

# ICT EXPORT REPORT

## CURRENT SITUATION AND POTENTIALS

June 2020 | Skopje, North Macedonia



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## IME – INCREASING MARKET EMPLOYABILITY

The Increasing Market Employability Programme – IME Works toward strengthening the business sector in the Republic of North Macedonia and creating an enabling environment for three target sectors: Sustainable Agriculture, Adventure Travel and Information and Communication Technology (ICT). This is achieved through boosting competitiveness amongst domestic players in these sectors, catalyzing an overall improvement in the quality of products and services, and creating sustainable jobs for high-skilled labor force in North Macedonia, especially women and youth.

For more information: [www.ime.org.mk](http://www.ime.org.mk)

## MASIT

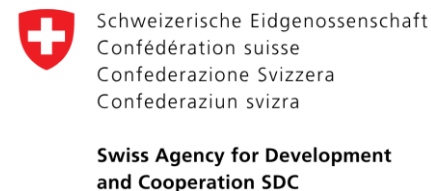
The Chamber of Commerce for Information and Communication Technologies – MASIT represents the Macedonian ICT Industry and promotes and represents the business interests of ICT companies in order to promote and develop the ICT industry and business environment. The Chamber represents companies operating a wide range of ICT products and services in North Macedonia and since its establishment in 2000, as a non-profit and voluntary institution, has provided its member companies with access to information, education, legal advice, cooperation, networking and promotion at domestic, regional and international levels, with the aim of advancing and developing the ICT Industry.

For additional information please visit [www.masit.org.mk](http://www.masit.org.mk)

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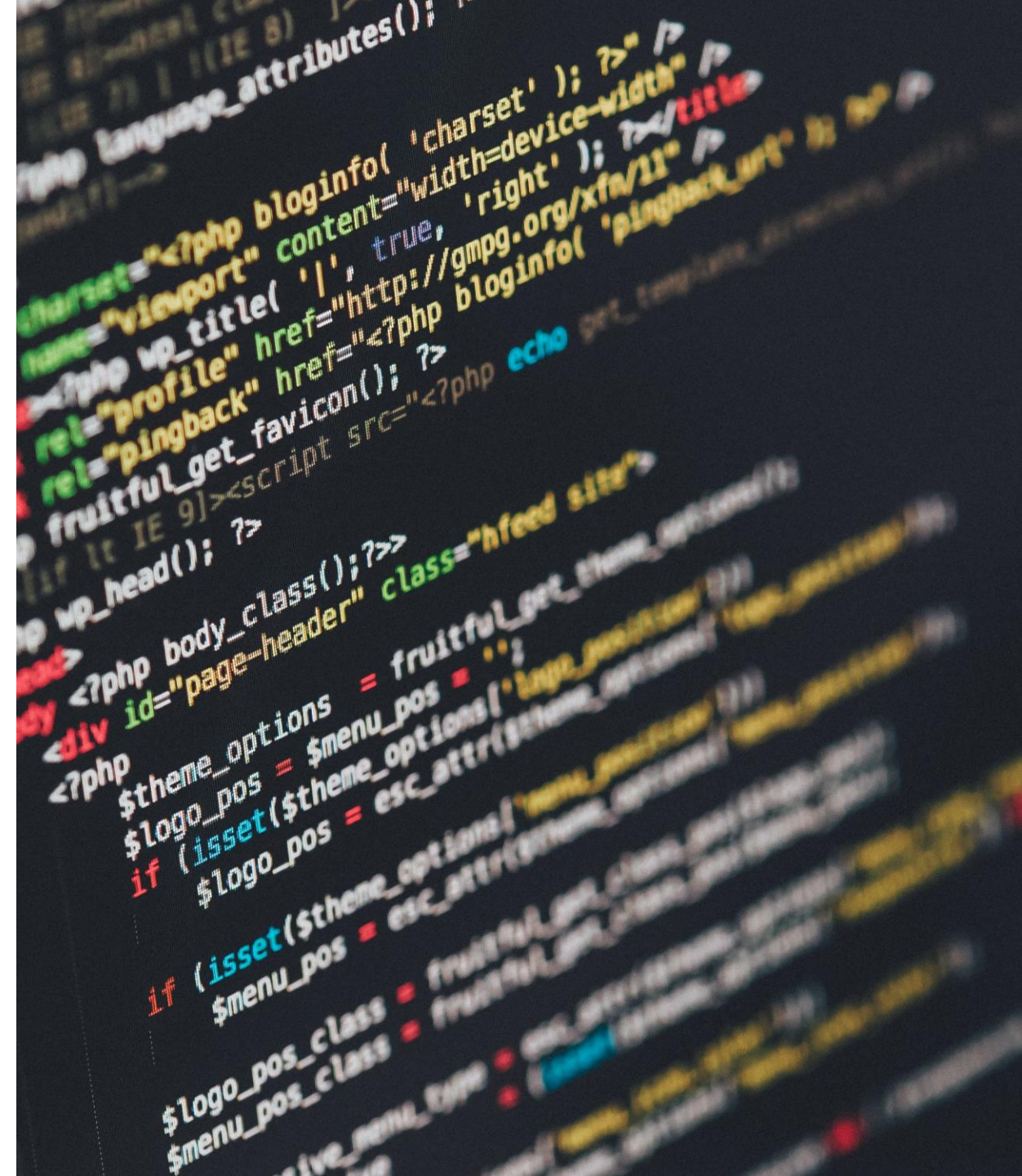
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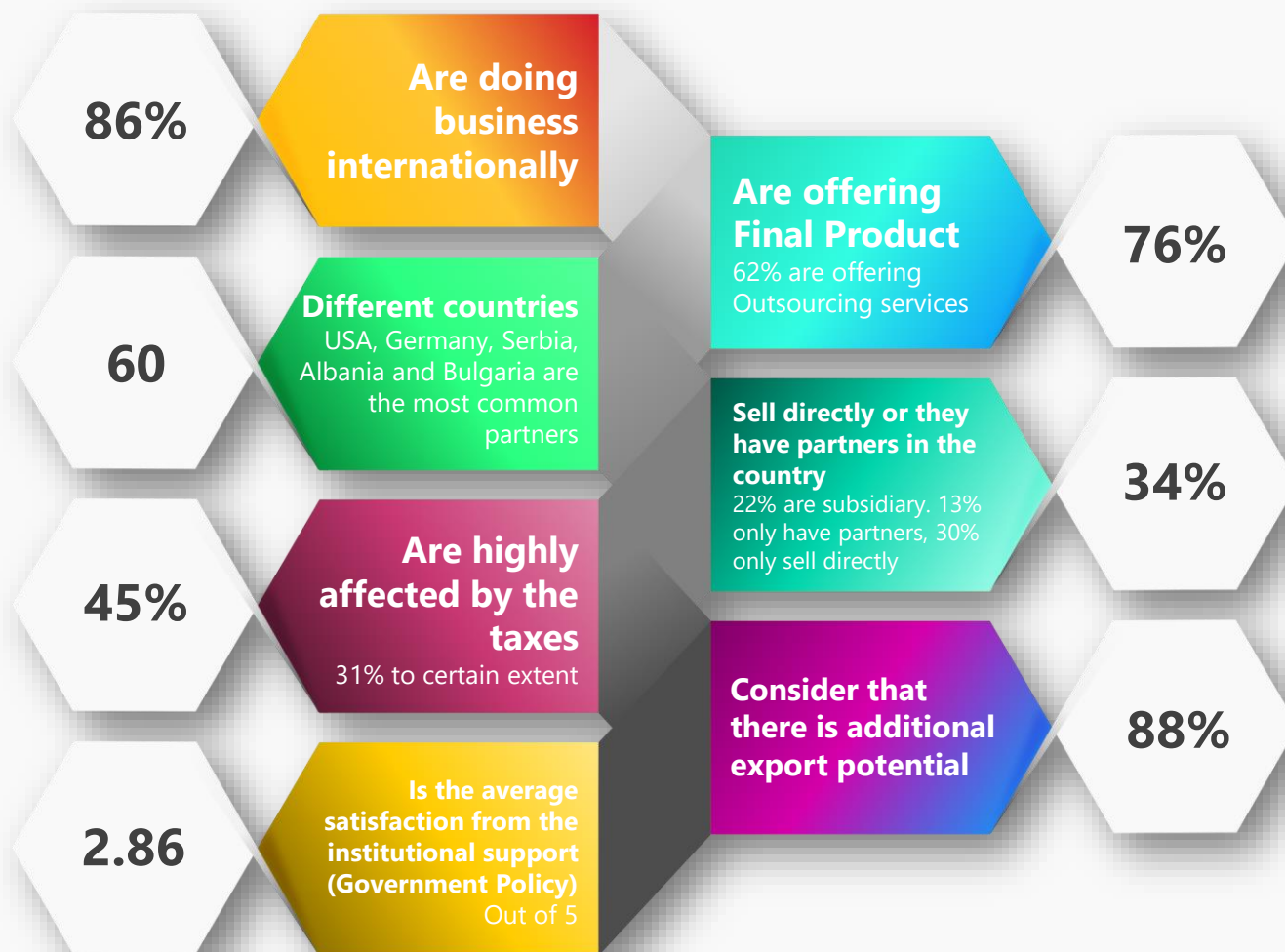
ICT EXPORT: CURRENT SITUATION AND POTENTIALS

## **X. EXECUTIVE SUMMARY**



## X. EXECUTIVE SUMMARY

### X1. GENERAL INFORMATION



#### GENERAL CONCLUSION

During the research 400 companies were contacted from which 106 accepted the invitation for the interview. From their answers, several conclusions are derived from the current situation in the IT Segment.

From the answers, 86% are doing business internationally, and the same markets are the main revenue stream for 66% of them. It is highly positive that the domestic IT companies are working in 60 different countries in which mostly (combined 78%) they have partners or sell directly, while 22% of the interviewed companies are subsidiary.

It is highly positive that 88% of the interviewed companies consider that there is future export potential. Baring in mind that the export is the most valuable aspect of the IT Segment, the previous conclusion is in the same line that the companies will seek the additional export potential for their own companies.

On the other side, the satisfaction from the Institutional Support, thus the Governmental policy is low. The average score is 2.86 (out of 5), which suggests that changes should be made, especially in the educational and taxation segment. ([click to open the demanded institutional support](#)) From the interviewed 45% consider that are affected by the taxes, but the possibility for government interference in the tax policy is explained in detail in the ICT General Mapping Report 2020.

**X. EXECUTIVE SUMMARY**  
X8. EXPORT OBSTACLES



**EXPORT OBSTACLES**  
General Conclusion

The biggest obstacle to the implementation of export activities is "Government support" with an average score of 3.53, and it suggests that improvement in this kind of support is inevitably needed (it is separately analyzed in this report in detail). Besides the Government support which in this question is very broad, the companies are having difficulties with the "Legal Aspects" which are again related to the "Governmental Institutions" and on third position the criteria closely related to the Educational system or the "Qualified Staff for Export".

Some of the barriers are partially internal as "Business Contacts Abroad", "Right Business Partner", "Consultancy Services", but with strategic and institutional support from other stakeholders as Chambers of Commerce (MASIT) and the Government they can be solved. Obstacles that are ranked under an average rate of 3.00 means that are on a level of somehow problematic, but no less significant for the companies and should be properly maintained to not cause any further restrictions in the export-related activities. From that group, the least problematic aspects are "Technical Skills", "Visa Requirements", and "Technical standards" with an average score of 2.32 to 2.52

X. EXECUTIVE SUMMARY

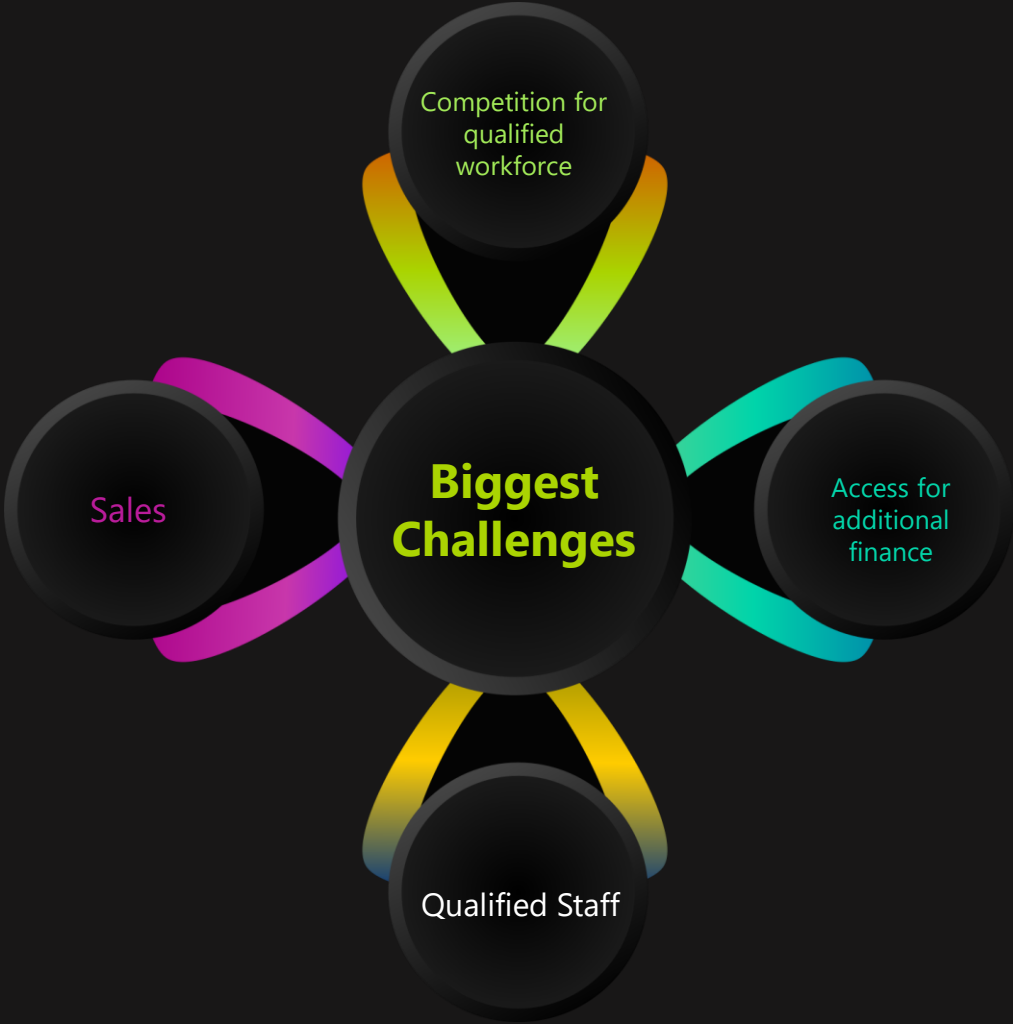
X8. BUSINESS CHALLENGES/PROBLEMS

BUSINESS CHALLENGES/PROBLEMS

General Conclusion

Apart from the barriers faced by the companies through their export process, there are other problems and challenges which the companies are facing in their everyday business activities. Defining the impact of the general challenges should help the companies in creating certain strategies and solutions for overcoming them and the ones that want to start a business in the IT Segment for what should they be prepared. Also, for the ones which are more macro-economically related the defining of the issues will give clear direction for the rest of the participants in the ecosystem in which way should deliver their support.

It is very interesting to stress that compared to the previous export obstacles which were ranging from 2.32 to 3.53, the current analyzed aspects are all above 3.00. The averages shown in Table B.02 are suggesting that generally there aren't business aspects that are extremely affecting the companies but nearly all of them are between 3.00 and 3.65. This situation with almost equally burdening issues for companies is very complex because the stakeholders are not able to solve all of them at the same time. The suggestion is to solve the problems that arise in different aspects of the business (as education and internationalization).



X. EXECUTIVE SUMMARY

X14. WORKFORCE & EDUCATION

ICT AND EDUCATION & WORKFORCE SHORTAGE

Short Conclusion

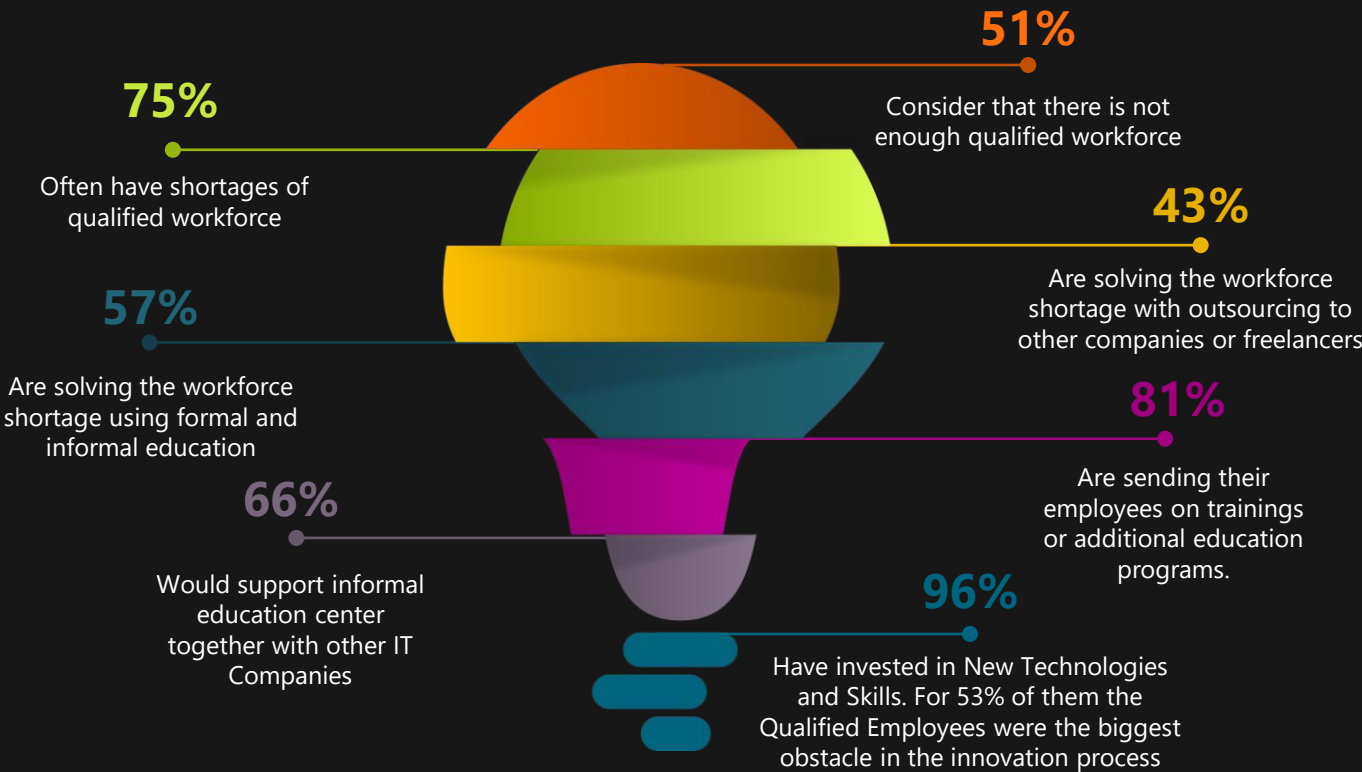
The biggest problems that the companies in the IT Segment are facing are employee-related. More than half (51%) of them consider that North Macedonia doesn't have enough qualified workforce, while 75% or three out of four companies often have a workforce shortage.

In general, 57% of companies are solving the shortage problem by taking interns from formal and informal education centers (the preferred one is formal). On the other side, 43% are outsourcing their (or part) projects on sub-contractors or hiring freelancers to do the job.

**To retain the employees, most of the companies are offering financial benefits as Attractive salary 68% and Financial bonus programs with 53%. Besides the financials, 81% of the companies are sending their employees on educational or training programs. The non-financial benefits are also important and considered as a strategy to retain, increase the workforce quality, and motivate the employees.**

A significant part of the companies, or 66% would support the Informal Educational Center together with other IT companies as a strategy to depreciate the lack of skilled workers.

It is of great importance that 96% of the companies have invested in learning new technologies and skills, while 76% have invested in developing new or enchasing existing software. Again, the biggest issue the companies were facing while development was the lack of Qualified employees (53%) ahead of the Funds with 32% and Legislation with 14%.





X. EXECUTIVE SUMMARY

X13. TRADE BALANCE OVERVIEW

TRADE BALANCE

Short Conclusion

The whole ICT Industry has been growing from 121 million euros in 2014 to 210 million or 73% growth by 2019 with a 5-year period with an average rate of 11%. On the other side, the import is growing at a lower rate or an average of 8%, or the export is growing significantly higher (in absolute and relative numbers) than the import, thus in the next several years, the trade surplus will be even higher.

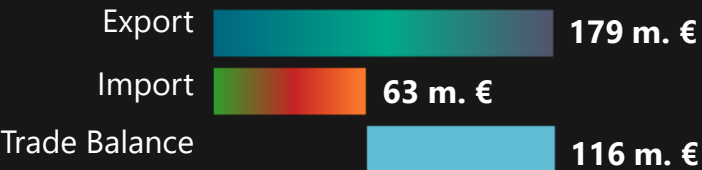
Analyzed separately, IT Segment has the most significant growth (in absolute value and relative growth rate) compared to the Telecommunication segment. IT has grown from 60 million in 2014 to 179 million in 2019 or nearly 200% in a 6-year period, with an average pace of 28%. Telecommunication on the other side as part of the ICT Industry Segment has a constant decrease of the export from 60.89 to 21.18 million euros and an average pace of -15% per year. The import in most of the analyzed years is between 22.2 – 44.2 million euros, with one peak in 2015. Because there is no clearly expressed trend, the export could be higher for several percent points than the one projected, because in the last 6 years it didn't fall below 10 million per year. The import and export rates are fluctuating highly for the Telecommunication segment and again there is not a pronounced trend.

In the IT Subsegment, the average growth rate of the trade surplus was 35% in the last 6 years, reaching the highest 45% in 2016 and the lowest 10% in 2019 (compared to 2018) and for telecommunication the average growth per year is -32%, but it should be taken with caution because the oscillations are too high to make a certain conclusion. Generally, the ICT Industry had an average growth rate of 22% per year in the period between 2015 – 2019.

ICT Industry



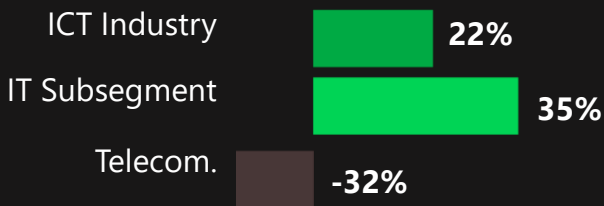
IT Subsegment



Telecommunication



Average growth rate



ICT EXPORT: CURRENT SITUATION AND POTENTIALS

## **Y. RESEARCH INTRODUCTION**

## RESEARCH INTRODUCTION

The research was successfully conducted in the first quarter of year 2020 on a sample of 106 companies in the ICT industry. The focus is on the 5 previously defined areas of operation of companies including their current performance as well as future plans which are key point into further development of the strategy of the entire industry.

These areas were analyzed: Market, Services, Obstacles, Education and employees, Institutional support and Investment and Innovation.

The general research aim is to define the main obstacles for companies that do not export outside the domestic market, but also for the existing exporters. In the section on Education and Employees, the problem of "brain drain" and lack of skilled labor is analyzed in detail, as well as how companies deal with it.

Questions have been asked about the most used systems by employers to motivate their employees, ways to further training and improving in order to be the best suit for the job requirements. Also, one part of the report defines the degree of satisfaction with formal and non-formal education as well as the willingness of companies to help create an informal educational center for the future creation of the adequate staff supply.

Section named Institutional support addresses issues related to the types of institutional support most needed by companies, how familiar they are with state tax policy, and to what extent it is a problem in day-to-day and financial operations of companies. Furthermore, individual types of state taxes are analyzed: personal income tax, profit tax, employee contributions and other duties.

The last section focuses on analyzing the level of investment of companies in learning of new technologies and skills, as well as the barriers faced by companies in developing new products and companies that do not invest, which are the most problematic one etc.

The method of analyzing the questions consists mostly of general overview of the question and then correlations of the questions with the market where they sell and type of the product they offer in order to discover the differences if they exist based on this kind of classification.

## RESEARCH GOALS

Due to the comprehensiveness of the report dedicated to identifying the challenges and opportunities of the IT export segment in North Macedonia, these are the main and additional goals that should be meet by the processed content.

As a main set of goals are the following:

1. Assessment of the main market and international collaborations
2. Defining the main export obstacles
3. Defining the biggest business challenges
4. Defining workforce trends and future potential
5. Defining the most needed types of institutional support

The additional goals cover information related to prospects for investment and innovation of the companies, motivational methods for employees, managing the staff shortages, etc. Through establishing a correlation between all the questions and two main characteristics of the companies such as the main market where they sell the services and type of the product they sell. The report should deliver an understandable and detailed insight towards specifics of different kinds of companies in the segment.

### CHART Y.01

Y. Research sample distribution



## METHODOLOGY AND SAMPLE

For collecting the information is used the method named CATI (Computer-assisted telephone interviewing) on representative sample of 106 companies with previously structurally defined questionnaires from approximately contacted 400 companies from a publicly available contact sources. Most of the companies have from 1 to 10 employees and are part of the "Computer Programming" sector and have annual revenue up to 100 mill. euros.

ICT EXPORT: CURRENT SITUATION AND POTENTIALS

## **A. MARKET AND SERVICES**

IMPORT AND EXPORT

## A. MARKET & SERVICES

### A1. MAIN MARKET AND TYPE OF SERVICES

The questions in the first group are asked primarily to define the general aspects as what the companies are offering, where are they offering their services, and which is the main market. Also, the questions are allowing further correlation and defining different behavior of the companies based on the main market and the type of service. The IT segment especially the part of the export-oriented companies are the most important when analyzing the export potential, thus the issues and problems those companies are facing are the ones that should be addressed on short notice.

Because one of the main benefits and goals of the IT Industry is enchasing and improving the export capacity and opportunity (for the ones which aren't currently exporting), the answers from the companies are highly positive. A significant part of the interviewed companies are familiar with the international markets, meaning they have know-how which can be used for further development and drawing conclusions which will be helpful in defining IT Internationalization Strategy. Most of the companies or 52% are selling on "Both" markets and the other 48% are selling sorely on ether domestic or international. If the answers are combined, the International Market is predominating because nearly 84% of the total companies are selling on it, compared to the Domestic with 68%.

From the type of service portfolio point of view, 38% are offering "Final product", 24% are offering "Outsourcing" and 38% combination of "Final product and Outsourcing". The combination of answers suggests that more companies or 76% are offering Final Product (Final Product + Both) compared to the 62% Outsourcing (Outsourcing + Both). To a certain degree, it is positive that the companies are offering with higher percentage "Final Product, because that kind of service has additional value, revenue, and profit for the companies.

From three companies that work only on the International market, on average one company offers a service in the form of "Final Product", another one offers Outsourcing activities and the third offers a combination of both. In meanwhile, from the companies that sell only on the Domestic market nearly 50% are offering "Final product".

**Subjective conclusion:** According to the answers, increasing the total number of active companies in the IT Segment will directly increase the export, because 84% are working internationally. From the ICT General Mapping Report 2020, the additional 1-million-euro income in the IT Segment is generating nearly 400,000 euros trade surplus.

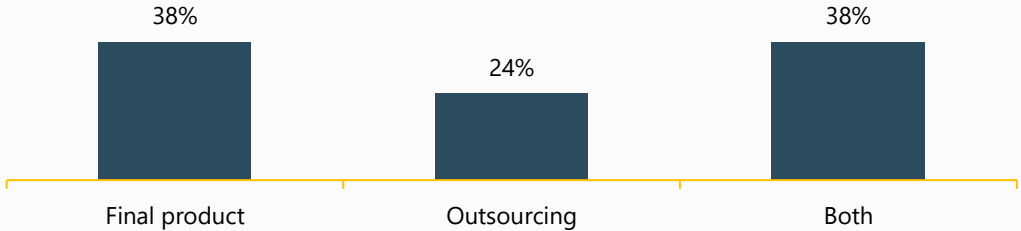
**CHART A.01**

**A1. On which market do you sell your services?**  
**General answer distribution**



**CHART A.02**

**B4. Are you offering final product (software solution), outsourcing activities or both?**  
**General answer distribution**



**Table A.01**

**Correlation: B4. Are you offering final product (software solution), outsourcing activities or both? – A1. On which market do you sell your services?**

	Domestic	International	Both
Final product	53%	35%	35%
Outsourcing	24%	32%	18%
Both	24%	29%	47%



## A. MARKET & SERVICES

### A2. INCOME STREAMS AND EXPORT MARKETS

**The companies that were part of the research, are exporting their services in more than 60 different countries, which generally analyzed indicates a rich diversification of locations in which Macedonian companies from the IT industry (more specifically in the Software and IT Services segment) are selling their services.**

Most of the companies or 50% have answered that their main income stream is from International clients. The percent is highly positive, and it is in the line with the conclusion from the ICT General Mapping report that supporting of the internationalization is on of the biggest issues which can bring benefit for the whole economy. Additionally, 16% answered with "Both" and 34% of companies only sell on domestic clients. If the answers between this and the previous question "A1. On which market do you sell your services?" are compared, 84% of the companies are selling internationally but for 66% the main income stream is from that market.

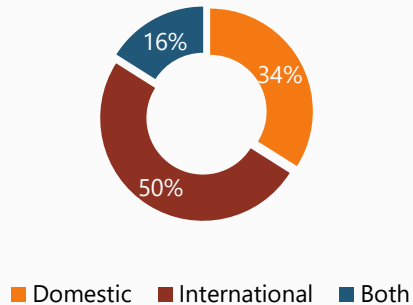
The top 5 countries where the Macedonian IT companies have clients are the USA, Germany, Serbia, Albania, and Bulgaria. The largest number of the surveyed companies have clients or partners in the USA or more specifically every third company, while 19% of the companies are collaborating with Germany. It is very important to emphasize that the countries from Western Europe and Northern America are the main markets, where the prices for IT Services are still high. That is enabling the domestic companies to expect long-term cooperation and higher income.

The countries with lower share but still in the Top 5 are the neighboring ones Serbia, Albania, and Bulgaria which with high probability is suggesting that the Macedonian companies are working on joint projects for larger clients or subcontracting for local companies. From the ICT General Mapping Report 2020, if in near future there is no National ICT Strategy, the client base will be shifting from Western Europe and the USA to the local Balkan economies. That's because the neighboring (or near) countries as Bulgaria and Romania have a very serious and successful strategy for developing the IT Segment.

Depending on the type of product/service offered, there is a difference in the main country where the export takes place. Respectively, for companies offering "Final product", the USA is a leading partner/client with 20% and then Serbia with 18%. Most of the companies that offer outsourcing cooperate with Germany with 24% and the USA with 16%.

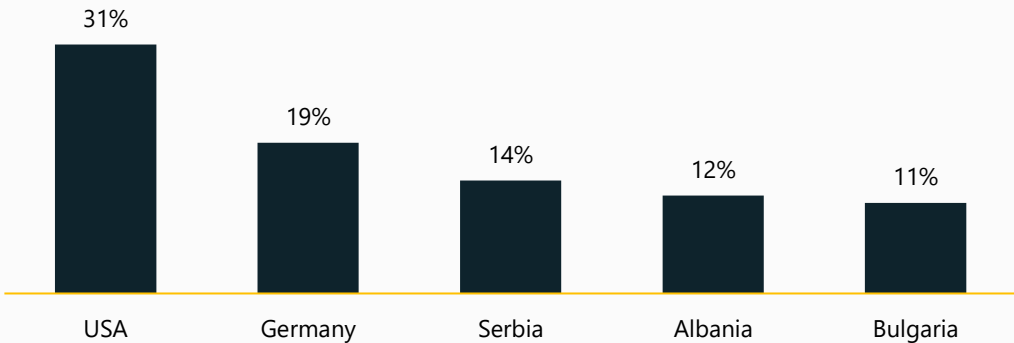
**CHART A.03**

**A2. Is your main income stream from international or domestic clients?**  
**General answer distribution**



**CHART A.04**

**A4. In which countries your company has clients/partners ?**  
**General answer distribution**



A. MARKET & SERVICES

A3. FINDING CLIENTS AND ORGANIZATION

Analysis of the following question is an important starting point for defining the most used sale channels and getting the general insight into the current organization of the sales process. It should serve as an effective direction for future entrants in the industry in planning their strategies for approaching the international markets.

**Note:** The answer “We are subsidiary” is suggesting that the company is not responsible (or to a small extent) for sales of the offered products/services. It means that the parent company is the main contractor for the projects and the main activity of the subsidiary is executing. From the answers, every fifth company in the IT segment is a subsidiary.

According to the general answer distribution, it could be concluded that companies in North Macedonia have organized their sales mostly through direct sell to clients with 64% compared to the usage of the method of having partners with 47%.

Based on the previous conclusion for usage and efficiency of direct sales, as a main point of the question analyzed in Table A.02 is defining how companies initially have contacted their clients generally and depending on the type of product they offer.

Generally, the answer distribution, most of the companies have initially contacted their clients/partners through “Personal Contact” and “Referrals” with a share in a range from 53%-54%. The significance of the direct contact it’s inevitably huge because every second company has established collaboration regarding this channel. The next most influential way to achieve cooperation according to the surveyed companies is “Direct contact” or “Method of Cold Calling” as an early stage in the selling process. Strategies that include visiting Professional Events, Fairs, and other Marketing Campaigns resulted positively for every third company.

Through correlation with the kind of service, “Personal Contact” is equally successful way for the two different analyzed types of companies, while “Referral” has a higher share for the companies that are outsourcing with +6% in comparison to companies that offer a final product.

Also, it is noticeable that “Fairs”, “Events (professional)” and “Direct Contact (Cold Call)” are commonly used by the companies that offer Final product, in contrast to the usage of “Marketing Campaign” that is more characteristic for outsourcing companies.

CHART A.05

A3. Do you have partners which are re-selling your services or you sell directly to your clients abroad, or you are subsidiary?

General answer distribution

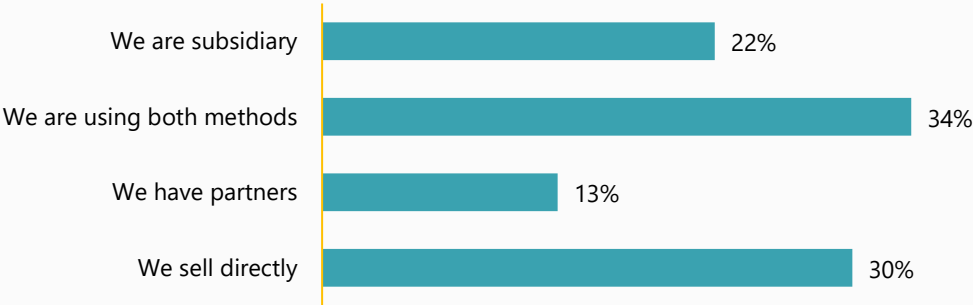


TABLE A.02

A5. HOW HAVE YOU FOUND/INITIALLY CONTACTED YOUR CLIENTS/PARTNERS?

Personal Contact	Referral	Direct Contact	Professional Events	Fairs	Marketing Campaign	I don't know
54%	53%	44%	37%	35%	30%	8%

Table A.03

B4. ARE YOU OFFERING FINAL PRODUCT (SOFTWARE SOLUTION), OUTSOURCING ACTIVITIES OR BOTH?

	Fairs	Direct Contact (cold call)	Personal Contact	Marketing Campaign	Events (professional)	Referral
Final product	30%	38%	40%	23%	30%	38%
Outsourcing	24%	32%	40%	44%	24%	44%
Both	33%	40%	53%	18%	38%	50%

**Note:** The questions A3 and A5 are multiple choice. The total sum of answers could potentially be above 100%;

A. MARKET & SERVICES

A4. COMPETITION

From a macro-economic point of view and the answers from the companies (on the question about future export potential), currently, there is a huge gap between the demand for IT Services from the clients and the capacity of the companies. Objectively, if there is significant current and future growth potential, there shouldn't be intense local competition for the services and products the companies are offering. Still, on the current question, the subjective perception will be analyzed and if the companies consider that there is intense competition for their services.

The general distribution is showing that 60% of the companies responded that they have local competition for the same services and software solutions. Considering the previously mentioned potential of the IT Segment, the percent of the positive answer is significant. On the other side, one-third of the companies don't think that they have competition, answer which suggests that from the correlation with the service type and market, different conclusions can be derived.

Companies that sell their services on the domestic market (in North Macedonia) consider that they are facing greater local competition compared to companies that export to international markets. This suggests that perhaps most of the companies that sell locally are facing high competition on the market because there is market saturation, price warfare, staff fluctuations, attempts to internationalize the service portfolio, and similar issues. Important information is that the local Macedonian market is limited and financially weak, thus increasing the competition intensity.

Also, the second correlation with the type of service offered by the company indicates that there is no significant difference in the perception of the competition. Companies that are only outsourcing with + 4% think they are facing huge local competition, compared to the companies that offer only "Final Product".

CHART A.06

B3. Is there competition (local) for the same services/software solutions you provide?

General answer distribution

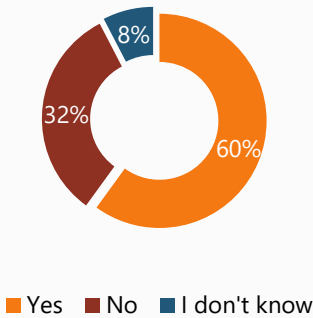


TABLE A.04

B3. IS THERE HUGE COMPETITION (LOCAL) FOR THE SAME SERVICES/SOFTWARE SOLUTION YOU PROVIDE?

	Domestic	International	Both	Final product	Outsourcing	Both
Yes	71%	50%	62%	60%	64%	58%
No	18%	38%	33%	33%	36%	30%
I don't know	12%	9%	5%	8%	0%	13%

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## **B. OBSTACLES, PROBLEMS AND BARRIERS**

# B. OBSTACLES, PROBLEMS AND BARRIERS

## B1.1 EXPORT OBSTACLES

Although the IT Segment has significant potential for export growth and positive trade balance, it is important to define the fields which hamper the export such as Education, Institutional Support, or internal organizational activities. It will give the stakeholders a glimpse in which direction they should be creating the strategy or channeling the activities to overcome the current export barriers, and therefore to harness the export potential.

**Note:** the companies responded with a score of 1 to 6, from 1-Not problematic at all to 6-Highly problematic. In Chart C1.01 are shown the average scores for each of the selected problems.

As can be observed, all the analyzed obstacles are in the range of 2.30 to 3.53, which indicates that there are no extremes among the barriers which require a score above 4.00. The close averages suggest that the companies are facing multiple issues at the same time with the same intensity. Those types of scores in a longer period can cause disruptive negative effects than to address only a single issue. Solving several obstacles simultaneously is the only approach, especially the ones with an average above 3.00.

The biggest obstacle to the implementation of export activities is "Government support" with an average score of 3.53, and it suggests that improvement in this kind of support is inevitably needed (it is separately analyzed in this report in detail). Besides the Government support which in this question is very broad, the companies are having difficulties with the "Legal Aspects" which are again related to the "Governmental Institutions" and on third position the criteria closely related to the Educational system or the "Qualified Staff for Export".

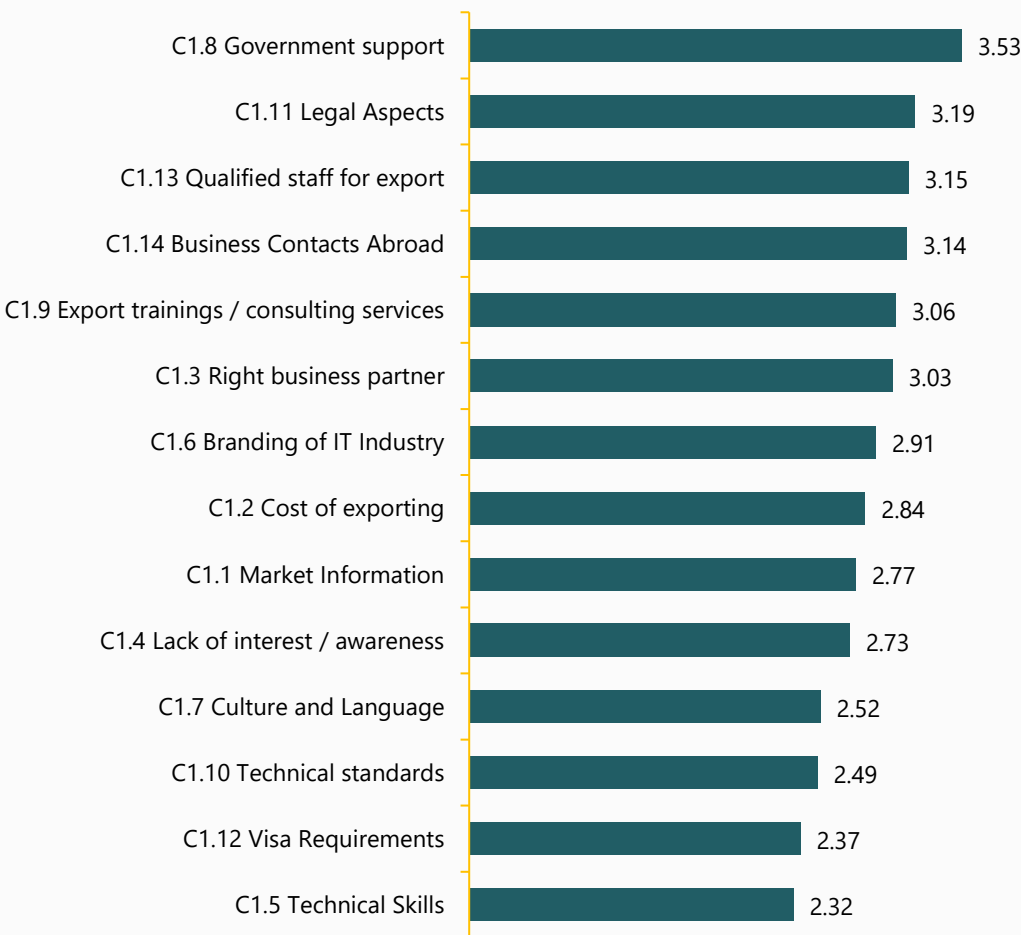
Some of the barriers are partially internal as "Business Contacts Abroad", "Right Business Partner", "Consultancy Services", but with strategic and institutional support from other stakeholders as Chambers of Commerce (MASIT) and the Government they can be solved.

Obstacles that are ranked under an average rate of 3.00 means that are on a level of somehow problematic, but no less significant for the companies and should be properly maintained to not cause any further restrictions in the export-related activities. From that group, the least problematic aspects are "Technical Skills", "Visa Requirements", and "Technical standards" with an average score of 2.32 to 2.52.

CHART B.01

C1. Export obstacles

Average answers





## B. OBSTACLES, PROBLEMS AND BARRIERS

### B1.2 EXPORT OBSTACLES

**To have even more precise direction for the faced barriers faced by the companies, there is a correlation between the main market and the export issues. Most importantly the issues which the export companies are facing are pretty much the ones that should be quickly solved to enhance the export and use its potential.**

The first part of Table B.01 correlates export-related issues with the companies whose main market is the domestic one. The biggest problem for them, according to Highly Problematic, is the "Cost of exporting" for 20% of the companies. Other obstacles such as Government support, Legal aspects, Right business partner, Lack of interest/awareness for their services, and Business Contacts Abroad are considered as Highly problematic obstacles for 13% of the companies working only on domestic markets.

If answers 4 and 5 (because are considered as negative) are combined for all previous obstacles, the need for solving is even higher which indicates that they are a problem for a significantly large number of companies. In that order, again "Cost of exporting" is emphasized with the highest share or 53%, followed by "Government Support", "Market Information", and "Qualified staff" for export for 33% of the interviewed companies. Additionally, "Visa Requirements" and "Technical Skills" are the least problematic aspect according to the survey.

The second part of Table B.01 correlates the companies whose main market is the International. The biggest obstacles, according to Highly Problematic share are Government support for 19%, Qualified staff for export with 18%, and Export training/consulting services for 14% of the companies.

Previously mentioned obstacles remain present as the most important barriers for export, but if the scores 4 and 5 are combined the companies are facing the following obstacles: Business contacts abroad, Export training / consulting services, Branding of combined IT Industry with the addition of Qualified staff for export. These barriers are affecting the export of almost every second company, or in a share range from 43% to 48%. As least problematic aspects for the companies which are working on the international market are "Culture and Language", and Technical Skills.

**Table B.01**

**C1. PLEASE RANK THE FOLLOWING EXPORT OBSTACLES**

<b>Domestic Market</b>						
	Not problematic	Somehow Problematic	Little Problematic	Problematic	Very Problematic	Highly Problematic
C1. EXPORT OBSTACLES						
C1.2 Cost of exporting	20%	7%	13%	7%	27%	20%
C1.8 Government support	7%	13%	40%	7%	13%	13%
C1.1 Market Information	13%	7%	47%	13%	20%	0%
C1.11 Legal Aspects	13%	27%	27%	7%	7%	13%
C1.3 Right business partner	13%	20%	33%	13%	0%	13%
C1.13 Qualified staff for export	7%	40%	20%	13%	13%	7%
C1.4 Lack of interest / awareness	27%	13%	27%	0%	13%	13%
C1.7 Culture and Language	20%	27%	20%	7%	13%	7%
C1.9 Export trainings / consulting services	13%	27%	40%	0%	7%	7%
C1.14 Business Contacts Abroad	20%	33%	27%	7%	0%	13%
C1.6 Branding of IT Industry	13%	33%	40%	0%	7%	0%
C1.10 Technical standards	20%	33%	40%	7%	0%	0%
C1.12 Visa Requirements	40%	13%	33%	7%	0%	0%
C1.5 Technical Skills	33%	40%	13%	7%	0%	0%

<b>International Market</b>						
	Not problematic	Somehow Prob.	Little Problematic	Problematic	Very Problematic	Highly Problematic
C1. EXPORT OBSTACLES						
C1.13 Qualified staff for export	7%	14%	39%	7%	14%	18%
C1.14 Business Contacts Abroad	3%	21%	28%	21%	17%	10%
C1.9 Export trainings / consulting services	22%	4%	30%	15%	15%	15%
C1.8 Government support	12%	38%	12%	8%	12%	19%
C1.6 Branding of IT Industry	22%	11%	22%	19%	15%	11%
C1.11 Legal Aspects	21%	21%	14%	14%	14%	14%
C1.3 Right business partner	30%	11%	19%	15%	15%	11%
C1.2 Cost of exporting	25%	14%	32%	11%	7%	11%
C1.4 Lack of interest / awareness	33%	19%	15%	11%	11%	11%
C1.1 Market Information	25%	21%	29%	18%	4%	4%
C1.12 Visa Requirements	33%	27%	10%	17%	7%	7%
C1.5 Technical Skills	38%	24%	3%	21%	10%	3%
C1.10 Technical standards	34%	28%	14%	21%	3%	0%
C1.7 Culture and Language	48%	28%	3%	7%	7%	7%

## B. OBSTACLES, PROBLEMS AND BARRIERS

### B2. EXPORT POTENTIAL AND GROWTH

The financial performance of the companies within the IT Segment is highly positive, but it's of importance to get a glimpse into their subjective opinion about the future. If they consider that there is potential for additional export growth and more international projects, there is a high probability for active involvement in creating international strategy which will bring them additional revenue.

Outstandingly positive is the fact that the largest percentage or almost 9 out of 10 companies anticipate that there is an additional potential for export growth in the future, while only 7% of companies do not agree. This suggests that among the companies the investment spirit is significantly high. Nonetheless, to achieve export growth, the obstacles which are pointed out by the companies should be primarily facilitated.

Previous analyses showed that every second company faces export difficulties which are mainly connected with reaching the potential sales/business leads abroad (Table B1.01). Taking this into consideration, and additionally to point out that 45% of the companies are demanding institutional support through covering the costs for fairs/export activities. To boost the export growth it is necessary to find a combined solution that will help the companies to visit more fairs and establish more international collaborations.

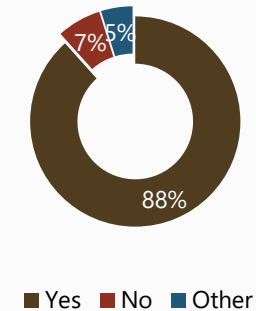
On Chart C4.02, only a positive response to question "C4. Do you think there is additional potential for export growth / more international projects?", is shown with correlation with the market on which companies sell their services and according to the product they offer. A higher percentage of companies that offer "Final product" agree that there is additional potential with + 11% compared to companies that offer "Outsourcing services". According to the main market for sale, companies that sell internationally with 14% more agreed on future growth opportunities compared to companies that sell on the domestic market.

**Subjective conclusion:** the answer distribution is not only suggesting that the companies are seeing the future as prosperous, but they are also sharing their subjective opinion that they "see" their company as part of that future.

**CHART B.02**

**C4.** Do you think there is an additional potential for export growth/ more international projects?

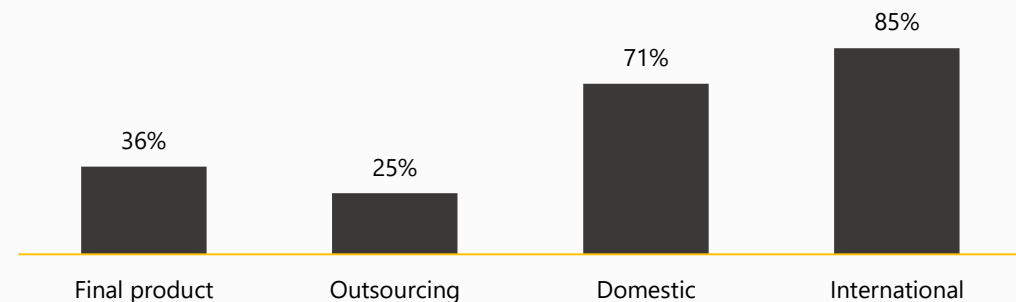
**General answer distribution**



**CHART B.03**

**C4.** Do you think there is additional potential for export growth / more international projects?

**Correlation:** C4. - A1. On which market do you sell your services?/ B4. Are you offering final product (software solution), outsourcing activities or



B. OBSTACLES, PROBLEMS AND BARRIERS

B3. BUSINESS CHALLENGES/PROBLEMS

Apart from the barriers faced by the companies through their export process, there are other problems and challenges which the companies are facing in their everyday business activities. Defining the impact of the general challenges should help the companies in creating certain strategies and solutions for overcoming them and the ones that want to start a business in the IT Segment for what should they be prepared. Also, for the ones which are more macro-economically related the defining of the issues will give clear direction for the rest of the participants in the ecosystem in which way should deliver their support.

**Note:** The companies evaluate on the scale from 1-Not problematic to 6-Highly problematic for the indicated aspects in the operation that are at the same time the main influencers on the growth of the IT ecosystem.

It is very interesting to observe that compared to the previous export obstacles which were ranging from 2.32 to 3.53, the current analyzed aspects are all above 3.00. The averages shown in Table B.02 are suggesting that generally there aren't business aspects that are extremely affecting the companies but nearly all of them are between 3.00 and 3.65. This situation with almost equally burdening issues for companies is very complex because the stakeholders are not able to solve all of them at the same time. The suggestion is to solve the problems that arise in different aspects of the business (as education and internationalization).

The companies an with average of 3.65 are pointing the "Competition for a qualified workforce" and "Sales" with 3.37 as the most problematic issues. Every strategic attempt for implementing change should incorporate solutions dedicated to increasing the supply of qualified workforce in the country as a base for further development of the segment. From the first 5 positions, 2 are employee-related issues, so again as emphasized many times before, employee-related issues should be addressed instantly.

In addition to the above mentioned, with significant participation in making it disruptive for daily business operations, there is also the aspect of "Education", where one of the three companies ranks it as problematic (degrees 4 – 6).

CHART B.04

C2. Rank the following aspects of your business by the degree you consider them as challenge/problematic  
General Obstacles Impact

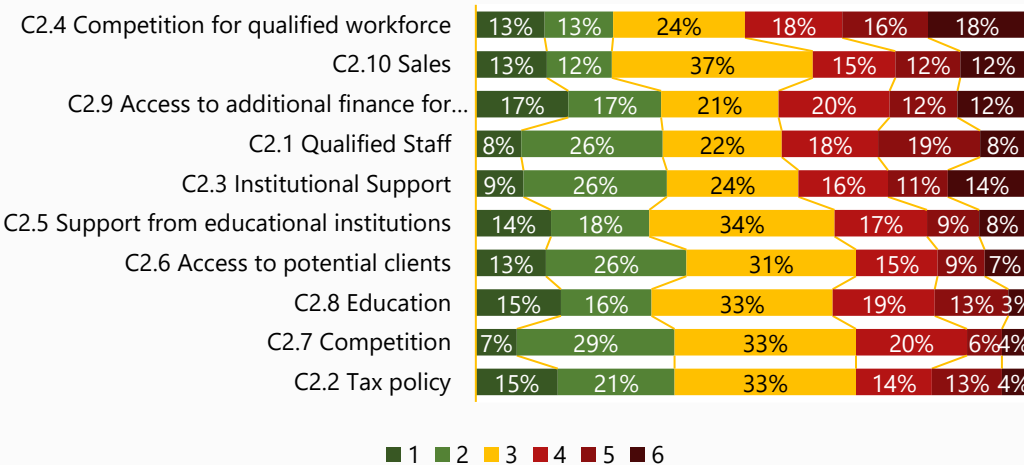


Table B.02	
BUSINESS ASPECTS	Average
Average Degrees	
C2.4 Competition for qualified workforce	3.65
C2.10 Sales	3.37
C2.9 Access to additional finance for innovation and development	3.31
C2.1 Qualified Staff	3.37
C2.3 Institutional Support	3.37
C2.5 Support from educational institutions	3.16
C2.6 Access to potential clients	3.03
C2.8 Education	3.07
C2.7 Competition	3.02
C2.2 Tax policy	3.01

ICT EXPORT: CURRENT SITUATION AND POTENTIALS

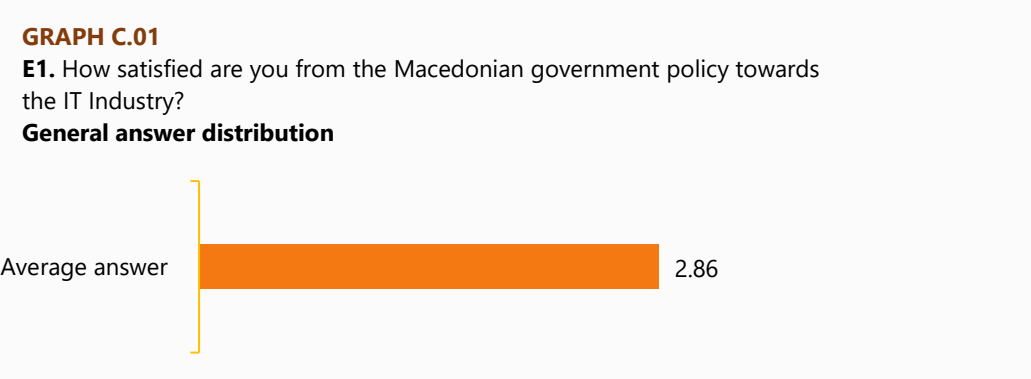
## **C. GOVERNMENTAL/INSTITUTIONAL SUPPORT**

C. GOVERNMENTAL/INSTITUTIONAL SUPPORT

C1. GENERAL SATISFACITON FROM THE GOVERNMENT POLICY

Although there isn't a National Strategy towards the ICT industry, the companies have been asked how satisfied are they with the present government policy. Only, as a support for the ICT Industry, it has been issued National Short-Term ICT Strategy 2016 - 2017, August 2015, but it hasn't been fully implemented. The the lack of an official Nacional Strategy for Development of the IT Segment is causing even higher dissatisfaction.

From the ICT General Mapping Report 2020, and the information and data analyzed, it's clear that the lack of a National Strategy is humping the whole IT Segment to use its full potential. The institutional support should be in the line of improving the whole business environment of the ICT Industry because from the analyzed information, the enhanced IT Segment will be beneficial for the whole Macedonian economy.



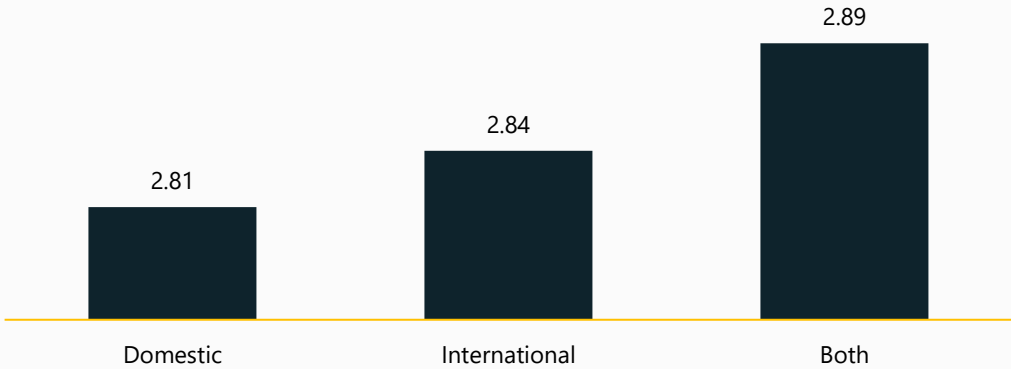
The average rate score of 2.86 is highly negative, because it is suggesting high dissatisfaction from the Government Policy towards the IT Segment. The Government and its institutions should take this average score into account because it is given by the most prosperous industry segment within the domestic economy.

In correlation with the market where the companies sell their services, companies that sell only internationally showed higher satisfaction levels in comparison with the companies that sell only on the domestic market. According to the type of product, companies that sell Final product are more satisfied compared to the companies that offer Outsourcing.

**CHART C.02**

**E1.** How satisfied are you from the Macedonian government policy towards the IT Industry?

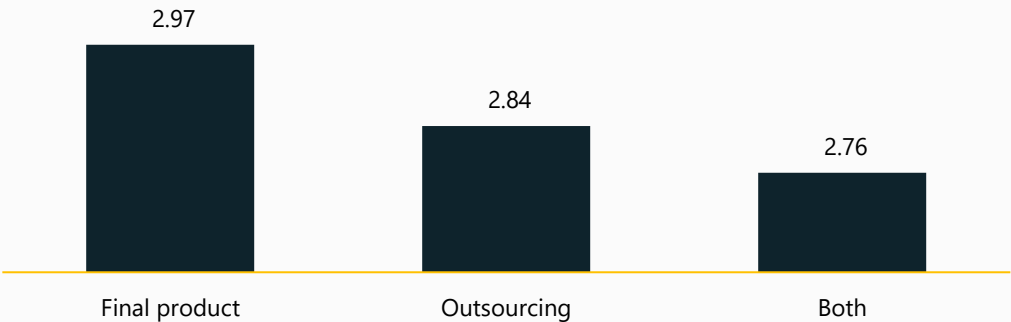
**Correlation:** E1. - Main Market



**CHART C.03**

**E1.** How satisfied are you from the Macedonian government policy towards the IT Industry?

**Correlation:** E1. - Type of service

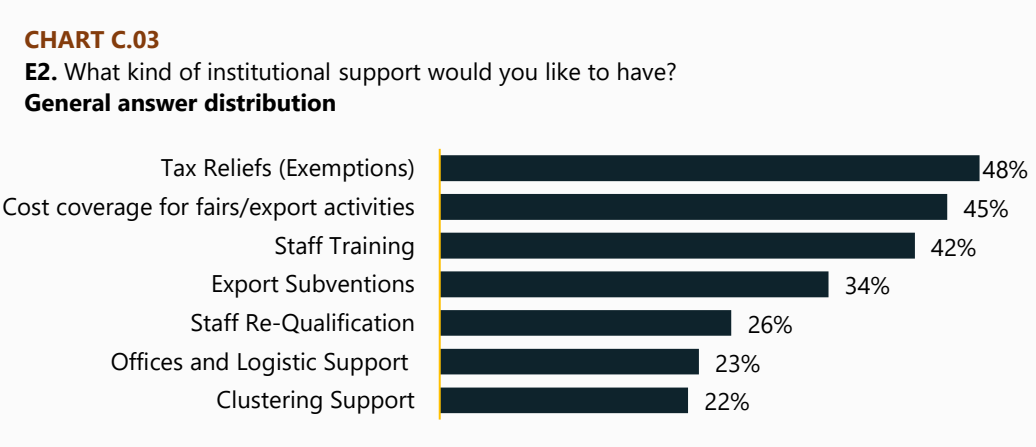




C. GOVERNMENTAL/INSTITUTIONAL SUPPORT

C2. DEMANDED INSTITUTIONAL SUPPORT

According to the previously analyzed questions and criteria, the Governmental and Institutional support, are pointed out as one of the largest barriers or obstacles currently or for future development. This question is dedicated in defining what kind of institutional support the companies are demanding to enable the State to meet their requirements.



Generally, all three fields where institutional support is needed are important for every almost second company in the ICT industry, but they all tackle different areas and do not complement each other. The challenge for the affected institutions is to direct their support where will cause the most effective long-term results and solve the current problems in the industry.

Although the general analysis of the needs of companies is of great importance for state support in the area of tax exemptions, when correlating with the type of company (whether it sells its products/services on the domestic or foreign market) there are differences in the priority needs for institutional support.

According to the companies, it is much more important, especially those who sell exclusively on the domestic market, to receive institutional support in terms of education of the employees and their additional training.

**TABLE C.01**  
**E2. What kind of institutional support would you like to have?**

	Domestic	International	Final product	Outsourcing
Tax Reliefs (Exemptions)	24%	50%	43%	40%
Cost coverage for fairs/export activities	35%	41%	40%	52%
Staff Training	47%	38%	40%	44%
Export Subventions	18%	32%	28%	36%
Staff Re-Qualification	18%	32%	30%	20%
Offices and Logistic Support	18%	21%	30%	12%
Clustering Support	18%	24%	23%	20%

The research shows that 47% of companies which are working solely on the domestic economy, would need support for "Staff Training". This is the only segment where companies that sell on the domestic market showed a higher demand for institutional support compared to the companies that sell internationally. As a second need is "Cost coverage for fairs/export" activities with a share of 35% and in the third-place are positioned "Tax Reliefs" with 24%. It's very interesting to stress that the companies which are currently oriented towards the domestic market, are seeking support for fairs/export which implies that they are analyzing (or currently considering) the opportunities for internationalization.

The situation with the companies that sell internationally is different, the priority for the required support they consider should be directed in "Tax Reliefs (Exemptions)" with a share of 50% and "Cost coverage for fairs/export activities" with 41%. A related indicator linked to the matter of employee education is noted for companies that sell on international markets and it is associated with "Staff Re-Qualification".

If the needs of the companies are analyzed based on the type of service, there is a need for institutional support mainly in three segments. According to the group to which the company belongs. For companies that offer "Final product", the need for support in the direction of "Tax Reliefs" stands out with 43% compared to the companies that are Outsourcing for which the most necessary is Cost coverage for fairs /export activities with 52%.

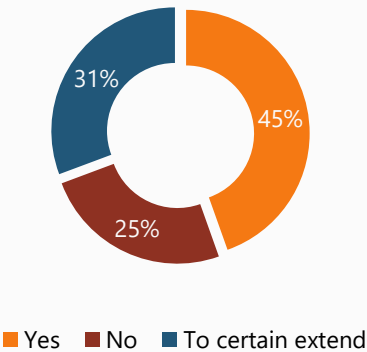
C. GOVERNMENTAL/INSTITUTIONAL SUPPORT

C3. INFLUENCE OF TAXES

From the ICT General Mapping Report 2020, it can be observed that in 2019 the total amount of employee-related expenses was nearly 200 million euros, from which 75 million euros were wage tax, salary compensations, and compulsory expenses. Additionally, the companies within the ICT Industry are paying an estimated 10 - 15 million in corporate taxes. Thus, the total amount of State Related expenses are nearly 90 million euros in 2019. Still, every Industry if asked will answer that the taxes are affecting their business, so if any kind of tax exemptions are implemented, they should be in the line with the strategic goals for enchasing the ICT Industry.

CHART E5.01

E5. Do taxes significantly affect your company financial performance?



According to the general answer distribution, 45% answered that the taxes significantly affect the financial performance of the company. On the other side for every 4th company, the answer is the opposite. The change in the taxation policy is certainly needed, but, in case of implementation, it opens the question of how significant the impact would be toward boosting the development of the whole IT industry and exactly in which segments.

The total amount of direct costs of companies in the form of taxes and contributions to the state is 47%-48%, which leads to a significant reduction in the financial resources of the companies. From a governmental point of view, those financials are significant for the national budget and pension funds.

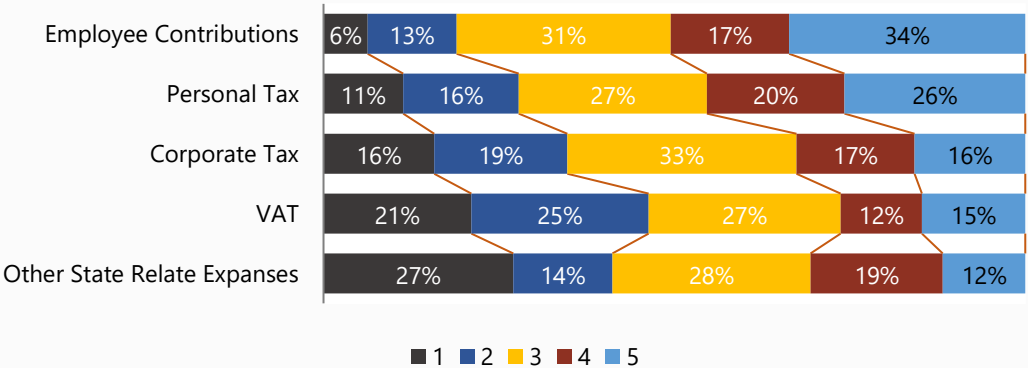
Additionally, the companies are asked to rate the significance of the financial impact on a scale from 1 – no impact at all to 5 – extreme impact. Results showed that companies picked out Employee Contributions and Personal Tax with a share in a range from 45% to 51% as the most influential fiscal expenditure. This percentage reveals the number of companies that will have a chance to differently dedicate the amount of money if the government makes some releases on the company's duties. As a taxes with less significant impact are positioned Corporate Tax and Other State Relate Expenses with an almost equivalent share on rates 4 and 5.

VAT is distinguished with a lower impact on the performance of the companies. The VAT is a highly specific tax that influences the companies which are importing goods or working mainly on the domestic market.

CHART C1.01

E4. How significant is the impact of the following taxes and expenses on your company?

General Obstacles Impact



ICT EXPORT: CURRENT SITUATION AND POTENTIALS

## **D. WORKFORCE AND EDUCATION**

## D. WORKFORCE AND EDUCATION

### D1. EMPLOYEES IN THE IT SEGMENT

**This part of the research is dedicated to define the biggest obstacle the IT Segment is facing related to the lack of a qualified workforce. From the ICT General Mapping Report 2020 and its estimations, the “hole” for employees only in the “Software and IT Services” in the next 5 years will be more than 5,000 IT experts. The natural growth of the number of employees in the “Software and IT Services” is between 1,200 and 1,500 from one side, but the number of graduate students is only 600 on the other. If the stakeholders in the industry don’t take the necessary activities in creating a National educational strategy for the IT Segment, this problem would be even more disrupting, thus it will affect the future performance of the whole industry.**

Many of the companies manage the problem with the poor level of the quality of the staff supply, which directly has an impact on successfully delivering the projects. Previously was concluded that as the biggest challenges for 40% of the companies are aspects connected with the quality of employees, on the Chart D5.01, through a combination of the answers “No” and “Maybe” the percentage of companies that don’t agree that North Macedonia has enough qualified IT Staff reaches 70%.

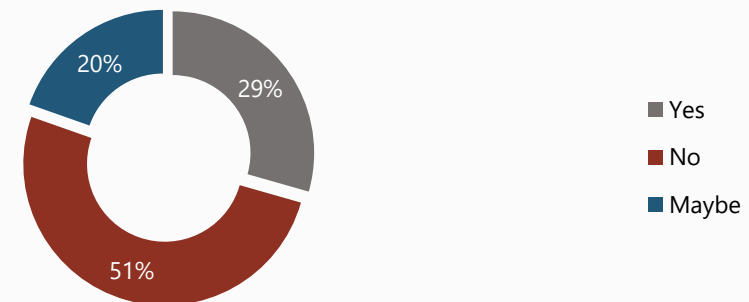
Half of the companies are certain that in North Macedonia there is not enough qualified workforce, and 20% think that “Maybe” there is enough. If a significant part of the companies are considering the lack of qualified employees as the biggest issue they are facing and 51% consider that there is not enough qualified workforce, that is directly sending a note to the institutions that it should be a high priority problem for solving.

Additionally, 75% of the companies have shortages for qualified employees, so even part of the ones that answered that North Macedonia has or maybe has enough IT Professionals are facing problems related to employees. Only 1 of 4 companies doesn’t have any kind of issues related to the subject.

From the correlations with the market on which they sell (not shown) most of the distributions are the same as in the general answer distributions, but the companies which are working internationally are facing more intensively with the problem related to the lack of qualified workforce. Again as mentioned before, the lack of staff especially the export-oriented companies is highly negative, because it is hampering the growth of the whole IT Segment.

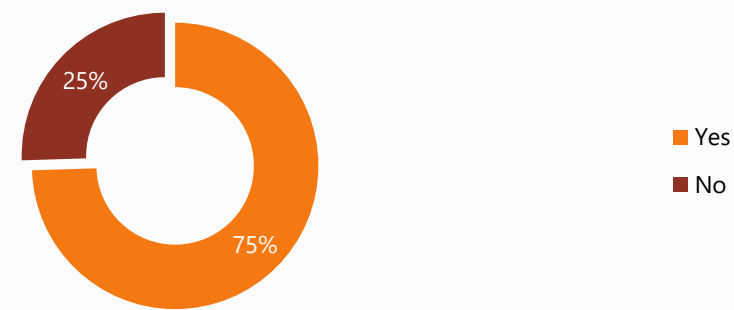
**CHART D.01**

**D5. Do you think that North Macedonia has enough qualified IT Staff?**  
**General answer distribution**



**CHART D.02**

**D1. Do you often have shortages of qualified employees?**  
**General answer distribution**



D. WORKFORCE AND EDUCATION

D2. MANAGING SHORTAGE OF WORKFORCE

In addition to the question on Chart D1.02, companies are asked how they manage that problem. According to the general answer distribution they choose mainly between two options, "Taking interns from faculties" and "Hiring freelancers" as a solution for 88% of the companies. Still, the total sum of the answers (because the question is multiple choice) is above 100% or 122%, so part of the companies are using several different methods for overcoming the problem. If the answers are grouped by their nature, taking interns from both formal and informal education is the solution for 57% of the companies, and outsourcing activities to other companies (foreign and domestic) is for 35%.

Accordingly, to the correlation in Table D.01 based on the market where companies sell their services, there is a different approach in this kind of situation. Companies that only sell on the Domestic market in the first place are taking interns from faculties (formal education) and as a second option, they are outsourcing activities to other domestic IT Companies. Companies that operate only in International Markets primarily employ Freelancers and then chose interns from formal education.

In most of the analyzed situations when the company is facing the problem with the shortage of qualified employees, they give preference firstly to formal education in comparison to informal educational systems, although the informal academies are significantly present in the quantitative supply of the workforce. Could be noticed that informal education in North Macedonia is an unavoidable part but does not fully meet the needs of companies on the market.

Based on the previous information, the educational centers, mostly formal should be ready to meet the market requirements when there is significant demand for their students in near future. The current situation with huge demand for a qualified workforce and lack of new employees surely is provoking the formal as well as informal education centers to improve their programs and curriculum to deliver the needed volume and quality of the workforce.

Subjective conclusion: There is a significant difference between the number of companies that are deciding to take interns from formal compared to informal education. That information is suggesting that the companies are having lower "trust" in the informal education and potential discrepancy between the needs of the companies and the skill level gain it the informal centers.

GRAPH D.03

D2. How do you manage that problem?

General answer distribution

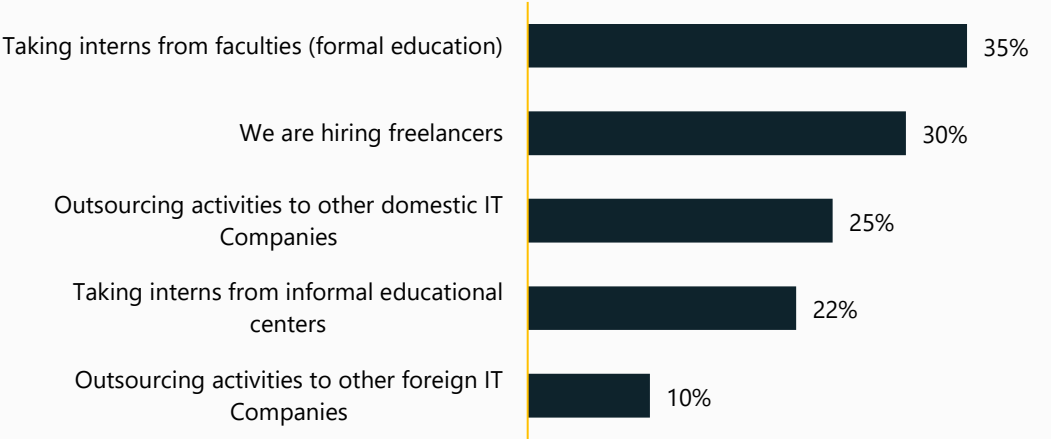


Table D.01

D2. How do you manage that problem?

A1. On which market do you sell your services?	We are hiring freelancers	Taking interns from faculties (formal education)	Taking interns from informal educational centers	Outsourcing activities to other domestic IT Companies	Outsourcing activities to other foreign IT Companies
Domestic	18%	29%	12%	24%	0%
International	41%	32%	21%	26%	12%
Both	25%	36%	24%	22%	11%

Note: The question/s D2 is/are multiple choice. The total sum of answers could potentially be above 100%;



## D. WORKFORCE AND EDUCATION

### D3. MOTIVATION METHODS

According to the previously analyzed question and Chart C3.02, one from ten companies is highly affected by "Competition for a qualified workforce". This question analyzes how the companies are motivating their people to stay in their company. The total sum of the answers is way above 100% (211%) so on average, the companies use two different approaches to retain current employees. The most used method with a share of 68% is "Attractive salary" and with 53% the "Financial Bonus programs". If the motivators are separated, every company is using one financial and one non-financial motivator or Attractive salary and Financial Bonus Programs on one side and the Non-Financial Benefits and Training programs from the other.

From the first ICT General Mapping Report 2020, could be noted that in the "Software and IT Services" the average share of "Employee Related Expenses per Employee" in "Total Expenses" is 44% in 2016 and reaching 47.7% in 2019. The consultants are anticipating that if the trend continues the share will grow up to 49% until 2021. That is suggesting that there is potential the companies will use even more extensive motivational programs (financial and non-financial) just to keep the employees motivated and engaged.

From Table D.02 could be noticed different approaches for the motivation of the employees based on the market where the company offers their services and according to the kind of the product they offer to the clients. Companies that sell only on the domestic market prefer a system of motivation based on Financial bonus programs with 65% compared with companies that only sell on the International market where the largest number (76%) are motivating their employees through Attractive salary. Additionally, the presence of non-financial benefits and training programs for the employees in companies that sell internationally is doubled compared to the companies that work only with domestic projects.

From the comparison made between companies that sell only Final product and those that offer Outsourcing activities lead to the conclusion that Non-financial benefits and Training programs are a more characteristic system of motivation for the companies that offer Final product.

**CHART D.04**

**D3. How do you motivate your employees to stay in your company?**

**General answer distribution**



**Table D.02**

**D3. How do you motivate your employees to stay in your company?**

	Domestic	International	Both	Final product	Outsourcing	Both
Attractive Salary	35%	76%	73%	65%	72%	70%
Financial Bonus Programs	65%	56%	47%	55%	56%	50%
Non-financial Benefits	24%	47%	55%	50%	40%	50%
Training Programs	12%	50%	49%	48%	36%	45%

**Note:** The question/s D3 is/are multiple choice. The total sum of answers could potentially be above 100%;

## D. WORKFORCE AND EDUCATION

### D4. SATISFACTION FROM FORMAL AND INFORMAL EDUCATION

It is expected that the companies will address the huge lack of workforce in the educational system, no matter if the Faculties and Informal Educational Centers themselves are offering high-level curriculum, simply they are not delivering enough people. Or there is another alternative, where part of the educational centers are producing high-quality employees and satisfaction but among small number companies which can attract those individuals. The purpose of the question is to define the general satisfaction of the companies from the formal and informal education.

If we consider the data from the previously analyzed questions that the biggest obstacles for 40% of the companies are those related to the skilled workforce and cannot be expected to gain a high satisfaction rate on the question "D4. How satisfied are you from the formal and informal educational system in North Macedonia?".

The companies responded with a ranking from 1 (completely unsatisfied) to 5 (completely satisfied) and have given an average score of 2.79 which is quite lower than the needed satisfactory degree of 4.00. From the average scores, even there are obvious oscillations and higher degrees of satisfaction among the companies for example which are working internationally, all degrees are bellow 3.00. That is suggesting the formal and informal education centers should reconsider their expectations and actively communicate the needs of the companies.

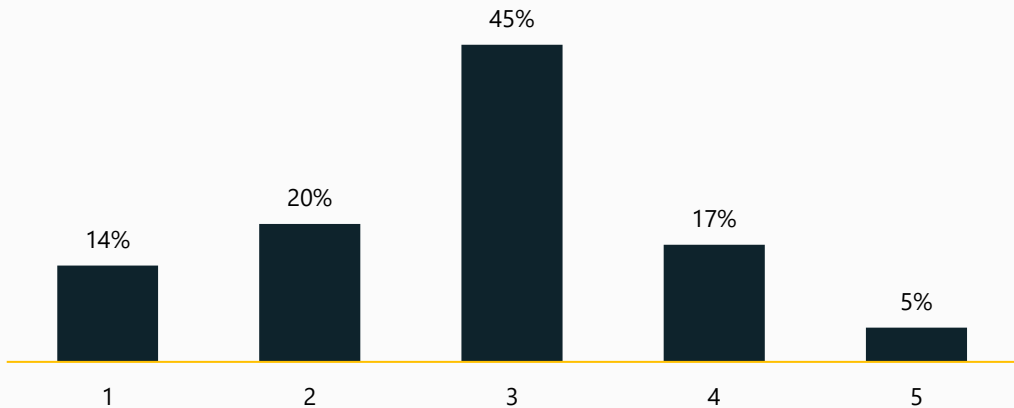
Through a combination of the lowest rates, a total percentage of 34% are highly unsatisfied with the formal and informal educational system in North Macedonia (degrees 1 and 2). From the direct answers, only 5% of the total interview companies have given the highest rate for the educational system of 5.

**Subjective perspective:** Again, maybe the Faculties and informal educational centers are offering high-quality curriculum and educational programs, but they are not delivering enough individuals. One of the challenges in the next few years (according to the researchers) will be the potential creation of Informal educational centers by the companies themselves or their active and more intensive involvement in formal education.

**CHART D.05**

**D4.** How satisfied are you from the formal and informal education system in North Macedonia?

**General answer distribution**



**Table D.03**

**D4.** Satisfaction rate from the formal and informal educational system in North Macedonia?

	Domestic	International	Both	Final product	Outsourcing	Both
Average rate	2.81	2.94	2.70	2.85	2.96	2.63

## D. WORKFORCE AND EDUCATION

### D5. EMPLOYEE TRAINING PROGRAMS

The current question is analyzed to define if the companies are investing in additional education of their employees, and what kind of education and training they use. Organizing and using successful methods for additional education, can help in overcoming the problem with the qualified workforce. Also, if every second company considers "Competition for a qualified workforce" as a highly problematic obstacle, it can be expected that companies will invest a serious amount of cash and time in enhancing the quality of the employees. With the additional education, the companies are not only improving their employees but rising their satisfaction and providing better job conditions, thus improving workforce stability.

The companies are sending their employees on regular training and conferences in a range from 50% to 54%, which is the most common way of additional education. With a lower share but still positive there are internal initiatives for the training of the employees. Only 19% of the surveyed companies are not sending their employees on any kind of additional training. As the main difference based on the market in which they offer their services, the companies that sell only on the Domestic market in the largest percentage organize internal training for their employees. The companies operating only on the International market have a higher share for all the listed ways but mainly there are sending employees to externally organized training.

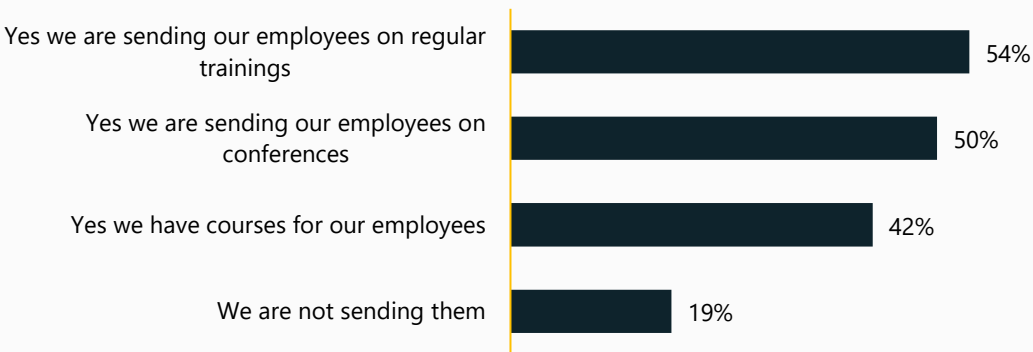
Additionally, a larger number of outsourcing companies are sending their employees on regular training compared to the companies that offer a final product but still this option for further education for employees is mostly preferred. A slight difference is noted for "We have courses for our employees" which suggests that companies that offer final products are more dependable on internally organized courses which are expected because of the specific needs for developed knowledge.

One of the measures which are proposed in the ICT General Mapping Report 2020 is that the Tax Reliefs should be used for financing not only the training and supporting informal and formal education centers, but the current employees also. So from answers to the current question, the support for training the employees will be more than welcomed for the companies because nearly 80% of them are using educational programs for their employees.

**CHART D.06**

**D6.** Does your company, on regular bases send the employees on trainings, courses, conferences for educational purposes?

**General answer distribution**



**Table D.04**

**D6.** Does your company on regular bases sends the employees on trainings, courses, conferences for educational purposes?

	Domestic	International	Both	Final product	Outsourcing	Both
We are sending our employees on regular trainings	35%	76%	73%	65%	72%	70%
We are sending our employees on conferences	12%	50%	49%	48%	36%	45%
We have courses for our employees	65%	56%	47%	55%	50%	50%
We are not sending them	24%	47%	55%	50%	40%	50%

**Note:** The question/s D6 is/are multiple choice. The total sum of answers could potentially be above 100%;

## D. WORKFORCE AND EDUCATION

### D6. ORGANIZING INFORMAL EDUCATION

Besides the formal education institutions, there are informal or vocational training academies that are offering the development of digital and programming skills, boosting innovation, and encouraging entrepreneurship. From the ICT General Mapping Report 2020, currently, there are 53 informal educational centers, and in the past few years, they are educating a significant number of students which are among others also potential employees in the ICT Industry. The challenge with a properly trained staff which fully meets the job requirement still exists. As expected, the trend of increasing labour demand caused by increasing project volume may be a major setback and cause slowing the growth of the entire sector, unless educational programs (formal and informal) are changed and tailored partially for the needs of the companies.

The information gathered from the question “Would you support informal education (institution/Centers) together with other IT Companies?” is very important. Most, or 66% of the companies would support, and 25% maybe will. Only 10% had stated “No” directly to the idea, which is highly positive. That is confirming the need, of the previous suggestion, for interfering with the companies in the organization of informal educational centers, directly through founding new ones or enhancing the existing ones by improving the curriculum.

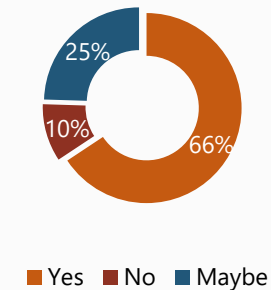
According to the correlation on Chart D7.02, where only the positive response is shown, a larger number of companies that work only on the Domestic market and offer Outsourcing activities are supporting the suggestion for creating an informal educational center compared to the other kinds of companies.

The subject for organizing informal education in which several companies would be involved is more complex than it seems initially. Several issues should be addressed even with the high interest from the companies for cooperating on the subject because different companies and stakeholders have different perspectives and expectations. The informal center will be looking for financials in the business concept, the companies will expect highly educated and trained employees, the jobs related to the subjects they learned. Still, the biggest problem is the potential employee division between the companies, because if one individual is highly skilled, there is a high probability all are interested in hiring him/her. Thus, a very explicit system of organizing the informal education center should be created to create a sustainable and long-term environment in which all stakeholders will have an interest.

**CHART D.07**

**D7.** Would you support informal education (Institutions/Centers) together with other IT companies?

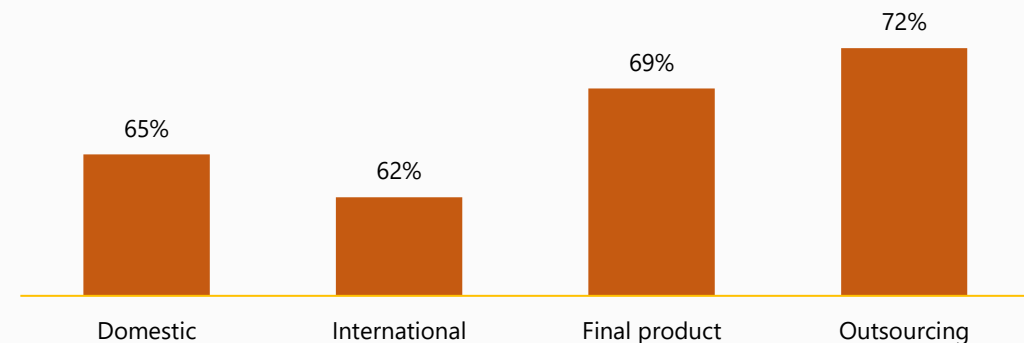
**General answer distribution**



**CHART D.08**

**D7.** Would you support informal education (Institutions/Centers) together with other IT companies?

**Correlation:** D7. - Market/Type of service



ICT EXPORT: CURRENT SITUATION AND POTENTIALS

## **E. INVESTMENT AND INNOVATION**

## E. INVESTMENT AND INNOVATION

### E1. INVESTMENT IN NEW TECHNOLOGIES/SKILLS

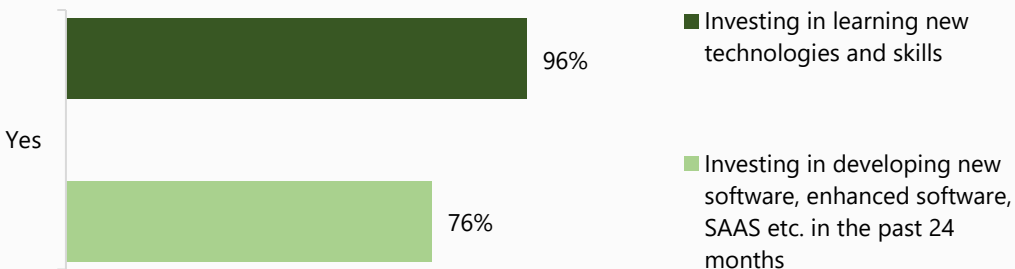
The development of the entire IT segment depends directly on the individual progress of the participating companies and their strategic development, which necessarily includes investing in new technologies that will enable them faster growth and increase the volume and complexity of the projects.

However, in the long-term, higher levels of performance could be achieved only with maximum exploitation of the capabilities of every company. Despite analyzing their investments in R&D by now, also is important the define issues that companies consider as barriers for future innovation and development.

**CHART E.01**

**F2.** Have you invested in developing new software, enhanced software, SAAS etc, in the past 24 months?/ **F1.** Do you invest in learning new technologies and skills?

**General answer distribution**



Generally, a very high percentage, or 96% of the companies, answered that already had invested in learning new technologies and skills. On an additional question, "F1. Have you invested in developing new software, enhanced software, SAAS, etc. in the past 24 months?", seven of ten companies answered that they have invested. Both answers are extremely positive, because if the combined share of the answers is nearly 100% of all IT Companies have invested in development (Human Capital, New products, etc.) in the previous period.

**Table E.01**

**F2.** DEVELOPING NEW SOFTWARE, ENHANCED SOFTWARE, SAAS ETC. IN THE PAST 24 MONTHS?

	Domestic	International	Both	Final product	Outsourcing	Both
Yes	59%	65%	82%	74%	68%	84%

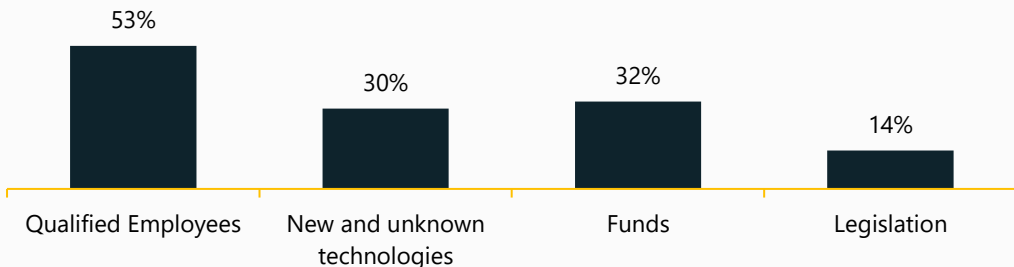
Depending on the market, companies that sell only internationally have invested in new software, technology, SAAS, with +6% compared to the companies that sell only on the Domestic market. A higher percentage of companies that sell "Final product" have invested in new software in the past 24 months.

On Chart F5.01, are analyzed the barriers for the companies in the process of developing the product. As the main issue for every second company when developing a new product or innovations is the problem with "Qualified Employees" which is confirmation on the previously defined lack of qualified workforce. Also, are "New and unknown technologies" and "Funds" for every third company. It is important to stress, that the companies that have already invested in developing products consider the lack of qualified employees as major problems, compared to the ones that haven't invested at all which consider the funds are their biggest issue (analyzed on the next slide).

**CHART E.02**

**F5.** What was the biggest issue that you had while you were developing the product?

**General answer distribution**



## E. INVESTMENT AND INNOVATION

### E2. INVESTMENT IN NEW TECHNOLOGIES/SKILLS

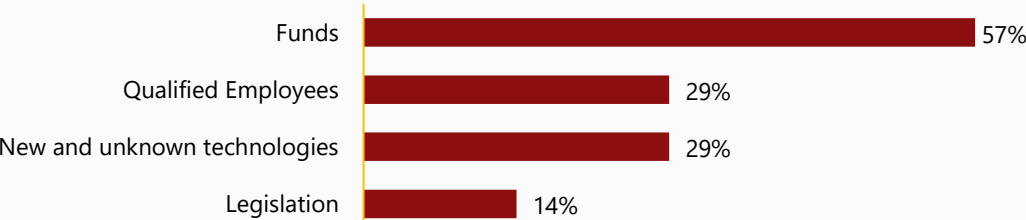
Apart from the companies that already invested in the development of their products or companies, a significant number of companies haven't done it yet, but they consider doing it.

Chart F4.01 gives the answers about what were the biggest obstacles that set them back from investing. Every second company is considering Funding as the main reason, while every third company has stated that the Qualified Employees and New and unknown technologies are the main obstacles.

**CHART E.03**

**F4. What is setting you back?**

**General answer distribution**



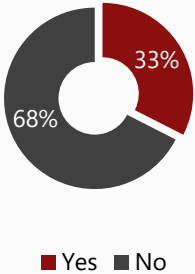
It could be observed, that there is an overlap in the main issues comparing the companies that had already invested in development and new skills and the companies that didn't. The only difference between them is the positioning of the obstacles as primary and secondary for the different types of investment stage. Nevertheless, the companies' challenges with Fund and Qualified employees should be seriously approached by the concerned institutions and finding a way for long-term mitigation.

The next chart is presenting the percentage of companies that have already applied for funding and the usage level of available finance means by the companies.

**CHART E.04**

**A6. Have you ever applied for funding from FITD or other institutions?**

**General answer distribution**



The average percentage of companies that have already applied for funding from FITD or other institutions is 33%. This share can be seen as a positive indicator, which means that the companies are informed of the financing options and aware of their usage in supporting the growth of the company. But on the other side, there is a significant number of companies that have never applied, which suggests that two of three companies still have the opportunity for access to additional finances.

The information should be taken with caution, due to the random choice of the companies in the research.

**Table E.02**

**C6. HAVE YOU EVER APPLIED FOR FUNDING FROM FITD OT OTHER INSTITUTIONS?**

	Domestic	International	Both	Final product	Outsourcing	Both
Yes	29%	14%	38%	20%	43%	39%
No	71%	86%	62%	80%	57%	61%

ICT EXPORT: CURRENT SITUATION AND POTENTIALS

## **F. TRADE BALANCE ANALYSIS**

**IMPORT AND EXPORT**



## F. ASSESSMENT OF THE MACEDONIAN ICT INDUSTRY

### F1. TRADE BALANCE OVERVIEW

From the macroeconomic data shown at the beginning of this report, North Macedonia generally has a deficit in the trade balance of 2.01 billion euros in 2019 or 6.42 billion export and 8.43 billion imports. It is strongly suggesting that the country needs industries that are export-oriented and help lower the trade deficit. Also lowering the trade deficit will release part of the foreign exchange reserves which are held by the Central Banks for balance payments of the country. The ICT Industry is one of the potentials because most of the companies especially within the "Software and IT Services" are export-oriented and they have significant added value. The share of the export realized by the ICT Industry is nearly 3.58% from national total (5.86 billion) export and 1.1% in total import.

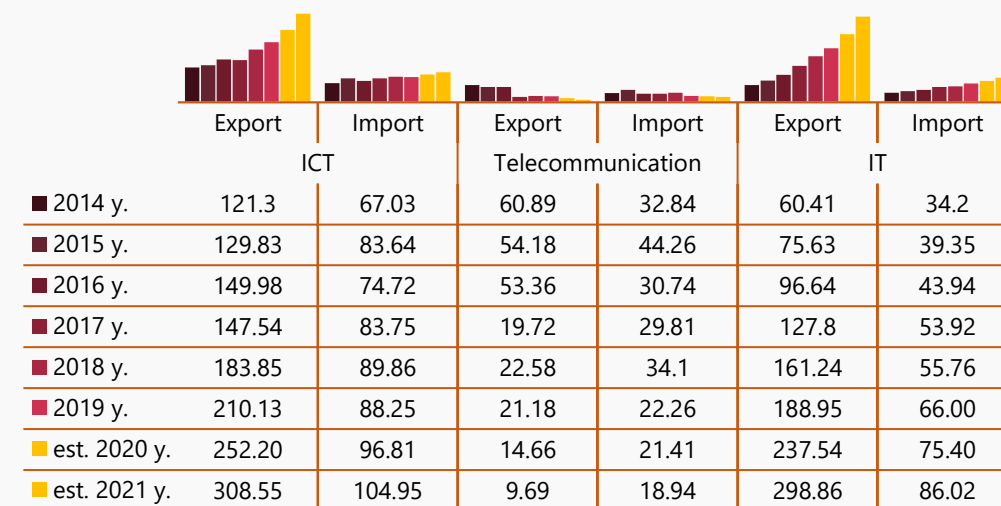
The whole ICT Industry has been growing from 121 million euros in 2014 to 210 million or 73% growth by 2019 with a 5-year period with an average rate of 11%. On the other side, the import is growing at a lower rate or an average of 8%, or the export is growing significantly higher (in absolute and relative numbers) than the import, thus in the next several years, the trade surplus will be even higher. According to the historical data, the average growth rate of the export is fluctuating as shown in Table F.01 from -2% in 2017 to 25% in 2018, as for the import but with lower rates.

Analyzed separately, IT Segment has the most significant growth (in absolute value and relative growth rate) compared to the Telecommunication segment. IT has grown from 60 million in 2014 to 179 million in 2019 or nearly 200% in a 6-year period, with an average pace of 28%. If the growth continues with the same rate, it can be expected that till 2021 the exported volume of IT Services will be above 278 million euros. From the average import/export growth rates, the export of IT Services has an average growth of 25% from 2015 – 2019 and the import 13% in the same period. Also it is highly positive that the value of the import in IT as well as the average growth is significantly lower than the one of the export, which means that in future the positive gap or the trade balance surplus will grow, which in the end will have a direct positive impact with lowering the national trade deficit.

Telecommunication on the other side as part of the ICT Industry has a constant decrease of the export from 60.89 to 21.18 million euros and an average pace of -13% per year. The import in most of the analyzed years is between 22.2 – 44.2 million euros, with one peak in 2015. Because there is no clearly expressed trend, the export could be higher for several percent points than the one projected, because in the last 6 years it didn't fall below 10 million per year. The import and export rates are fluctuating highly for the Telecommunication segment and again there is not a pronounced trend.

**CHART F.01**

F1. ICT Industry Segment – Import & Export  
Values in millions ('000 000) euros



**TABLE F.01**

B1. ICT INDUSTRY  
Import & Export Growth Rates

Industry/Segment		2015 y.	2016 y.	2017 y.	2018 y.	2019 y.	2020 Y. (est.)	2021 Y. (est.)	Average (16 – 19)
ICT	Export	7%	16%	-2%	25%	14%	13%	21%	12%
	Import	25%	-11%	12%	7%	-2%	6%	8%	6%
Telecommunication	Export	-11%	-2%	-63%	15%	-6%	-31%	-34%	-13%
	Import	35%	-31%	-3%	14%	-35%	-4%	-12%	-4%
IT	Export	25%	28%	32%	26%	11%	25%	24%	25%
	Import	15%	12%	23%	3%	15%	13%	13%	13%

Source: NBRM- National Bank of the Republic of North Macedonia

## F. ASSESSMENT OF THE MACEDONIAN ICT INDUSTRY

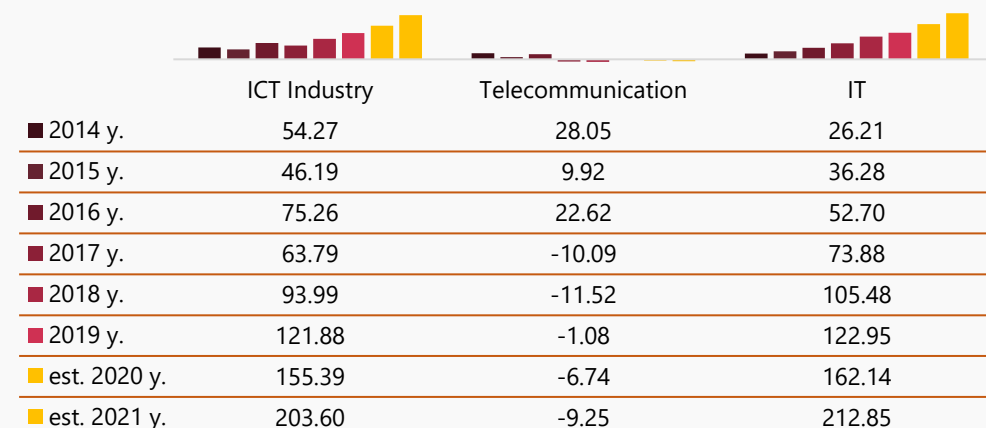
### F2.1 TRADE BALANCE OVERVIEW

**CHART F.02**

**F2. ICT Industry - Export/Import**

**Years:** 2014 – 2018

In million ('000 000) euros



**TABLE F.02**

**B1. ICT INDUSTRY**

Trade Balance Growth Rates

Industry	2015 y.	2016 y.	2017 y.	2018 y.	2019 y.	Average growth per year
ICT Industry	-15%	63%	-15%	47%	30%	22%
Telecommunication	-65%	128%	-145%	14%	-91%	-32%
IT Segment	38%	45%	40%	43%	10%	35%

**Source:** NBRM <http://www.nbrm.mk/content/statistika>

According to the trade balance, the ICT Industry is continuously in surplus and growing (except 2015), from the lowest point in 2015 with 46 million to 121 million euros by 2019, while having a peak in 2016 with 63% growth compared to 2015. The average growth rate is 22% per year in the period between 2015 – 2019, but it is unstable due to the large oscillations in the Telecommunication segment. From the Chart F.02 it is very clear that the companies that are working in IT are the main contributors to the positive trend and export in the whole industry.

The IT Segment had “only” 26-million-euro trade surplus in 2014, growing nearly 350% in just 6-year period and this growth will continue in the next few years, reaching 196 million in 2021. Because the export growth of the IT Segment is directly connected with other aspects such as education, entrepreneurship, start-up ecosystem, and finance, if few current obstacles are overcome in the next period, the export has even bigger potential in near future. The average growth rate of the trade surplus was 35% in the last 6 years, reaching the highest 45% in 2016 and the lowest 10% in 2019 (compared to 2018). The current 2020 will be hard to project, mostly because of the COVID-19 crisis, but the researchers from the communication with the IT companies consider that this industry won’t be affected severely so the growth will continue.

On the other hand, the “Telecommunication” segment has a different outcome for each year. From 2014 to 2016 it accounted for trade surplus between 8 and 22 million euros per year. But from 2017 till 2019, records are negative reaching -11.52 million euros in 2018, and this negative trend is projected to continue until 2021. Because this segment doesn’t have a straight trend or movement, the average growth per year is -32%, but it should be taken with caution because the oscillations are too high to make a certain conclusion. If the Government wants to intervene to lower this negative trade balance, it should analyze which are the sub-segment that should be stimulated (and there is a real possibility to do so) for local development, thus lowering the need for import.

**Even the total value of ICT Export has 3.3% share in total export for 2019 of North Macedonia, the additional 100 million trade surplus (which is very real in the next 3 years) can contribute to lower the negative trade balance for more than 5% (100 million / 1.81 billion). Lowering the negative trade balance will release part of the Foreign Exchange Reserves, which could be used for different and productive purposes. The need for lowering the negative trade balance of the country will be even more needed after the devastating crisis caused by COVID-19 in the first half of 2020.**

## F. ASSESSMENT OF THE MACEDONIAN ICT INDUSTRY

### F2.2 TRADE BALANCE OVERVIEW

When analyzing the export, import and trade balance surplus of the IT Segment, it should be calculated what should be expected from every additional 1 million revenue for trade balance. The analyzed period is between 2016 and 2021 because for the same there are available information about the revenue and other indicators about the companies.

The average export per economically active company is 127,830 euros and its growing up to 139,371 euros despite the 51% growth of number of the companies, which should lower the average what is highly positive. In the same time, the average import per company is decreasing from 58,121 euros in 2016 to 49,619 euro which again is positive because it is increasing the trade balance surplus per company which is getting up to 100,000 euros in 2018 and till will be again at the same point by 2021.

From standpoint of additional 1 million of revenue within the IT Segment, according the numbers of 2019, 660,000 euros will be export, 230,000 will be import and the trade surplus would be roughly 430.500 euros. If the same numbers are extrapolated on additional revenue of 100 million euros there will be 41 million trade surplus which is near 2.3% of the total National trade deficit (by 2018 1.81 billion). Its highly important to stress again that the industries which are export oriented, because the domestic economy is highly dependent from the import, thus there is significant trade deficit that should be controlled and financed with the foreign exchange reserves. The additional trade surplus will release some of the reserves, which could be used in other more productive purposes.

The projections for the future 2020 and 2021 are suggesting that even with higher growth of the number of the economically active companies, the averages will continue with the same rates as before. There is probability that the share of the export in the revenue is overestimated (76% by 2021) but considering that most of the newly opened companies are focused on foreign markets.

**This projection is allowing another conclusion, that the Macedonian market for IT Services is 160 million euro, because if from the total revenue of 283 million in 2019 nearly 188 million euro is exported the difference between them are all the services plus the import that is made with presumption that those services are used by Macedonian companies.**

**TABLE F.03**

Import/Export Analysis IT Segment

INDICATOR	2016 Y.	2017 Y.	2018 Y.	2019 Y.	2020 Y. (est.)	2021 Y. (est.)
Revenue (in million euro)	155.86	200.87	235.44	283.60	326.18	367.95
Number of companies	756	935	1050	1288	1592	1958
IT – Export (in million euro)	96.64	127.80	161.24	188.95	223.57	278.15
IT – Import (in million euro)	43.94	53.92	55.76	66.00	72.53	82.09
Trade Balance (in million euro)	52.70	73.88	105.48	122.95	151.03	196.05
<b>ADDITIONAL INDICATORS</b>						
Average Export per company (in euro)	127,830	136,684	153,561	139,371	140,412	142,045
Average Import per company (in euro)	58,121	57,668	53,104	49,619	45,554	41,923
Average Trade Balance per Company (in euro)	69,708	79,016	100,457	89,715	94,957	100,121
Coverage (export/import) (Export/Import)	1.20	1.37	1.89	1.81	2.08	2.39
% share of export in revenue	62%	64%	68%	66%	69%	76%
% share of import in revenue	28%	27%	24%	23%	22%	22%
% share of trade balance in revenue	34%	37%	45%	43%	46%	53%

**Note:** The revenues and number of economically active companies are sum of the Subsegments “Software and IT Services” and “Other IT” which are the holding the classification codes under which the export and import under the IT Segment is done;

**Source:** NBRM <http://www.nbrm.mk/content/statistika> (Trade Balance)