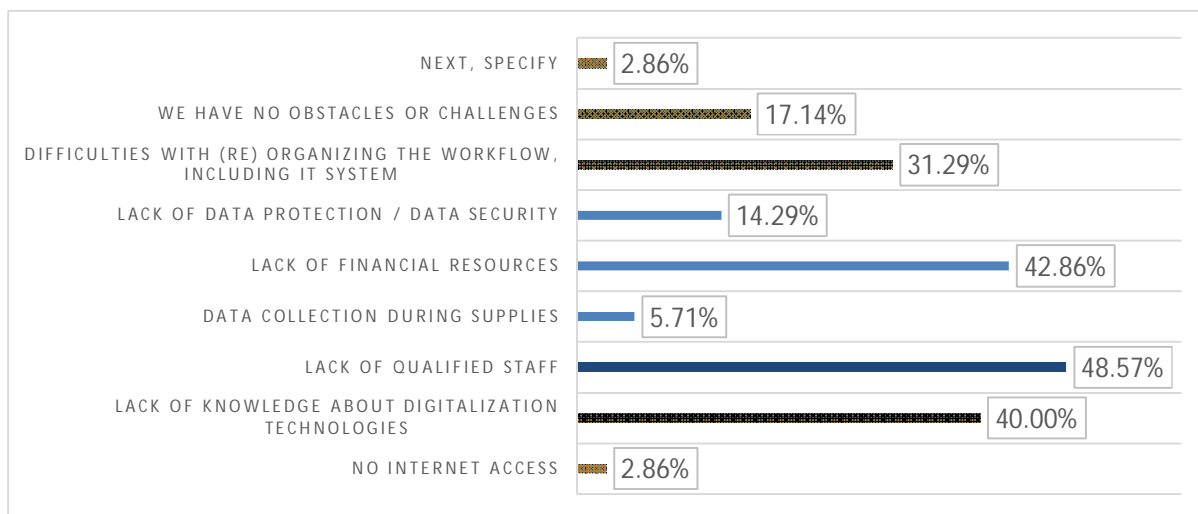


Figure 23: Key obstacles and challenges by agribusinesses perspective to become more digitalized (agribusiness sector)

Figure 24 reveals where future investments in companies should be made against the background of the goals achieved with digitalisation efforts and the existing obstacles. Further investments in software and hardware have the highest priority. About 70% of the firms see the necessity to also invest in the future.

The integration of digital workflows in companies is also poised to receive more significant investment than in the past (+25% of firms intend to significantly invest here). At the same time, further investments in "marketing and customer loyalty through digital tools" will also play an important role in the future. Over 50% of the firms surveyed see an important need for investment in this area. On the contrary, the readiness to invest in IT consulting and cyber security is comparably low as it is considered to be an important obstacle on the road to digitalisation (see Fig. 24).

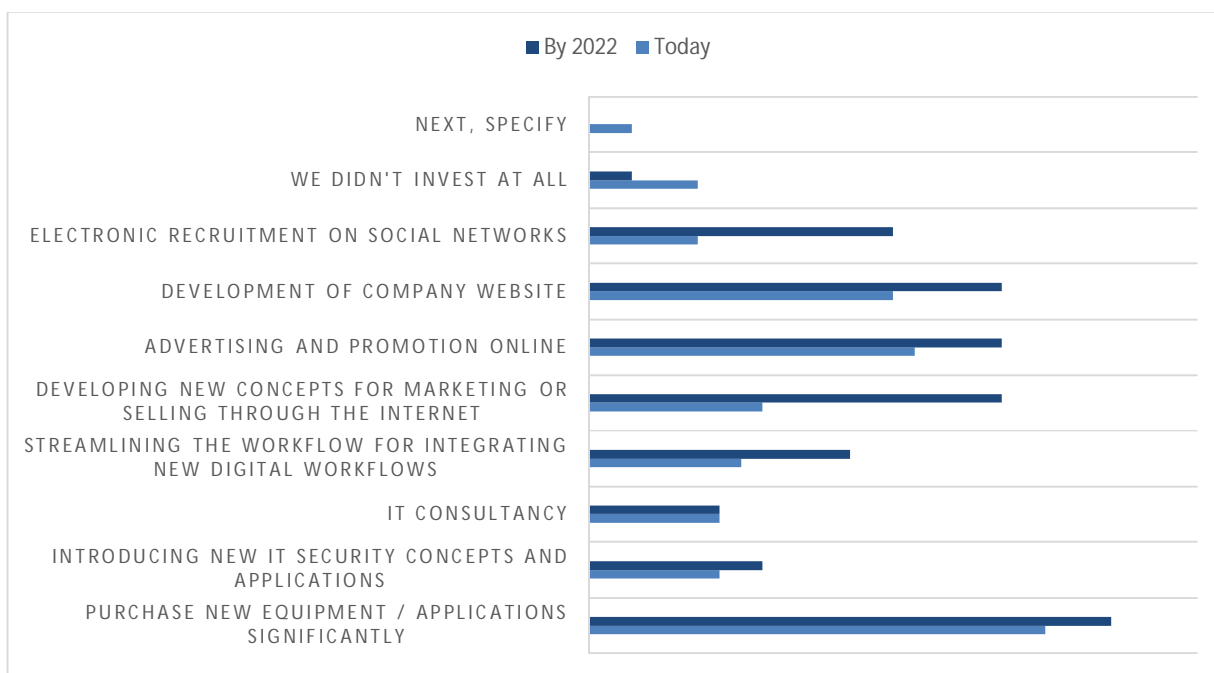


Figure 24: Areas of investments in digitalisation today and by 2022 (agribusiness sector)

Also, in the agribusiness sector, most of the employees do not have access to computers or other digital tools. More than two thirds confirmed that less than 50 % of the employees are working with such devices. However, according to the feedback received, this picture will likely change dramatically over the next three years. Accordingly, the day-to-day operation procedures in these firms are defined and mostly supported by traditional analog tools, like paper or phone. Only 20 % of the respondents pointed out that they have designated processes in place with are supported by digital tools, like ERP software or related tools.

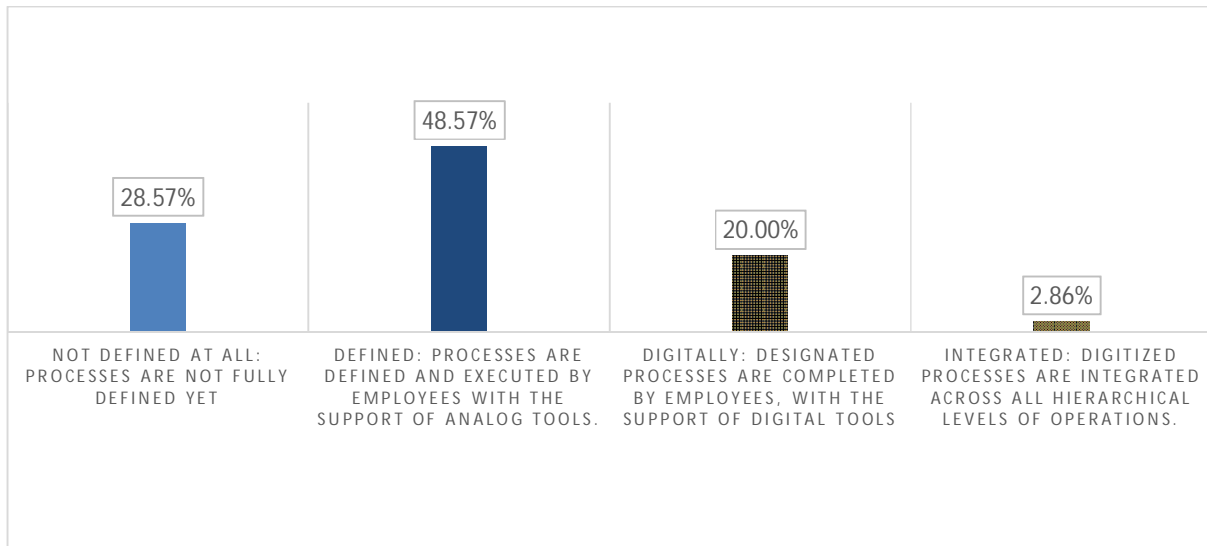


Figure 25: Degree of digitalisation of internal day-to-day operations (agribusiness sector)

An example of how the agribusiness community communicates based on digital tools is given in Fig. 26. Information about weather or other agrological conditions is of very high relevance, mainly for farmers. Only one third is using digital tools or the social network to be updated and informed. The vast majority still receives information about crop disease, weather conditions, etc. through traditional channels.

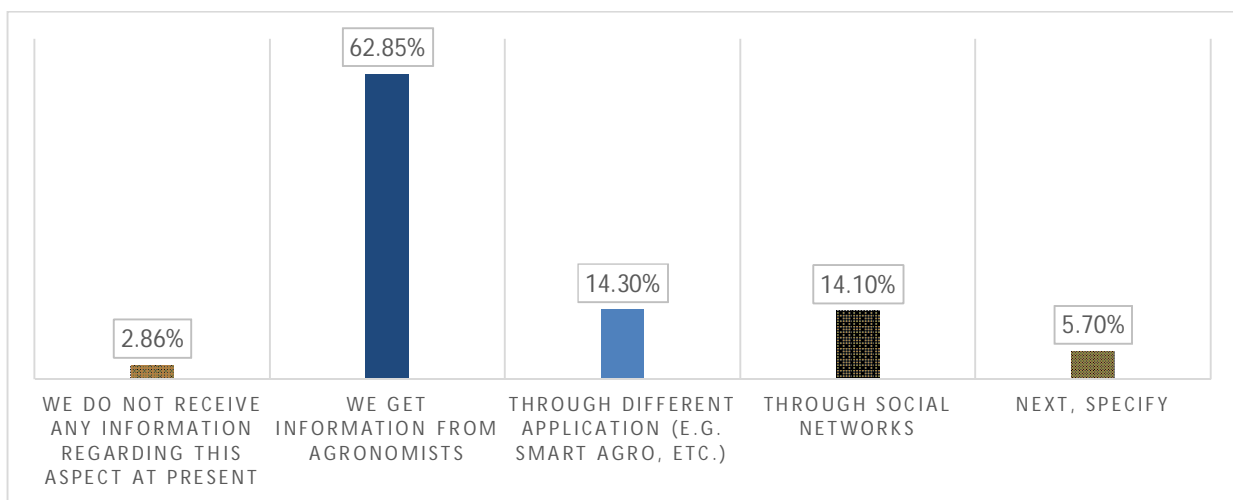


Figure 26: Where agribusiness usually receive agrological information from

### 7.2.3 Digitalisation trends

The current chapter focusses on upcoming changes and trends with regards to digitalisation of the agribusiness firms. As pointed out earlier, a key objective for investments in digitalisation is, among others, increased productivity. In order to reach this goal by 2022, many firms see the need to upgrade their manufacturing equipment (s. Fig. 27). Whereas 80 % of respondents confirm that their equipment is currently fairly advanced, 50 % see the need to become much more technologically advanced in terms of digital production facilities and equipment. However, only 15 % of the respondents believe there is a need to become a fully digitalised plant. These results fit well with the argument that agribusinesses need to make more use of digital production equipment. Fully digital manufacturing is not (yet) needed to gain productivity improvements or to meet current customer needs.

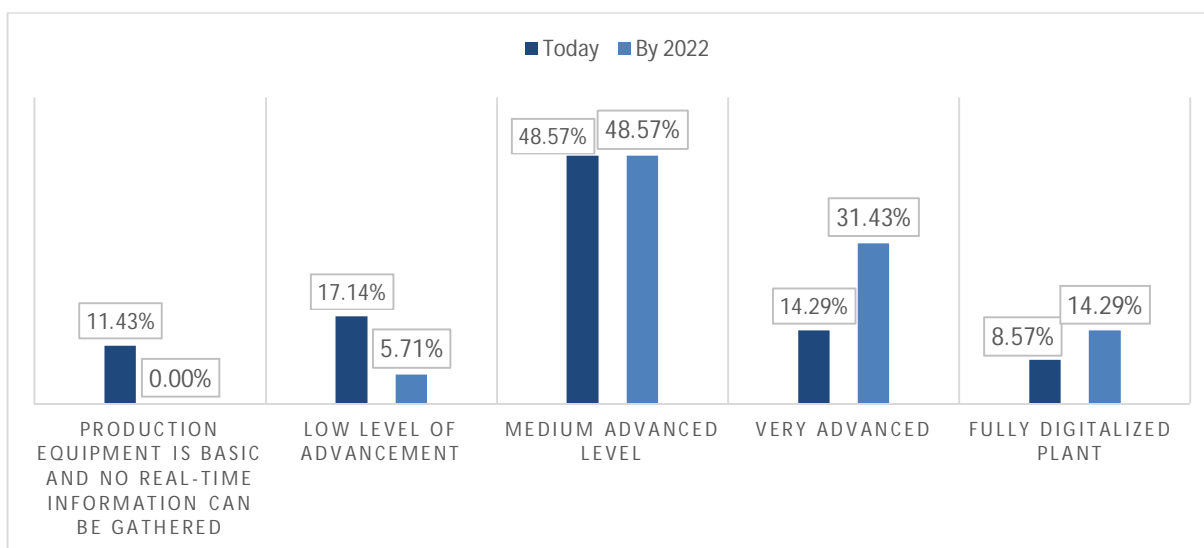


Figure 27: Degree of digitalisation of production equipment today and by 2022 (agribusiness sector)

There are basically four types of channels to put food products on the market. These include direct selling; selling through intermediaries; dual distribution; and reverse channels. In the case of smaller businesses, the producers usually sell their products to wholesalers or industrial distributors. Thus, these firms commonly use integrated sales channels (s. Figure 28). Digital sales and marketing tools will allow the agribusinesses to make their products available to various customer groups, including final customers. An individual producer may choose different marketing channels with respect to different types of products or customers. That this might be the way to go in the future is confirmed by a majority of the respondents that see a dedicated need to become more integrated in future sales channels. Over 20 % intend to use a comprehensive, multi-channel approach by 2022.

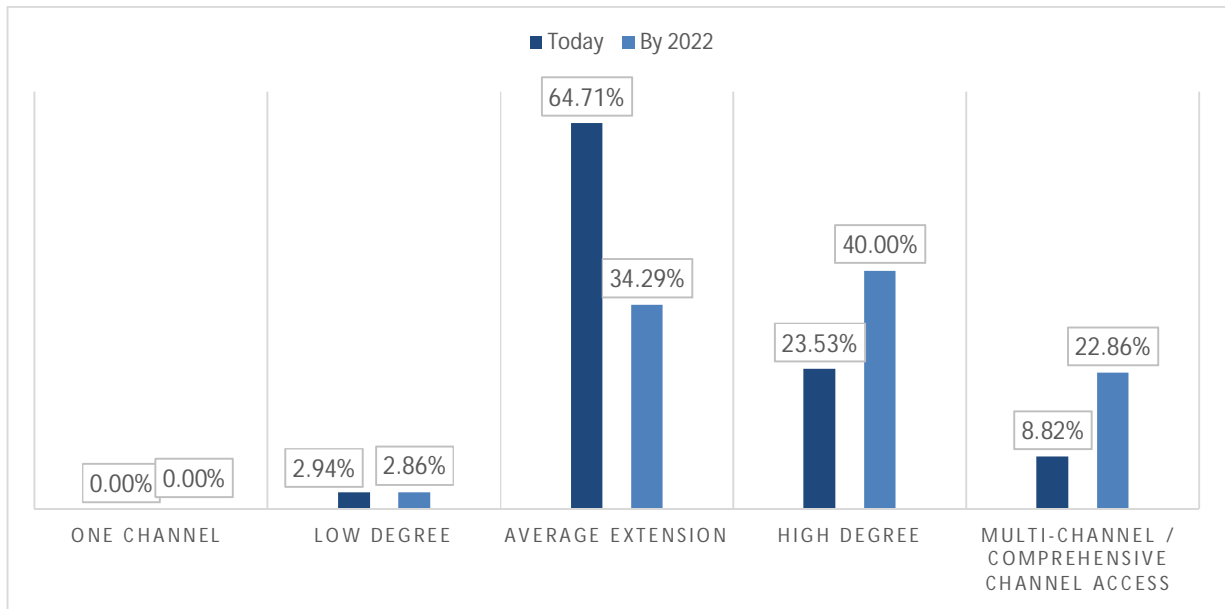


Figure 28: Degree of integration in sales channels today and by 2022 (agribusiness sector)

Well in line with the above mentioned observations is the need to make better use of data through data mining or advanced data analytics. However, there seems to already be already a high degree of awareness in this regard and the expected change over the next three years is limited as illustrated in Fig. 29.

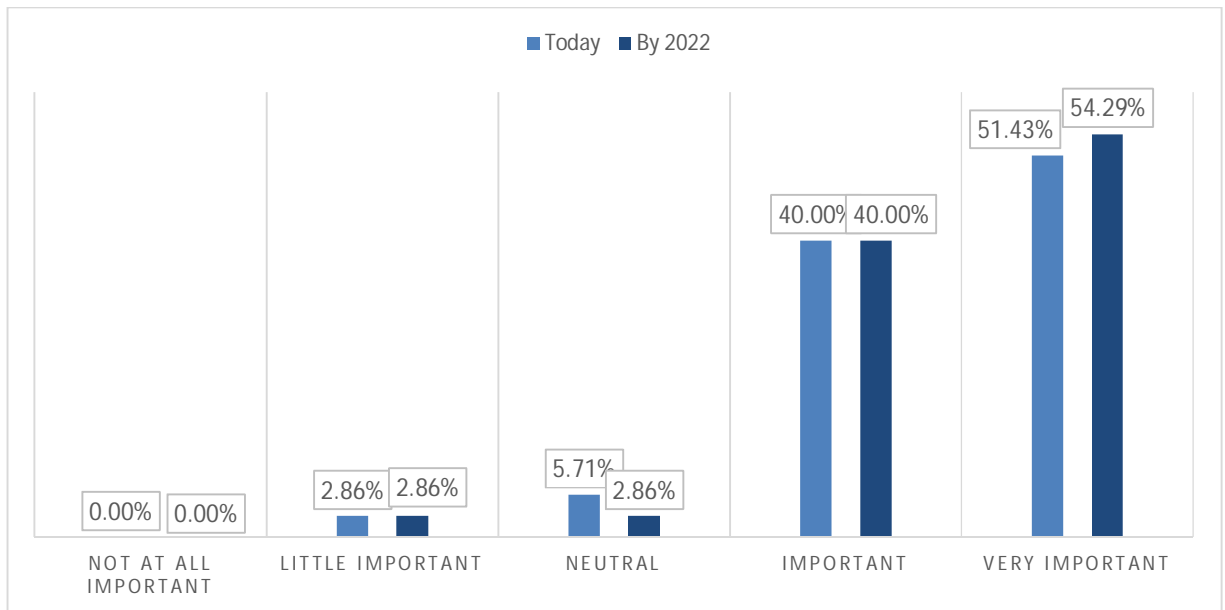


Figure 29. Importance of making use of data analytics today and in 2022 (agribusiness sector)

### 7.3 Digitalisation in the Tourism SME

Digital technologies have brought significant transformation to the tourism industry, revolutionising tourism enterprises, products and experiences, business ecosystems, and destinations. Digitalisation has also transformed the traditional roles of tourism producers and consumers, with new roles, relationships, business models, and competencies emerging. The rise of digital platforms has increased the variety and volume of tourism products, services and experiences, with on-demand functionality accelerating the speed of economic transactions, market awareness and feedback. These shifts have created new opportunities, as well as challenges, for the tourism industry and also for Kosovo. Coordinated efforts to foster an innovative digital culture in tourism firms can increase Kosovo’s ability to remain an attractive destination.

In total, 53 firms were interviewed. Most of these firms were located in Gjilan (29%), Gjakove (25 %) and Peje (23%). A minor share originated from other cities, like Prizren (10%) and Pristina (6%). The sub-sectors represented in the study were dominated by firms from the food and beverage sectors (44%) and tourist providers. Other sub-sectors were also included, but with smaller shares (s. Fig. 30).

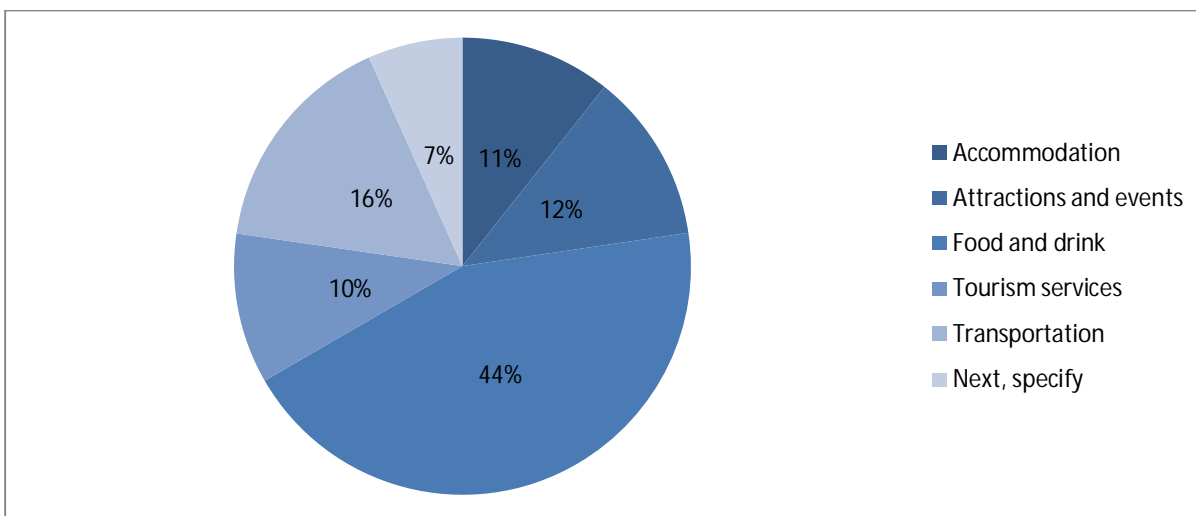


Figure 30: Sub-sectors covered by the baseline study (tourism sector)

Figure 31 displays the size distribution of the tourism firms in terms of employment. This distribution differs from that of the manufacturing sector. The majority of firms has 10 – 49 employees (56%), whereas almost one third of the firms interviewed have less than 10 employees. Thus, the tourism sector had, by far, the biggest share of so-called micro firms.

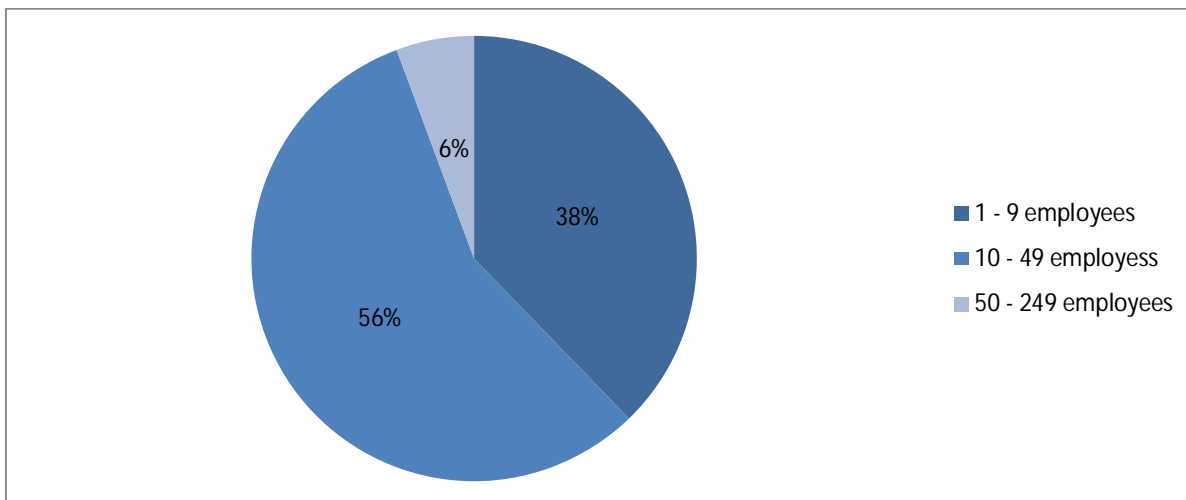


Figure 31: Distribution of sizes of firms involved in the survey (tourism sector)

### 7.3.1 Current status

An important prerequisite for dealing extensively and sustainably with digitalisation is to have an appropriate ICT infrastructure in place. As shown in Figure 32, only 10 % of the firms surveyed have their own IT department. Also, another 10 % is working together with external service providers and outsource this component. This result is not surprising since most of the companies examined were very small. As a rule, it is not worthwhile for them to maintain their own IT department. However, it is a bit surprising that the share of outsourced IT support also remains quite low.

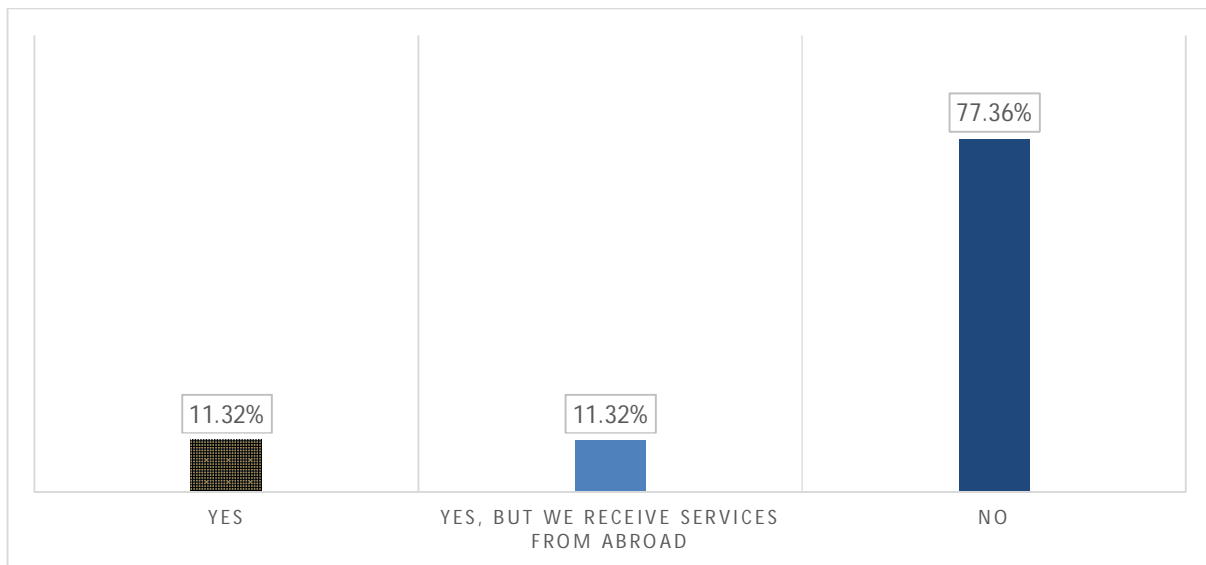


Figure 32: Existence of IT departments in agribusinesses interviewed (tourism sector)

The automation of processes also plays an important role in the tourism sector, even if in a different way than in production technology. Aspects such as marketing, customer engagement, bookings and payment transactions can be easily digitised and thus lead to a high degree of automation. As displayed in Figure 33 just 50 % of the firms confirmed that around half of the processes are more or less digitised. Whereas 10 % consider themselves quite well advanced in this regards, around 40 % admits to be just at the beginning. Taking the considerable need for digitalisation in the tourism sector into account, this fact is critical. Certainly, these values can also be attributed to the sector-specific small size of the company. It is nonetheless surprising that 40% of the companies in question have hardly automated their processes.

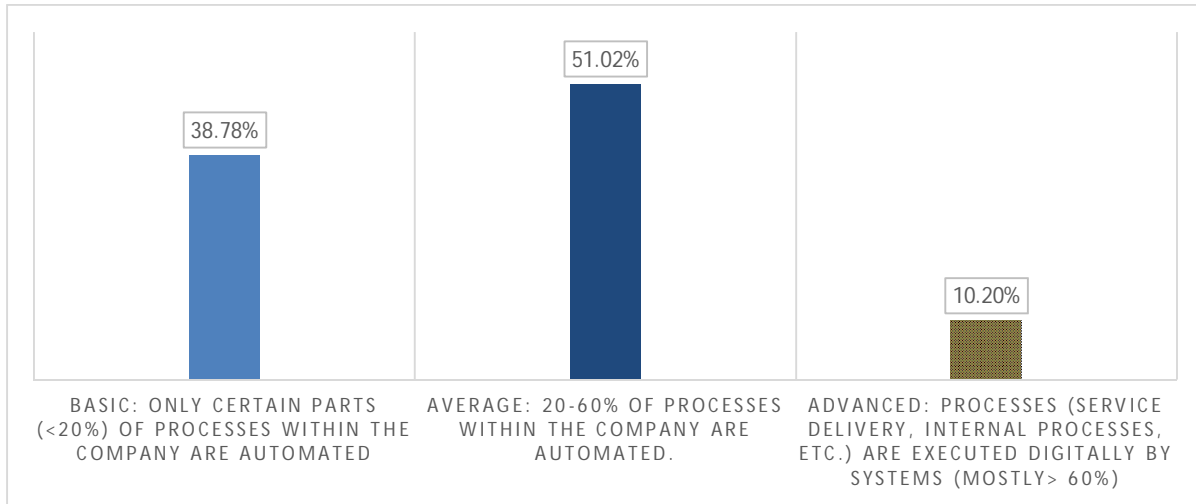


Figure 33: Degree of process are automatised (tourism sector)

### 7.3.2 Challenges and opportunities

In tourism, digitalisation revolutionized experiences and products. This affected the demand side of tourism. While facilitating the entire vacation of the tourists, digitalisation possess a series of challenges for the Kosovan tourism SMEs. The main objective that tourism companies pursue with digitization is to strengthen customer relationships and to improve service quality. Interestingly, strengthening branding or increasing international reach through the increased use of digital tools hardly matters for Kosovan companies. Greater customer interaction and customer satisfaction is of medium importance. The answers given do not significantly vary between the different sub-sectors or between the company sizes. This provides a fairly uniform picture.

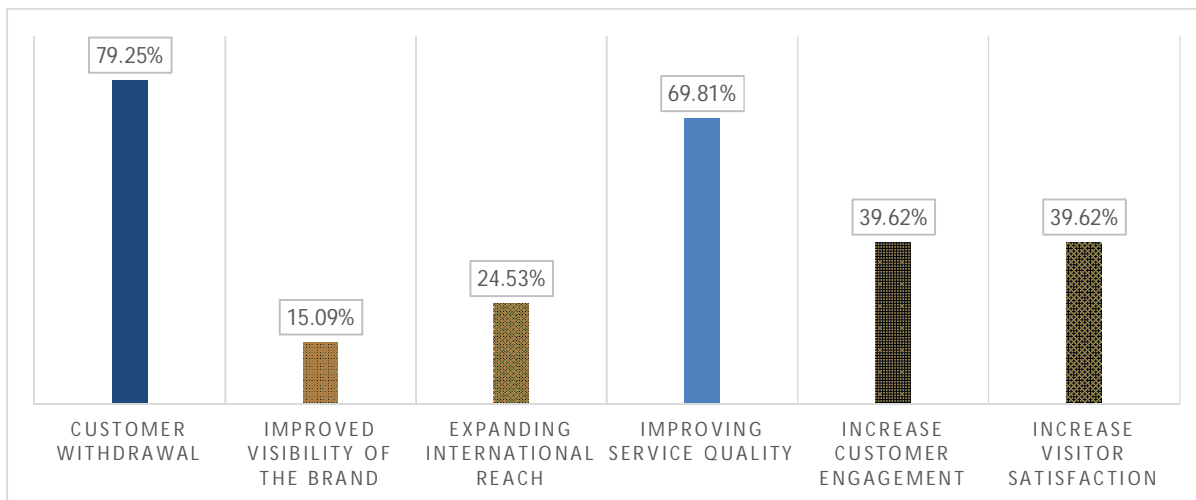


Figure 34: Prevailing objectives associated with the development of digitalisation processes (tourism sector)

In contrast, the three main hurdles for increasing digitalisation are the same as for the other sectors examined (Fig. 35). Again, a lack of qualified staff is the main prevailing obstacle (45%), followed by a lack of financial resources to invest sufficiently in digitisation as well as a lack of knowledge where to start (both 40%). It is interesting to see that, like agribusiness firms, tourism firms have fewer concerns related to data security compared to the manufacturing sector.



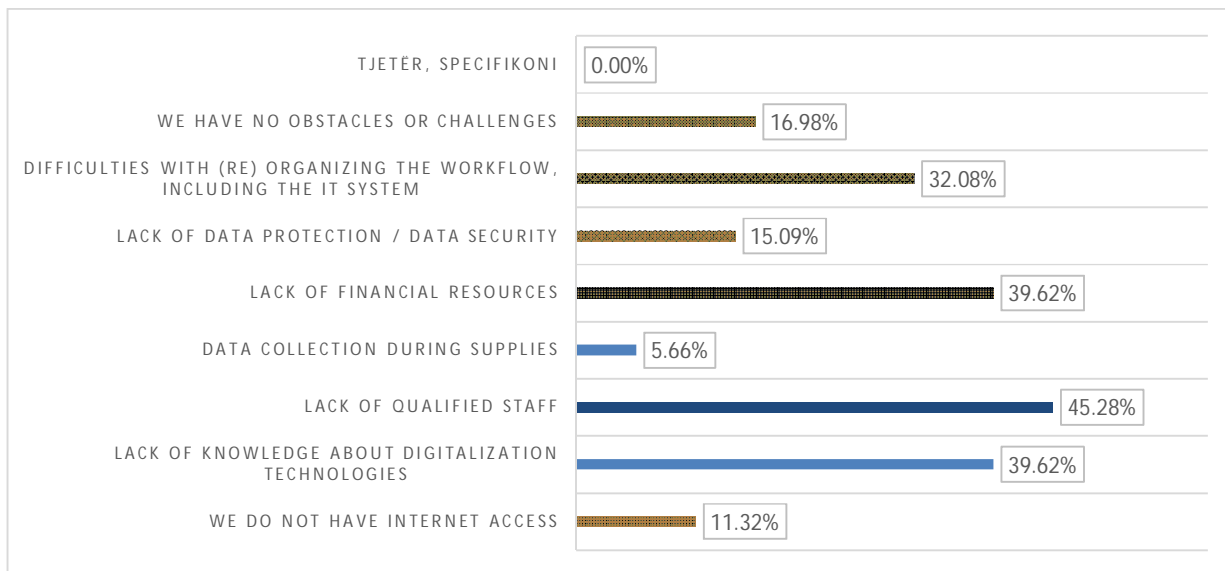


Figure 35: Key obstacles and challenges by firms perspective to become more digitalized (tourism sector)

Figure 36 reveals where future investments in tourism firms should be made against the background of the goals achieved with digitalisation efforts today. Existing obstacles are also shown. Further investments in software and hardware are high on the agenda of the tourism firms. Additional investments are also prioritized for better online visibility and online advertising as well as new digital concepts for marketing and sales. These are areas for future investments. The latter one is projected to have an increase between today and 2022 of almost 30 %. Whereas only 4 % of the respondents confirmed having already invested in IT security, 27 % plan to do so by 2022. A similar picture can be found for investments that support the streamlining of internal workflows in tourism firms.

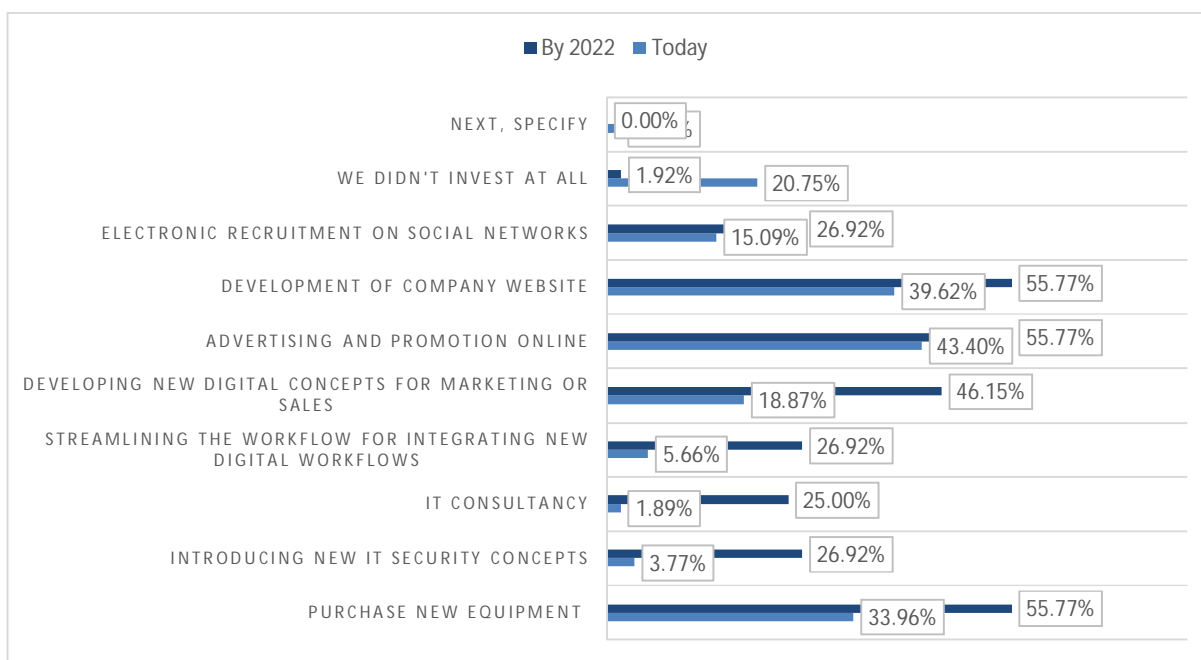


Figure 36: Areas of investments in digitalisation today and by 2022 (tourism sector)

As in the agribusiness sector, most of the employees of tourism firms do not have access to computers or other digital tools. Around 55% of the respondents confirmed that less than the half of their employees are working with such devices. However, according to the feedback received, this picture shall change dramatically over the next three years (Fig. 37).

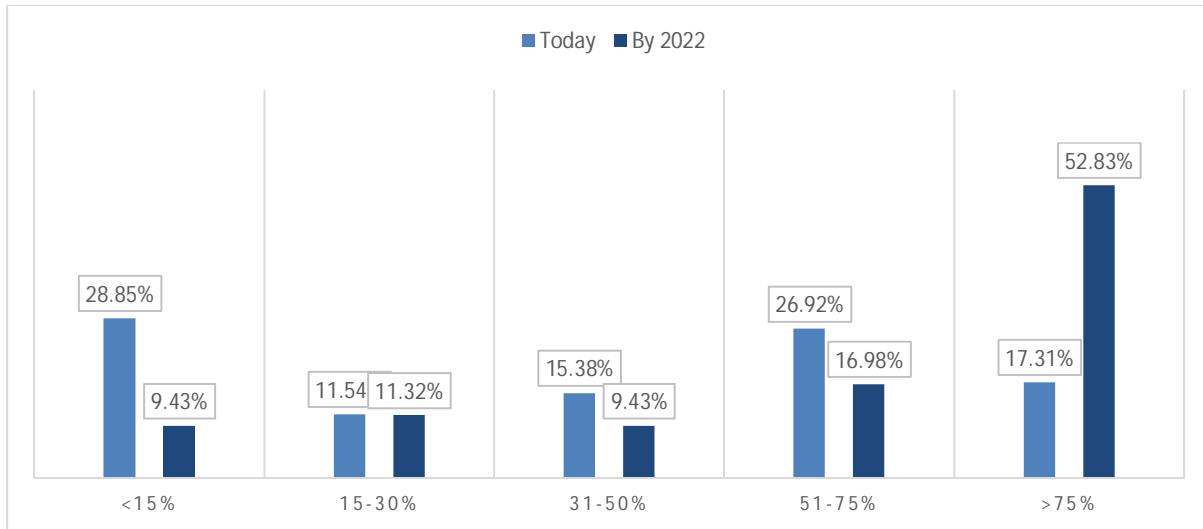


Figure 37: The extent to which staff of tourism firms have access to computer and other digital devices today and by 2022

7.3.3 Digitalisation trends

The current chapter focusses on upcoming changes and trends with regard to digitalisation of the tourism firms. One of the key challenges is that still 40 % of the firms interviewed confirmed their supply chain remains on a very low level of digitalisation. Most process procedures are still implemented in a traditional analogue way today. What is striking is the fact that by 2022 still 20 % of these firms do not intend to change anything. One the other hand, 55 % of the respondents plan to be highly digitalised in their supply chain by 2022 (Fig. 38). This indicates that there might be two levels of firms. Those that are not digitally integrated in any supply chain and those that are highly integrated.

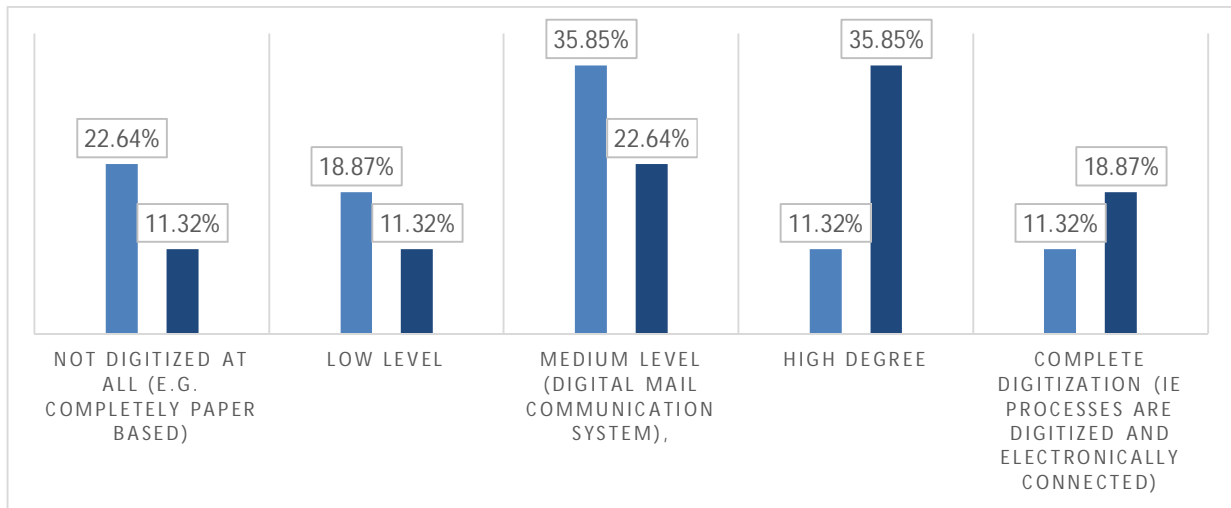


Figure 38: Degree of digitalisation of the supply chain in the tourism sector today and by 2022.

In the tourism sector, firms are highly connected with the consumers themselves. Thus, making use of a multi sales-channel approach provides various advantages for Kosovan firms. Today, 45 % of these firms consider themselves as medium integrated, meaning they have one or two sales channels in place. Only around 15 % have really implemented a multi-channel approach using digitalised processes which are all electronically connected. Although this number is not supposed to change dramatically by 2022 (although they will increase from 15 to 25 %), at least 45 % of the respondents intend to use more sales channels than today by using more digitally-based approaches (Fig. 39).

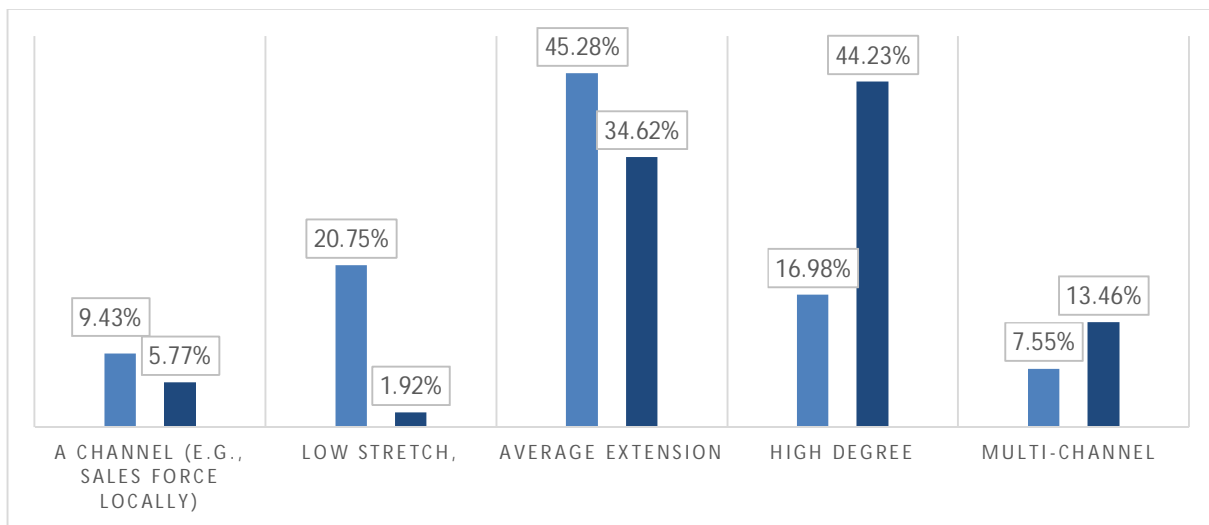


Figure 39: Degree of integration in sales channels today and by 2022 (tourism sector)

Well in line with the above-mentioned observations is the understanding to make better use of data through data mining or advanced data analytics. Similar to the Agribusiness sector, there seems to be already a high degree of awareness in this regard. As illustrated in Fig. 40, the expected change over the next three years is limited. Only smaller further increases are likely to happen by 2022.

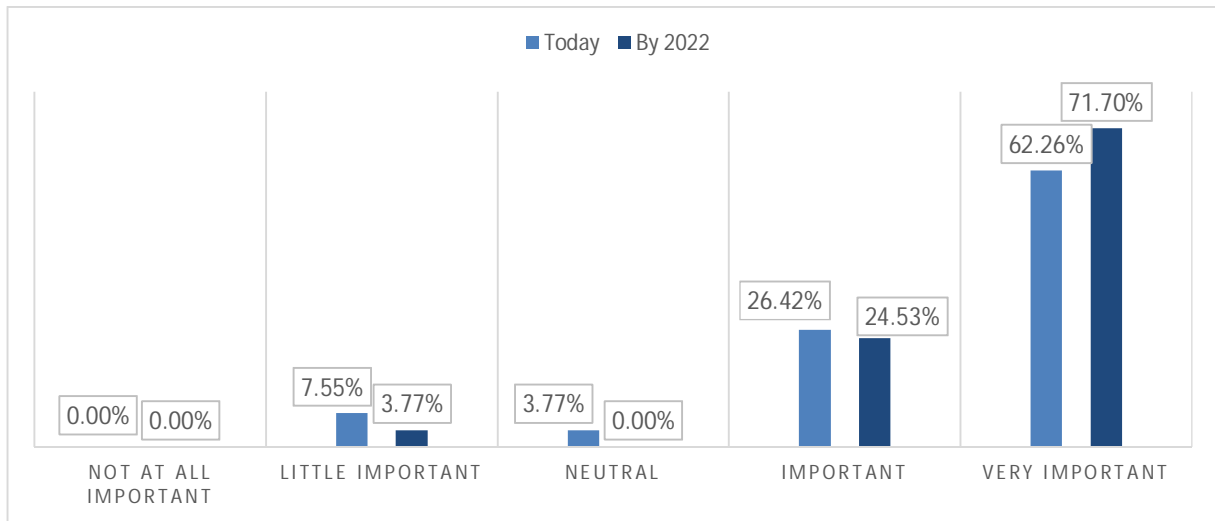


Figure 40. Importance of making use of data analytics today and in 2022 (tourism sector)

### 7.4 Digitalisation in the Retail SME

Digitalisation denotes an on-going transformation of great importance for the retail sector. It transforms the following aspects, like retailing exchanges (in a number of ways and in various facets of exchange, including communications, transactions, and distribution). It also alters the nature of retail offerings (i.e. blurred distinctions between products and services, what constitutes the actual offerings and how they are priced); retail settings (i.e. where and when retailing takes place); and the actors who participate in retailing (i.e. retailers and consumers, among other parties)<sup>22</sup>.

E-commerce brings opportunities for greater efficiency since it transforms management, stimulates new business models and trading formats, and creates new jobs with new skills requirements. Consumers reap the benefits of greater convenience and price competition through loyalty marketing systems, mobile web sites and new payment platforms, which continue to transform the consumer’s experience and the efficiency of retail businesses<sup>23</sup>. All this puts significant pressure on the businesses operating in the retail sector in Kosovo.

In total, 52 firms were interviewed, most of which were located in Peje (37%), Ferizaj (17%), Gjakove (15%) and Gjilan (13%). The sub-sectors represented in the study were quite well balanced as is indicated in Figure 41.

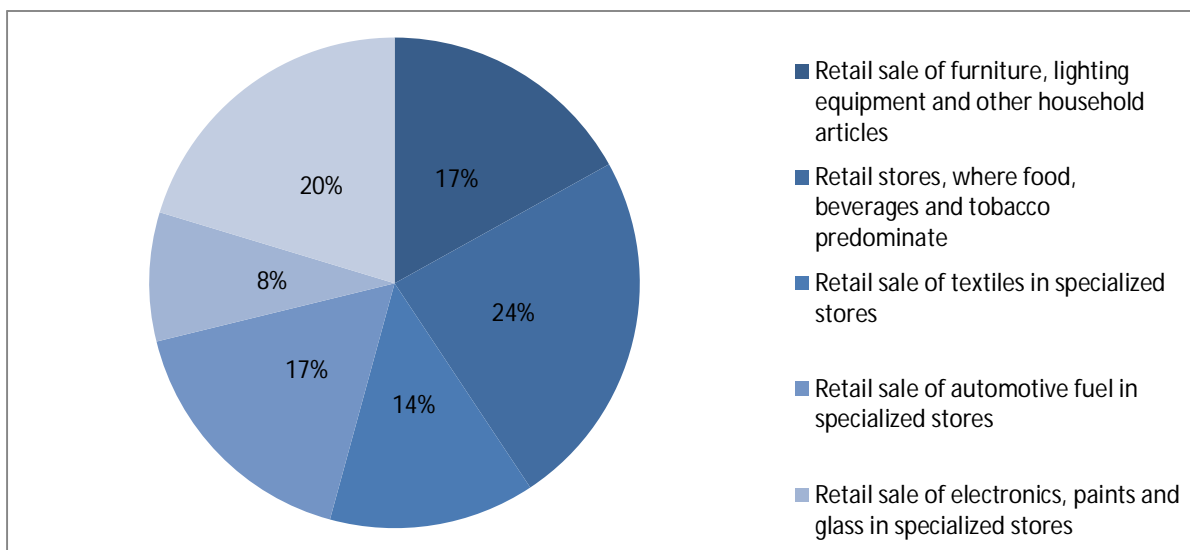


Figure 41: Sub-sectors covered by the baseline study (retail sector)

Figure 42 below displays the size distribution of the retail firms in term of employment. Majority of firms has 10 – 49 employees (70%), whereas 20 % firms interviewed have less 10 employees. This kind of distribution well represents the situation in the entire retail sector from Kosovo.

<sup>22</sup> Hagberg, J., Sundström, M.; Egels-Zanden, N. (2016), The digitalisation of retailing: an exploratory framework, *Int. Journal of Retail & Distribution Management* 44 (7), DOI □ DOI: 10.1108/IJRDM-09-2015-0140

<sup>23</sup> Annual Report, Deloitte (2015), <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Consumer-Business/gx-cb-global-powers-of-retailing.pdf> (assessed 14 December 2019)

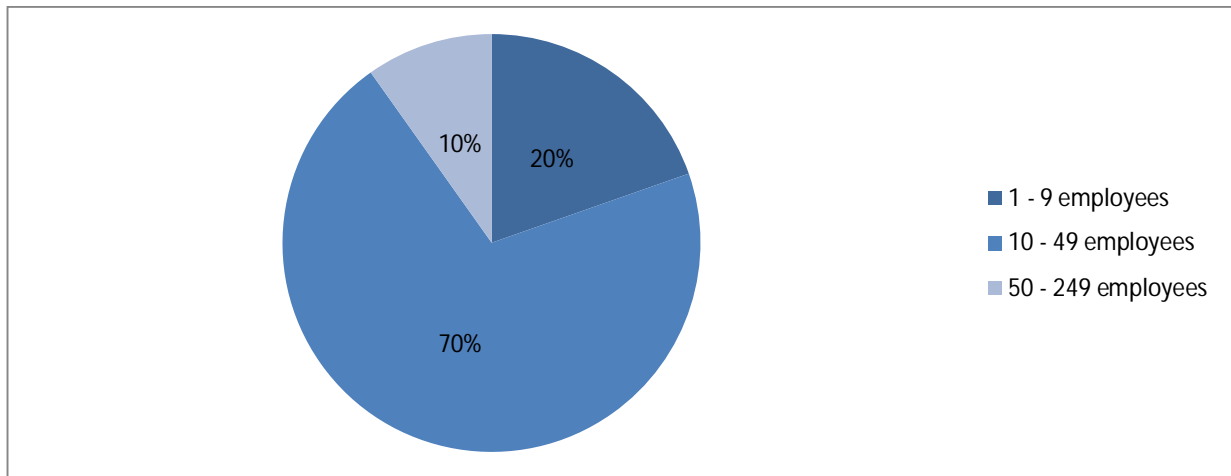


Figure 42: Distribution of sizes of firms involved in the survey (retail sector)

#### 7.4.1 Current status

An important prerequisite for dealing extensively and sustainably with digitalisation is to have an appropriate ICT infrastructure in place. As shown in Figure 43, around 21% of the firms surveyed have their own IT department and even 27% others are working together with external service providers and outsource this component. When adding both values, it becomes clear that almost the half of the retail firms have access to professional IT support. This is, by far, the highest share among all four sub-sectors considered in this study.

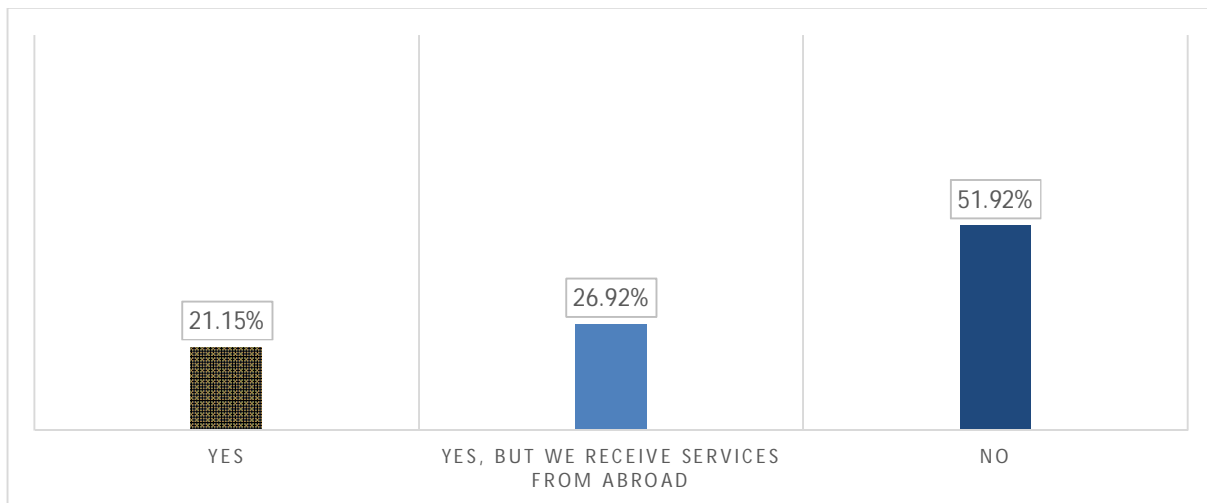


Figure 43: Existence of IT departments in retail sector

Similar to the previous findings, the level of digitalisation is quite high in the retail sector compared to the others of the baseline study. Around 75% confirmed that the majority of the internal processes are managed by means of digital tools.

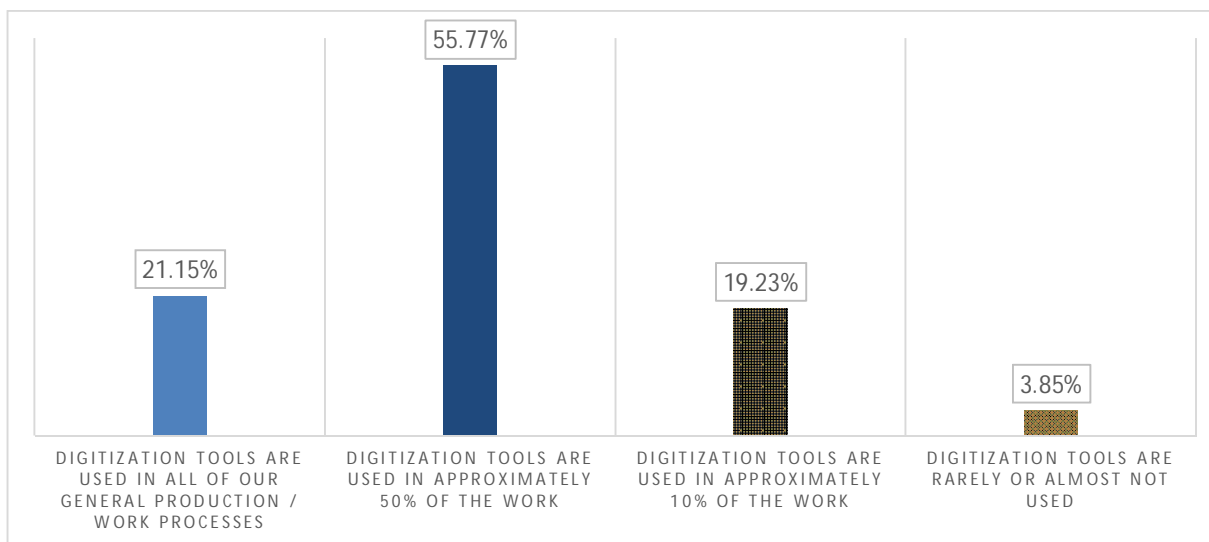


Figure 44: Level of digitisation of firms in the retail sector

#### 7.4.2 Challenges and opportunities

The main objective for firms from the retail sector to go digital is to strengthen customer relationships (85%) and to improve service quality (63%). Interestingly, strengthening branding (31%) or increasing international reach (35%) through the increased use of digital tools is only of lower relevance for Kosovan retail firms. Greater customer interaction and customer satisfaction is also just of medium importance. The answers given do not significantly vary among the sub-sectors investigated.

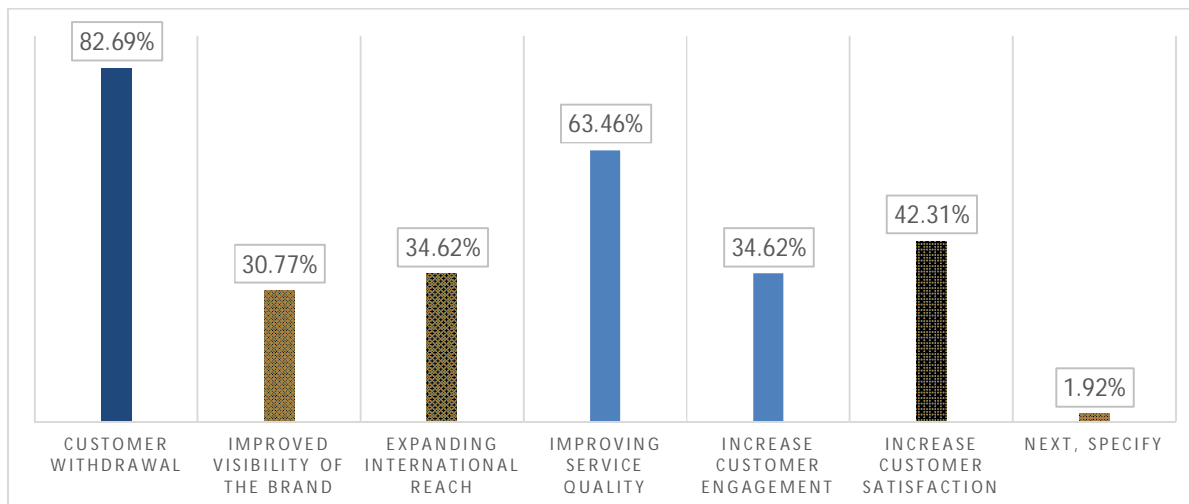


Figure 45: Prevailing objectives associated with the development of digitalisation processes (retail sector)

Figure 46 illustrates the key barriers connected with digitalisation. The findings are quite interesting and different as for the other sub-sectors. A quite high number of retail firms (almost 40 %) do not see any significant barriers at all when it comes to going more digital. A lack of qualified staff is also an important obstacle (28%) for all other sectors. A lack of knowledge about where to start or limited resources are two major obstacles for the other sectors. This is only of minor concern for most of the firms from the retail sector. On the contrary, data protection / IT security is of much higher concern than for the other sectors (25%).

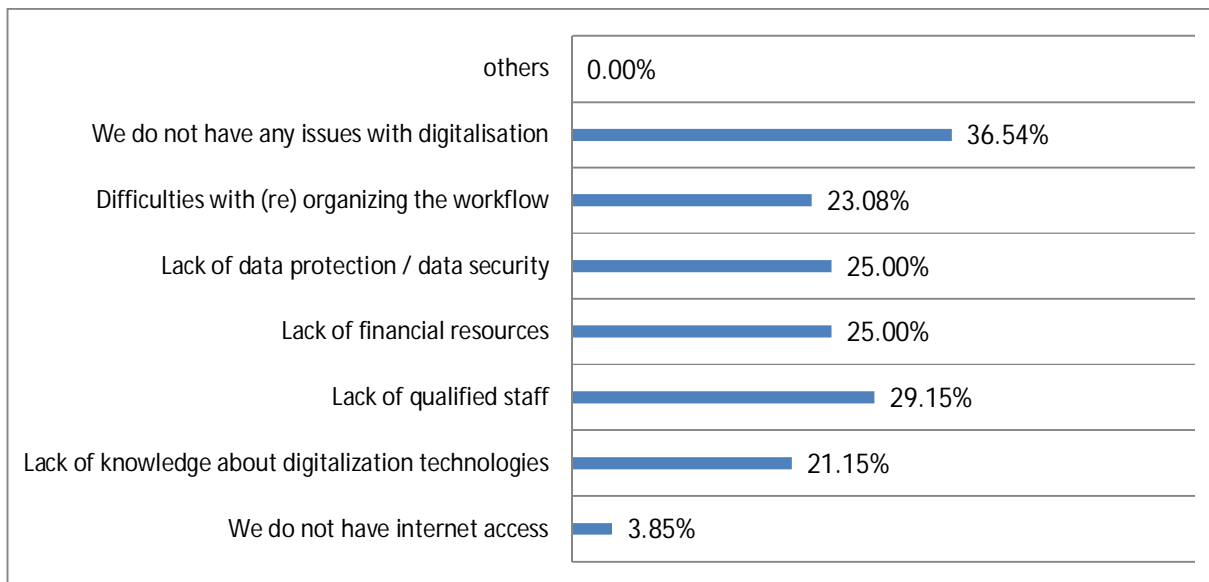


Figure 46: Key obstacles and challenges by firms perspective to become more digitalized (retail sector)

Figure 47 reveals where future investments in tourism firms should be made. Further investments in software and hardware are high on the agenda of the retail firms (55%). Also, investments for advertising and online promotion are also primary targets of future investment (60%). Further development of the firm’s website is of high importance. Whereas only 6 % of the firms confirmed of having already invested in IT security until today, 24 % plan to do so by 2022. A similar picture can be found for investments that support the streamlining of internal workflows in tourism firms (40%).

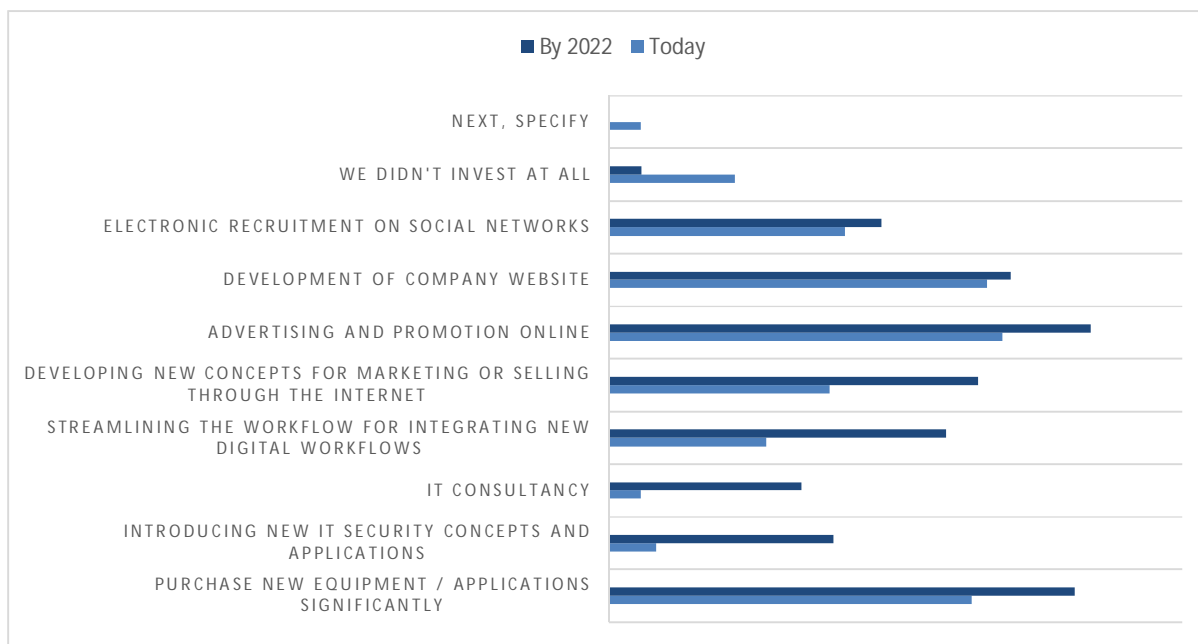


Figure 47: Areas of investments in digitalisation today and by 2022 (retail sector)



### 7.4.3 Digitalisation trends

As indicated in Figure 48, some of the retail firms interviewed are struggling to meet the current customers' expectations. Around 30 % admitted that they are only able to meet these expectations to a limited extent. However, it is hoped that these requirements will be better met by using appropriate digital tools. By 2022, the majority of the firms are confident that they will meet future customers' requirements at a high or very high level.

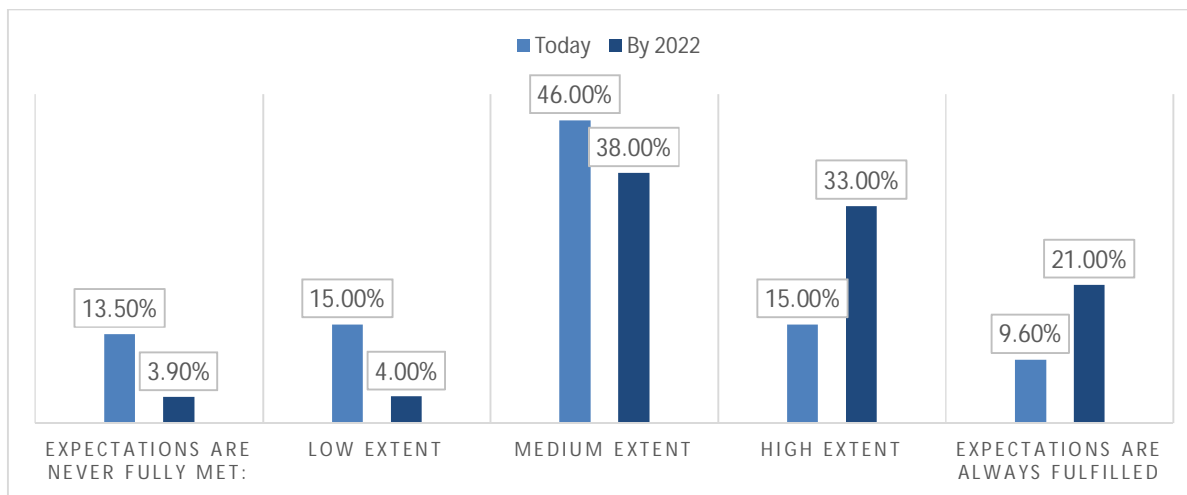


Figure 48: Degree and extent to which current and future customer requirements are met (retail sector)

The retail sector is known for its intensive interaction with private and business clients. However, only still 60 % of the retail firms confirmed that the interaction with private and business clients is low or just medium (Fig. 49). Taking the importance and the possibilities of digitalisation into account, by 2022, almost 75 % of the interviewees confirm their intention to get much more engaged with their clients.

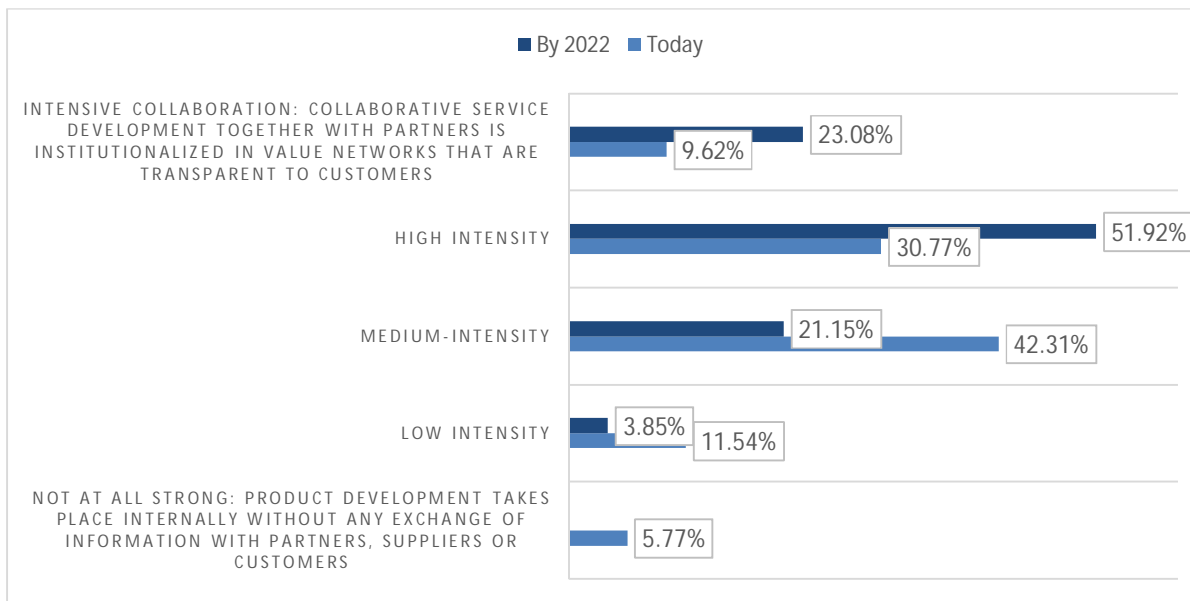


Figure 49: Degree of current and future engagements with clients (retail sector)

Thus, having a multi sales-channel approach in place provides various advantages for the respective firms. Today, still 35% of these firms consider themselves as minimally integrated, meaning they have mainly one

sales channel in place. At the other end, a similar share of firms considers itself to be well integrated with multi-channel approaches in place. This picture is likely to significantly change within the next three years. According to the finding, in 2022, almost 70 % of the retails firms plan to use more sales channels (Fig. 50). The application of digital tools is the driver for this process.

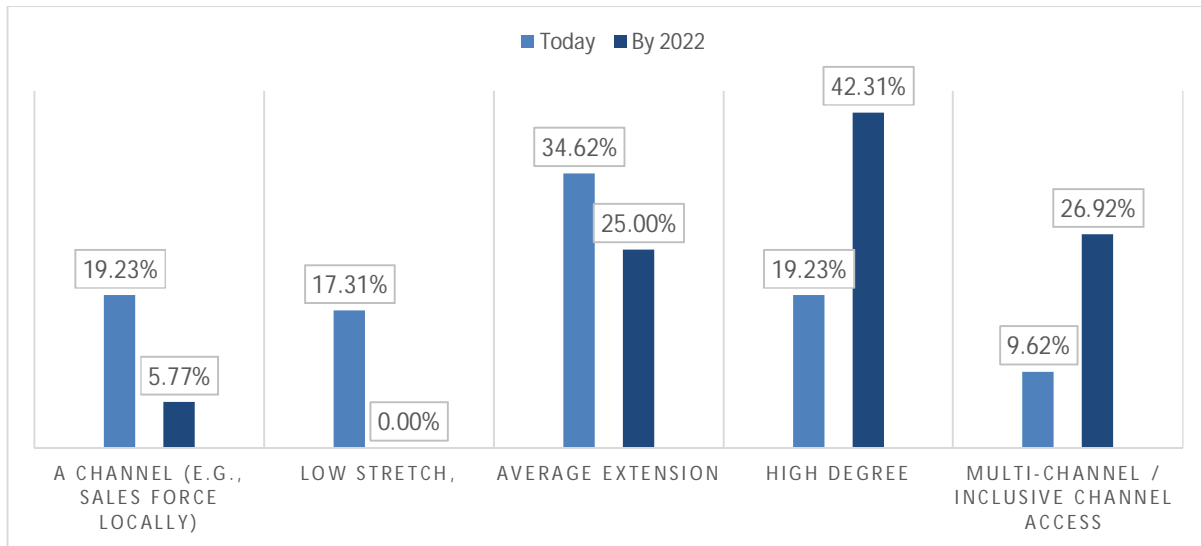


Figure 50: Degree of integration in sales channels today and by 2022 (retail sector)

The majority of the firms indicated that they are using data analytics of clients and internal processes to provide better or more effective services (80% of the interviewees). The findings confirm that the importance will further increase by 2022 (Fig.51).

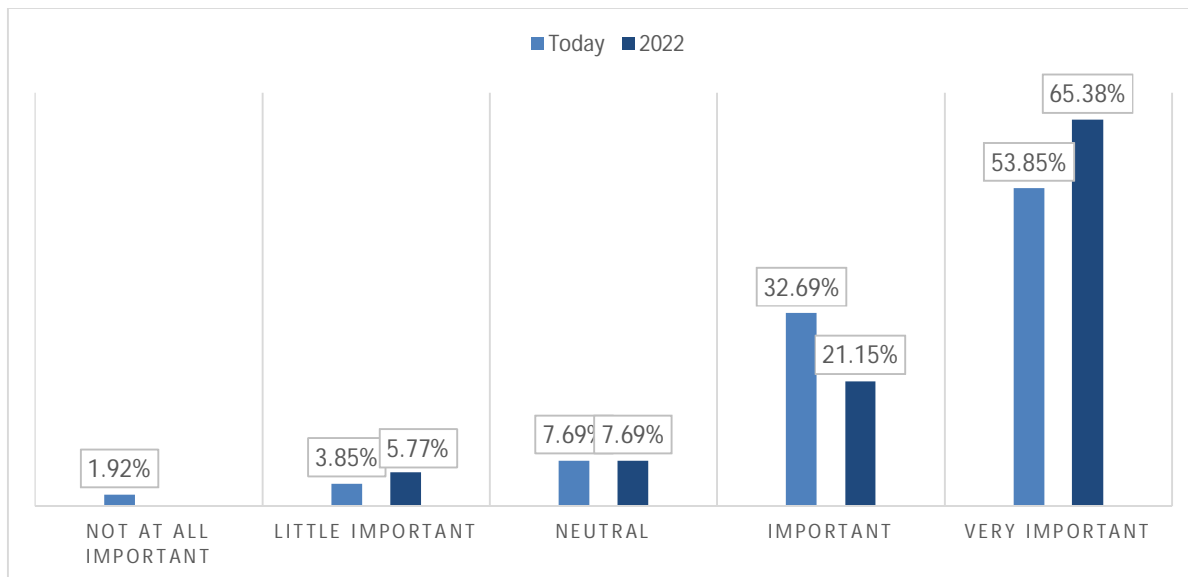


Figure 51. Importance of making use of data analytics today and in 2022 (retails sector)

### 7.5 Summary of cross-sectoral key issues

Whereas in the previous chapter focused more on sector-specific considerations of the findings, the present chapter deals more with cross-sectoral aspects. The guiding questions are: where are the sector specific differences? Is any of the four sectors more digitalised than the others? A first impression is given by Fig. 52 below. Seventy percent (70%) of the retail firms consider digitalisation as one of the most relevant key success factors for future business operation, whereas only 50 % of the firms from other sectors think along these lines. However, there is a common understanding that digitalisation, is definitely important.

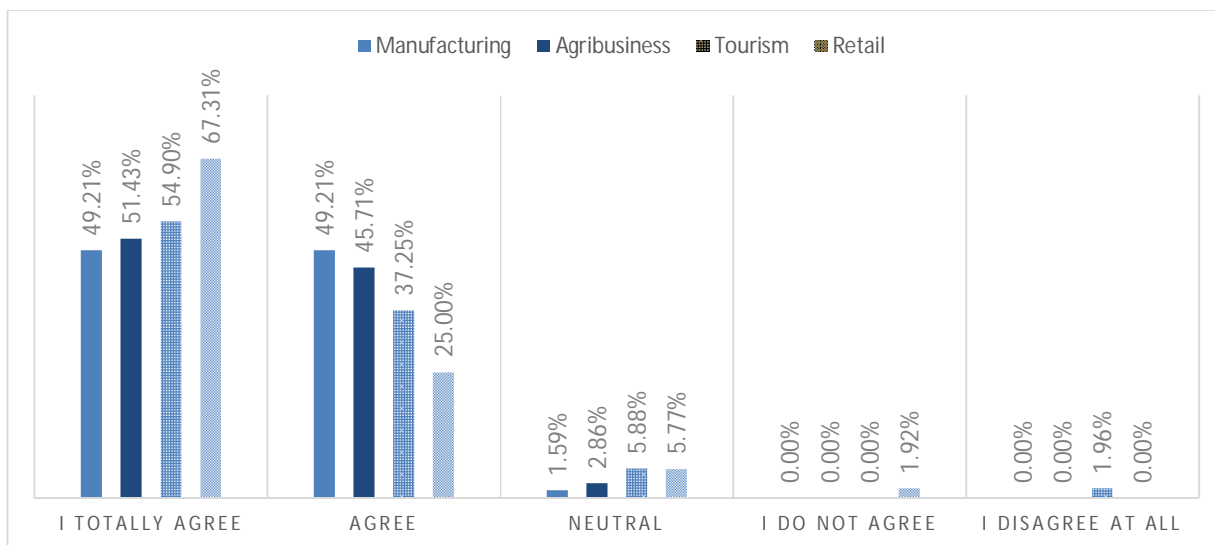


Figure 52: Importance of digitalisation as key success factor for future business operation

Taking into account that retail firms consider digitalisation of highest relevance for future competitiveness, it is not a surprise that this sector seems to be a bit more digitalised than the others. This is demonstrated in Fig. 53. Over 90 % of the retail firms interviewed confirmed that digital tools are used for approximately 50 % of the work.

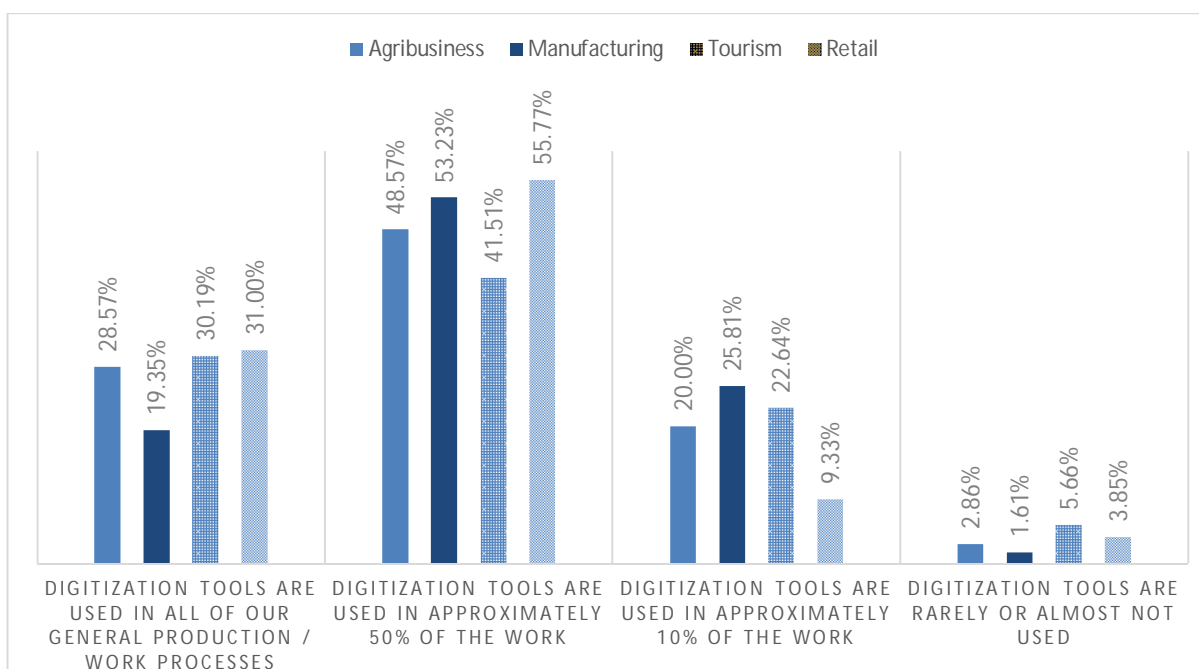


Figure 53: Comparison of degree of digitalisation across the four sectors

In the manufacturing sector, more than 30 % of the interviewed firms did not yet nominate any person to be in charge of digitalisation, whereas this is only the case in less than 10 % of the retail firms. However, in all sectors, the majority of the responsibilities rest with the management.

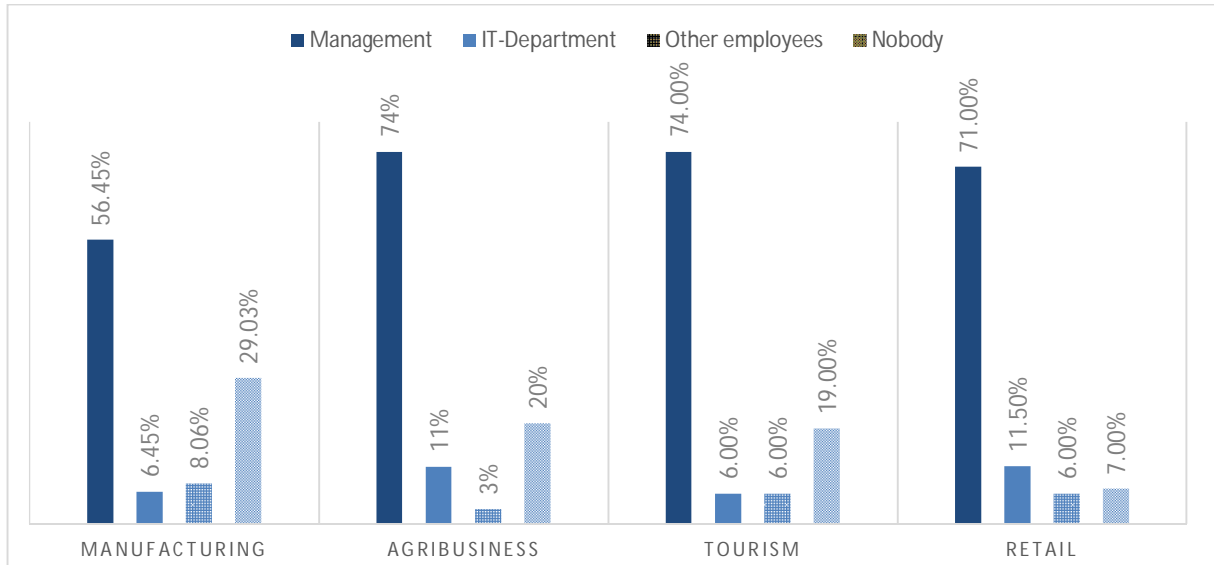


Figure 54: Who is responsible for digitalisation (strategy) in the firm

An interesting picture can be found when comparing the need of firms to be present in social media (s. Fig. 55). Not a surprise that tourism firm rate the very high importance at highest (90 %). However, there is not a difference across sectors then considering both answers “completely agree” and “agree”. That manufacturing firms rate the importance that high comes a bit as a surprise. Being mostly located at the beginning of the supply chains there do normally not interact with consumers and end-buyers, which are the key actors in social media.

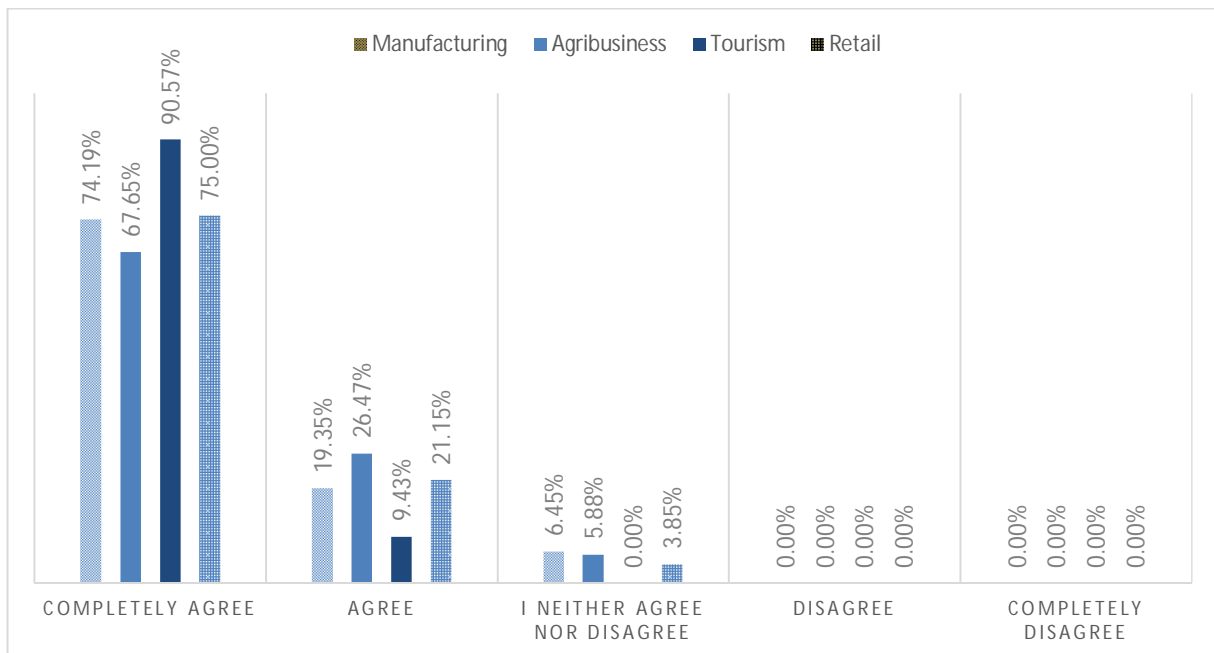


Figure 55: Importance of being present in social media

The cross-sectoral comparison has shown similarities and differences across the sectors. However, the similarities outweigh the differences. The retail sector seems to be a little bit more digitalised but the objectives and barriers are the same as for the other sectors.

## 8 Conclusion

The study examined the current status of digitalization in around 200 Kosovar SMEs in the four different sectors of manufacturing, agribusiness, tourism and retail. Interestingly, although the study covers very different sectors, it does give a uniform picture of the current level of digitization (Fig.57). A substantial part of the firms that took part in the baseline study have recognized that digitalisation has already caused (or will cause) major changes in their competitive landscape, putting the value propositions of established products and services at stake. Those firms have understood that, in order to stay relevant, they need to transform in many regards. The findings conclude that many firms seem to be in their orientation phase regarding digital transformation and thus have not yet defined a digitalisation strategy and related action plan.

Figure below illustrates three prevailing barriers and hurdles which firms consider on their way to become digitalised. Even if the values vary a bit for the retail sector, the overall picture is quite similar.

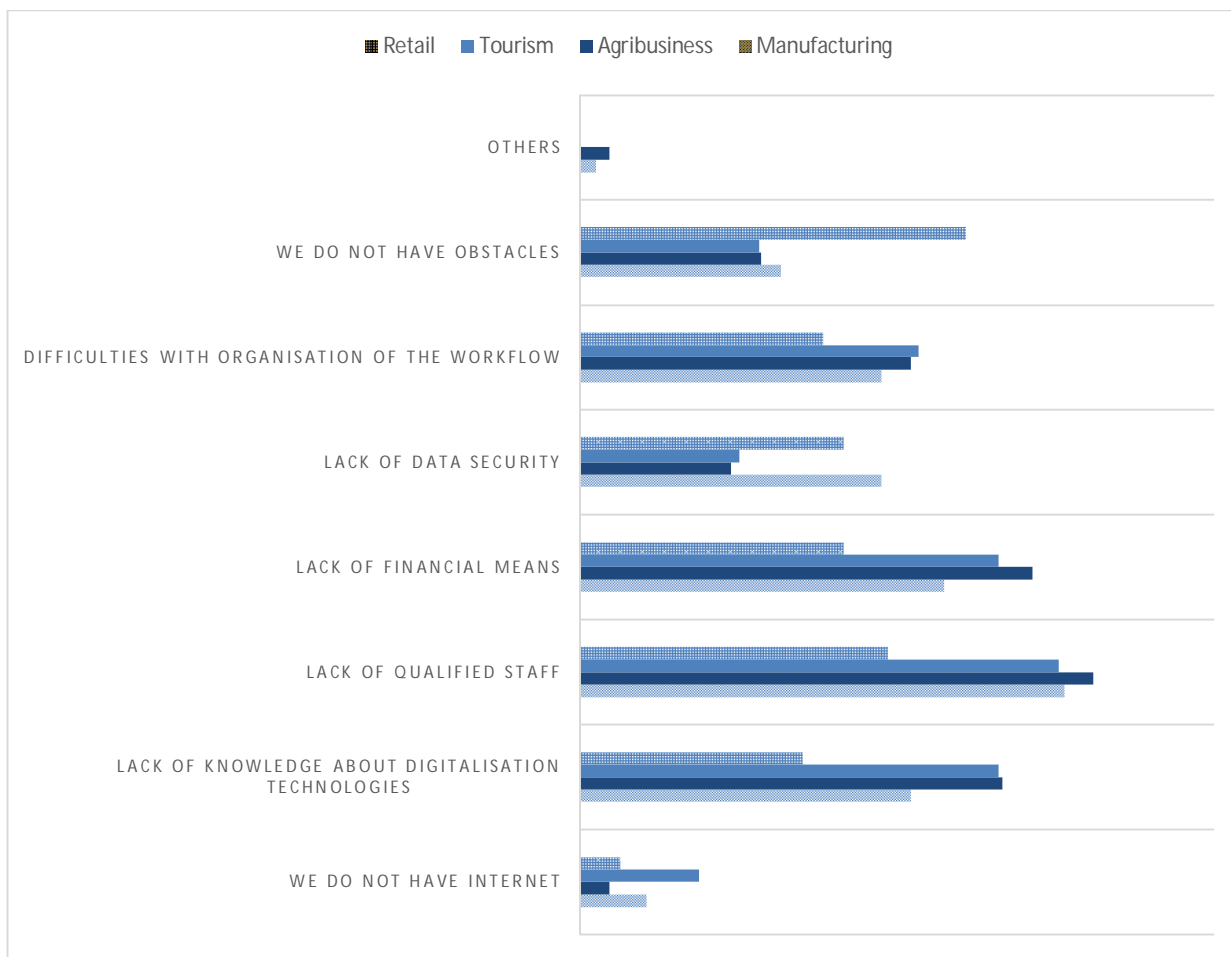


Figure 56: Cross-sectoral consideration of prevailing obstacles for digitalisation of Kosovar SMEs

**Lack of appropriate workforce skills:** The digital competencies of the labour forces will play a key role in the successful uptake of digitalisation. The labour market demands digital skills from employees who are not only fluent in other languages or their academic speciality but also in the essential tools needed to deal with fluency in the digital age. What is meant by this is knowledge about electronic devices, networks, cybersecurity, communications systems and data analysis, among other things.

Digital skills allow firms to:

- Optimize time and costs

- Understand the potential of interactive electronic devices such as smartphones, tablets and laptops, incorporating new digital routines into our professional work
- Increase the pace of reflection, creativity and innovation
- Manage corporate digital identity in a meaningful way
- Improve effectiveness and work efficiency

With a view to the gap between the skills needed and the skills available internally, access to personnel with specialized digital skills is likely to be the main bottleneck for future digitalisation. It is worth noting that the skills gap cannot only be observed on the staff-level but also on the executive level. The respondents in this survey seem to not have a clear perception of what skills they need access to in order to be able to shape the digital future of their company.

**Lack of technical knowledge to drive the digitalisation process.** Most SMEs are lacking the necessary technical resources in their workforce to fully realise the potential of digitalisation. This can be due to a number of factors ranging from a lack of knowledge in identifying required digital skills to limited staffing issues, restricting the time and effort which can be applied to learning new digital processes. Most SMEs do not have a dedicated strategy or even an idea of the digital future of their company. Not surprisingly, only some respondents have a clearly defined execution plan for implementing their digital transformation strategy.

**Lack of finance** is identified as the third major obstacle preventing the implementation of digital technologies in Kosovan SMEs. There is a significant concern amongst the firms that the cost of implementing new digital technologies will not be offset by the gains. Furthermore, there is a lack of equity to invest. Many Figures in chapter 7 have demonstrated the significant need of investments in IT infrastructure, software and other digital tools for internal and external process improvements. And, not to forget, there is a need to invest in labour skills.

What raises further concerns is the fact that IT security is not a top priority. At least the respondents did not consider IT security as a major obstacle for digitalisation. To be sure, manufacturing and retail firms rate this concern a bit higher than interviewees from the other two sectors. However, they did not rank this concern among the top 3. A lot of future educational work seems to be necessary here since it can be assumed that many companies do not even know the various threat scenarios that could arise due to inadequate IT security.

## 9 Recommendations and Call for Actions

The following recommendations address the three main identified barriers to digitization in SMEs.

- Lack of skills
- Lack of technical understanding of potentials of digitalisation and how to implement a related strategy
- Access to finance

The recommendations target two different areas. One area is the so called “digital support infrastructure” that must be improved in order to provide domestic firms with a digital support infrastructure which is not yet fully developed in Kosovo. The other area is the “digital support programmes”, which is needed to provide Kosovan firms with appropriate access to the financial means to facilitate future investments in digitalisation.

### Area of “Digital support infrastructure”

#### Recommendation 1: Implementation of Awareness Campaigns

Digitalisation of the Kosovan industry needs awareness campaigns. Such campaigns are well-established tools to provide insights on what can be understood by digitalisation and what potentials it offers. Practise has shown that the industry would benefit from raising awareness of digitalisation and education of new skills. It can be combined with other events, like Digitalisation Awards or Good Practices to motivate managers of SMEs to seriously consider digitalisation as an option to increase innovation and competitiveness.

*Action I: Based on consolidated information about existing awareness campaigns or those that have been conducted in 2019, a set of Awareness Campaigns shall be designed. Kosovan innovation entities, like the Chamber, Incubators and others shall align actions for 2020 and address potential blank spots and related opportunities in this regard.*

#### Recommendation 2: Increase the availability of digitalisation expertise

The interviews have not only demonstrated that there is a significant uncertainty and lack of knowledge of how to digitalise or what potentials digitalisation can provide. It also revealed a lack of expertise and consultancy capacity that firms can use to get support on their way to digitalisation. Currently, the market is dominated by international consultancy firms which are not necessarily appropriate for the majority of the domestic SMEs. There is need of expertise to mentor and guide SMEs, starting at a low level and coaching them through the first part of the process. It is similar to the demand in the 80s with regard to quality management or in the 90s for innovation management.

Furthermore, existing linkages between universities and vocation training providers on one side and the industry on the other side shall be strengthened to include the current knowledge about digital transformation and related technologies in all these activities.

*Action II: Set up a training scheme for digitalisation experts and implement a set of trainings in order to develop an appropriate expert pool to be used for advising and coaching of SMEs interested in digitalisation. This approach has to be embedded in a neutral entity which is close to Kosovan industry. The KCC or similar entity can be engaged in the training as well as in providing the expertise requested by the Kosovan SMEs.*



**Recommendation 3: Setting up Digitalisation Centres to provide practical guidance for firms interested in digitalisation in practices.**

Digitalisation by nature is a very abstract term. However, it is closely connected to various technologies. What is currently missing in Kosovo are rooms or entities that serve as focal points for digital solutions and innovations. Also named as Digi-Hubs or Centres for Digital Transformation, such entities can provide a wide variety of ideas, technologies and creativity. Such Centres can serve as regional contact points for SMEs in various industries with questions about digitalisation. They are basically designed to be open to the industry and to offer the opportunity to find out about digitization on site. This enables them to experience digitization directly and to develop and test new ideas for digital projects in experiment rooms. It should not be mixed up with digital R&D labs, which might be intended for domestic market leaders looking for highly sophisticated solutions. Through cooperation, networking and exchange, such Digi-Hubs can lower the barriers for firms to digitalise and to stimulate digital innovations across the entire country.

*Action III: Start with preparatory actions to develop an appropriate concept for such a Digitalisation Hub. Benchmarking missions to peer regions can help to better understand how the service spectrum and mandatory infrastructure of such Centres could look like. There are digitalisation services that can be offered for SMEs from all sectors, whereas some might be more sector-specific. Inviting firms from the baseline study to further discuss what services shall be offered by such Centres as well as what digital infrastructure is needed. This action can be well aligned with training from digitalisation experts. In the ideal case, SMEs get initial support by these experts. In a second step, they might approach such Centres to find out what technical or digital solution might serve the needs of the firms.*

**Area of “Digital Support Programmes”**

**Recommendation 4: Setting-up a Digital-Voucher Scheme**

Implementation of a voucher scheme that supports specific feasibility or market studies as well as projects for the introduction of new digital solutions and for improving IT security in SMEs. Such vouchers shall also be applicable for SMEs to buy consultancy services to help them create and shape digital strategies.

*Action IV: Getting engaged with Kosovar Ministries or other programme owners to implement such voucher schemes. There is plenty of experiences all over Europe how to best design, implement and monitor such digital voucher schemes.*

**Recommendation 5: Digitalisation Investment Programme**

The study has shown that there is a huge industrial demand to invest in various areas to turn digitalisation strategies or plans into practice. Taking into account that most Kosovar SMEs have limited resources, such an investment programme is strongly needed to provide SMEs with appropriate access to finance. Such an investment programme shall provide soft loans intended for firm level investments in digitalisation infrastructure.

*Action V: Getting engaged with Kosovar Ministries or other programme owners to implement such a Digitalisation Investment Programme as soon as possible.*

## Appendices

## Case study “ARCHTIME “ N.P.T

“ARCHTIME” is a company founded in Prishtina in June 2000 and started as a microbusiness in the field of metalworking. Throughout the years ARCHTIME continued to grow in several dimensions, such as human resources, by creating a professional staff, technology, environmental protection equipment and increasing the number of products and services it now offers in the local market and wider.

ARCHTIME aims at international markets convinced that it can compete with its quality and services against any other company in the European market. The business has a wide range of products and services in which it specializes in the manufacture of metal doors and windows, ATM booths, fixed physical security, production of medium and heavy construction for machinery, alucobond facades, small metal elements for different purposes, etc.

In the field of renewable energy, ARCHTIME continues with the pellet stove and boiler program since 2013 being the first production company in this field in Kosovo.

The strength of their company comes from the teams who with their passion, work and dedication create values that meet the needs and quality required of market and clients.

It is impossible for a company, especially a manufacturing company as ARCHTIME, to operate successfully, unless it has a well-trained staff about technology processes, which is the most important asset of the company since they carry out complex manufacturing processes ranging from design, cutting, welding, bending, penetration and other automated processes with minimal human intervention.

Undoubtedly, information technology or precisely digitation is irreplaceable throughout this journey. From the onset of the company, mastering the ability to work with editing and CAD software, many works were completed technologically, from writing an offer to designing and implementation. Establishment of stable internet networks in Kosovo enabled the all companies to be informed in real time with technology changes, and also enabled ARCHTIME and other companies from all over the globe to be visible and competitive in the market through website and other focused forms for higher ranking in the list of search engines.

In the last 10 years, e-commerce and many other online platforms have opened a door of never-ending possibilities to provide services, from online tax payments, supplier payments to digital marketing. Wide reach of social networks and e-commerce enabled ARCHTIME to be present in any market targeted, and simply define all the parameters they want in the target market, which is now part of their daily work.

## Case study “INOVA” - Plastic Pipe Industry

Plastic Pipe Industry - INOVA, established in 1989 is the first private enterprise in Kosovo and the region for the production of plastic pipes.

As the first private manufacturing company in the Region, INOVA is dedicated to continuously upgrade its products, applying innovations in manufacturing and quality management to provide plastics pipes and quality consulting services at competitive prices to its customers.

Thanks to the continuous application of innovations in manufacturing and digitization, INOVA has consistently provided quality plastic pipes at affordable prices.

Today, INOVA LLC offers a wide range of plastic pipes for use in various fields such as: potable water pipes, sewage and drainage pipes, telecommunication and optical fiber protection pipes, power cables protection pipes, irrigation pipes, pipes for wells and for various construction applications.

INOVA has a professional and competent staff, committed to providing its customers with quality products and services. Continued commitment to digital transformation and process automation resulted in providing an adequate framework and system that meets and exceeds customer needs and expectations about performance, quality and reliability at a competitive cost.

INOVA is PAS 99 certified for the integrated system and the well-known EN ISO 9001 quality system, ISO 14001 environmental management system and ISO 45001 occupational health and safety system for: Plastic Pipe Manufacturing and Sales, Design and Installation of Plastic Piping Systems and Solutions, becoming one of the few companies in the region whose operations are based entirely on global best practices conducted according to international standards EN, ISO and PAS.

Undoubtedly, in all these achievements, information technology and the degree of automation of production processes are of particular importance. INOVA has consistently paid great attention to the digitization of processes in order to achieve competitive advantages. INOVA already has production lines with computerized production process control that enable continuous quality control during the manufacture of products. Advanced financial accounting and real-time stock control in all its units. Efficient supplier qualification and evaluation system. All this through MySQL based software.

INOVA has its own dynamic website and is proactively present on almost all social networks, with the aim of maintaining a genuine customer base. This has enabled it to further consolidate the brand and be a trusted brand for customers.

However, INOVA is aware that there still is a long way to go in order to digitize all processes and maintain competitive advantage and better communication with customers.

The wide reach of social networks and other online platforms as well as the effective use of digital marketing have served to increase the presence in the international market through such digital platforms and created endless opportunities for interaction with partners, affiliates and clients across the globe, helping to internationalize activities.

**Appendix A: Questionnaire for Manufacturing Sector**

**“Baseline Study on digitalisation of industry”**

**DRAFT QUESTIONNAIRE FOR SURVEY WITH BUSINESSES**

:

1. Manufacturing

**A - General information**

**A.1 What sub-sector you are active in**

- Metal manufacturing
- Plastic manufacturing
- Wood manufacturing
- others

Total number of employees	
< 9 employees	
10 – 49 employees	
50 + employees	
Turnover	
When established	

Scope of questions and lists of options to be selected by interviewees

**A.2 Do you have a separate IT department?**

- yes
- yes, but outsourced
- no

**A.3 Who is responsible for the digitization strategy at your company?**

- Management
- IT-department
- (An)other employee(s)
- Nobody
- Other (please specify):

## **B. Importance of digitalisation by firm perspective**

### **B.1 Digitalisation is one of the key factors for successful business operations in our area of business**

- Completely agree
- Agree
- I neither agree nor disagree
- Disagree
- Completely disagree

### **B: 2 Which issue are important for you (rate the relevance from 1: not relevant, 2: low relevance, 3: relevant, 4: very relevant)**

- Digital workplaces for more productivity
- Having a reliable and flexible IT infrastructure
- Simplifying internal processes
- Digitalisation of production processes
- Interacting online with customers
- New digital business models

### **B.3 Which goals do you associate with the advancing digitalisation?**

- Productivity
- Cost saving
- Fulfilment of client requirements
- New clients/new markets
- Product or process innovations
- Other (please specify):

### **B.4 In order to increase the level of digitalisation, in which measures/actions did your company already invest?**

- Acquisition of novel or significantly improved hardware and/or software
- Introduction of new IT security concepts and applications
- IT consulting
- Reorganization of the workflow for integration of new digital work steps
- Development of new concepts for marketing or sales via the Internet
- Online advertising and promotion
- Development of the company's website

<ul style="list-style-type: none"><li>• E-recruitment in social networks</li><li>• Other (please specify) _____</li><li>○ _____</li><li>• Have not invested at all</li></ul> <p><b>B.5 In order to increase the level of digitalisation, in which measures/actions will your company invest within the next 3 year (select three options)?</b></p> <ul style="list-style-type: none"><li>• Acquisition of novel or significantly improved hardware and/or software</li><li>• Introduction of new IT security concepts and applications</li><li>• IT consulting</li><li>• Reorganization of the workflow for integration of new digital work steps</li><li>• Development of new concepts for marketing or sales via the Internet</li><li>• Online advertising and promotion</li><li>• Development of the company's website</li><li>• E-recruitment in social networks</li><li>• Other (please specify) _____</li><li>○ _____</li><li>• Will not invest at all</li></ul>	
--	--



### **C. Current status of digitalisation (general)**

#### **C.1 % of employees currently using computer or digital devices today**

- < 15 %
- 15 – 30 %
- 31 – 50 %
- 51 % - 75%
- > 75 %

#### **C.2 % of employees that have to use computer within the next 3 years**

- < 15 %
- 15 – 30 %
- 31 – 50 %
- 51 % - 75%
- > 75 %

#### **C3 How would you evaluate the level of digitalisation of your company?**

- Digitalisation tools are used in all production and operation processes
- Digitalisation tools are used in approx. 50% of work
- Digitalisation tools are used in approx. 10 % of work
- Digitalisation tools are seldom used or almost not used

#### **C4. When it comes to digitalisation, which obstacles or challenges does your company face (up to 3 selections possible)?**

- Insufficient internet connection
- Lack of knowledge about digitalisation technologies
- Lack of qualified personnel
- Lack of financial resources
- Lack of data protection / date security
- Difficulties with the (re)organization of the workflow, incl. the IT system
- Other (please specify)

○

- No obstacles or challenges

## D Internal processes

**D.1 Operation management: As part of your day-to-day operations, how do you execute the daily activities? (e.g. daily production planning, process execution, quality inspection)**

- **Not defined:** Processes are not yet entirely defined
- **Defined:** Processes are defined and executed by employees with the support of analogue tools. (e.g. paper-based, white board, emails, phone calls, etc.)
- **Digital:** Defined processes are completed by employees, with the support of digital tools. (e.g. enterprise resource planning system, manufacturing execution system etc.)
- **Integrated:** Digitised processes are integrated across all hierarchical levels of the operations. (e.g. production systems are integrated and information flow is bi-directional across these systems.)

**D.2 To which extent is your IT system and organization able to fulfil business requirements in the requested time, quality and cost today?** (1: Expectations fall regularly short – Implementation time and quality fail to meet business expectations (e.g. long lead times, inflexible IT processes etc.); 2: low ability, 3: medium ability, 4: high ability, 5: Expectations are always met – The IT is able to react agile to new and changing requirements. Business and IT are perfectly aligned  
Rating: \_\_\_\_\_

**D.3 To which extent must your IT system and organization able to fulfil business requirements in the requested time, quality and cost within the next 3 years?** (1: Expectations fall regularly short – Implementation time and quality fail to meet business expectations (e.g. long lead times, inflexible IT processes etc.); 2: low ability, 3: medium ability, 4: high ability, 5: Expectations are always met – The IT is able to react agile to new and changing requirements. Business and IT are perfectly aligned  
Rating: \_\_\_\_\_

## **F. Supply chain management**

**F. 1 How would you rate the degree of the digitization of your vertical value chain (from product development to production) today?**

(1: no digitalisation at all (e. g. manual machine programming based on paper plans, 2: low degree, 3: medium degree, 4: high degree, 5: Complete digitalisation, continuous flow along vertical value chain (e. g. direct controlling of machines via CAD models, integration of ERP and MES)

Rating: \_\_\_\_\_

**F.2 How would you rate the need of the digitization of your vertical value chain (from product development to production with in the next 3 years?**

(1: no digitalisation at all (e. g. manual machine programming based on paper plans, 2: low degree, 3: medium degree, 4: high degree, 5: Complete digitalisation, continuous flow along vertical value chain (e. g. direct controlling of machines via CAD models, integration of ERP and MES)

Rating: \_\_\_\_\_

## G. Production & Automatization

G. 1 **Automation maturity:** Which of the following best describes the level of automation in your organisation's production shop floor?

- **Basic:** Only selected (< 20%) of the production process in the shop floor are automated.
- **Intermediate:** 20 – 60% of the production process in the shop floor are automated.
- **Advanced:** Production processes are predominantly (> 60%) executed by equipment, machines and computer-based systems.

G. 2 **To which degree are the life cycle phases of your products digitized (digitization and integration of design, planning, engineering, production, services & recycling) today?** (1: low level of digitalisation & integration (e. g. no integration of engineering and production, 2: low degree, 3: medium degree, 4: high degree, 5: Complete digitalisation & integration (e. g. reducibility can directly be tested during product development via virtual prototyping)

Rating: \_\_\_\_\_

G. 3 **To which degree are the life cycle phases of your products digitized (digitization and integration of design, planning, engineering, production, services & recycling) within the next 3 years?** (1: low level of digitalisation & integration (e. g. no integration of engineering and production, 2: low degree, 3: medium degree, 4: high degree, 5: Complete digitalisation & integration (e. g. reducibility can directly be tested during product development via virtual prototyping)

Rating: \_\_\_\_\_

G. 4 **To which degree can your customers individualize the products they order today?** (1: Not at all (products allow for no individualization at all, e. g. standardised mass production), 2: low degree, 3: medium degree, 4: high degree, 5: Completely (products can be completely defined by customers)

Rating: \_\_\_\_\_

**G. 5 To which degree expect your customers individualization of the products they order within the next 3 years?**

(1: Not at all (products allow for no individualization at all, e. g. standardised mass production), 2: low degree, 3: medium degree, 4: high degree, 5: Completely (products can be completely defined by customers)

Rating: \_\_\_\_\_

**H. Digitalisation of production equipment**

**H 1: How advanced is the digitalisation of your production equipment (sensors, IoT connection; digital monitoring, control, optimization & automation) today ?** (1: purely physical factory – production equipment is entirely cut off from IT system and no real-time information can be gathered, 2: low advanced, 3: medium advanced, 4: highly advanced, 5: fully digitized factory – interconnected production equipment allows for IT-access

Rating: \_\_\_\_\_

**H 2: How advanced must be the digitalisation of your production equipment (sensors, IoT connection; digital monitoring, control, optimization & automation) within the next 3 years ?** (1: purely physical factory – production equipment is entirely cut off from IT system and no real-time information can be gathered, 2: low advanced, 3: medium advanced, 4: highly advanced, 5: fully digitized factory – interconnected production equipment allows for IT-access

Rating: \_\_\_\_\_

## I. Human resource development and planning

### I.1 Human resource development and planning: Which of the following best describes your workforce digital capability, skills and competencies to enable successful transformation?

- **Basic:** Skills matrix exists and is used for accessing workforce capability to meet operation demands. Training plans (e.g. Lean manufacturing, machining, basic programming and etc.) are in place to develop existing workforce
- **Intermediate:** Formal learning and development programs are in place to upskill the workforce digital competence
- **Advanced:** Customised training and development with continuous improvement and real-time feedback program to upskill the workforce digital competency.

### I.2 What tools currently used within the firm for human resource planning?

- Customer-made solution software specially made for this purpose
- General purpose software
- Specialised system (e. g. ERP, SAP modules)
- Others \_\_\_\_\_
- No software used
- Personally, I do not know

### I.3 Do you have any plans to invest in this regard within the next 3 years? (up to two answers possible)

- Customer-made solution software specially made for this purpose
- General purpose software
- Specialised system (e. g. ERP, SAP modules)

- Others \_\_\_\_\_
- No software used
- Personally, I do not know

### J. Data integration

J. 1 How important is the usage and analysis of data (customer data, product or machine generated data) for you **today**? (1: insignificant (no data analytics are done), 2: low importance, 3: medium importance, 4: high importance, 5: Crucial (data is the key value driver for us))

Rating: \_\_\_\_\_

J. 2 How important is the usage and analysis of data (customer data, product or machine generated data) for you within the next **3 years**? (1: insignificant (no data analytics are done), 2: low importance, 3: medium importance, 4: high importance, 5: Crucial (data is the key value driver for us))

Rating: \_\_\_\_\_

J. 3 What tools currently used within the firm

- Customer-made solution software specially made for this purpose
- General purpose software
- Integrated reporting solutions
- Others \_\_\_\_\_
- No software used
- Personally, I do not know

## **K Sales & Communication with clients**

### **K.1 How intense is your collaboration with partners, suppliers and clients for development of products and services today?**

(1: No Collaboration - Product development is done completely in-house without any exchange of information with partners, suppliers or customers 2: low intensity, 3: medium intensity, 4: high intensity, 5: intense collaboration: Collaborative development of products together with partners is institutionalized in value networks that are transparent for the customers  
Rating: \_\_\_\_\_

### **K.2 How intense will your collaboration with partners, suppliers and clients for development of products and services be in 3 years?**

(1: No Collaboration - Product development is done completely in-house without any exchange of information with partners, suppliers or customers 2: low intensity, 3: medium intensity, 4: high intensity, 5: intense collaboration: Collaborative development of products together with partners is institutionalized in value networks that are transparent for the customers  
Rating: \_\_\_\_\_

### **K.3 To which extent do you use integrated sales channels to sell your products to your customers today?**

(1: one channel (e. g. local sales force), 2: low extent, 3: medium extent, 4: high extent, 5: Multi / Omni-Channel approach (e. g. stores, sales force, web-shop, sales platforms, etc)  
Rating: \_\_\_\_\_



**K.4 To which extent will you use integrated sales channels to sell your products to your customers within the next 3 years?**  
(1: one channel (e.g. local sales force), 2: low extent, 3: medium extent, 4: high extent, 5: Multi / Omni-Channel approach  
(e.g. stores, sales force, web-shop, sales platforms, etc))

Rating: \_\_\_\_\_

**K.5 Which tools do you use to exchange information with clients or partners?**

- Company website
  - Phone
  - Email
  - Online file sharing platforms, e.g. WeTransfer, Dropbox, Google drive, clouds, etc.
  - Messenger/WhatsApp/Telegram or similar
  - External services for distance meetings, e.g. Messenger, Skype, WebEx
  - Other (please specify):
- 

## **L. Marketing**

**L.1 Having a website is of high relevance**

- Completely agree
- Agree
- I neither agree nor disagree
- Disagree
- Completely disagree

**L.2 Being present in social media is important for our business**

- Completely agree
- Agree
- I neither agree nor disagree
- Disagree
- Completely disagree





